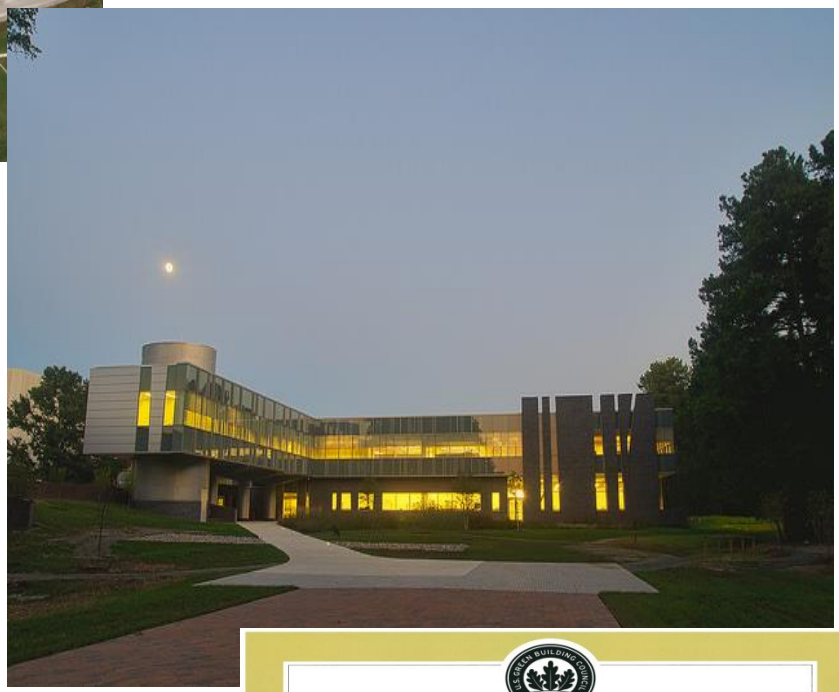
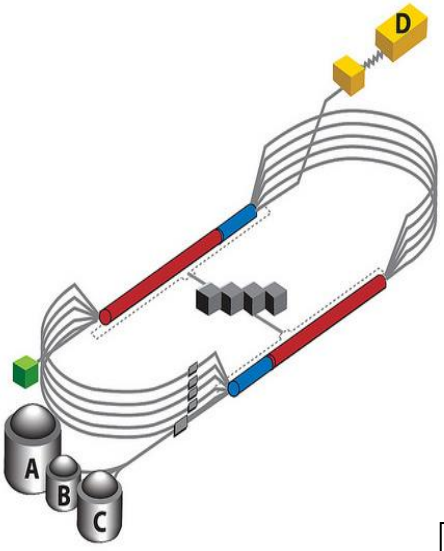
Jefferson Lab 2017
Site Sustainability Plan



Jefferson Lab
Sustainability Matters



December 9, 2016

Jefferson Lab
Thomas Jefferson National Accelerator Facility

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List of Acronyms

AFV – Alternative Fuel Vehicle
BTUs/GSF – British Thermal Units per Gross Square Foot
CEDR – Consolidated Energy Data Report
ECM – Energy Conservation Measure
eGRID – "Emissions & Generation Resources Integrated Database" (EPA, EIA, FERC data)
EUI – Energy Utilization Intensity
FAR – Federal Acquisition Regulation
FIMS –Facilities Information Management Systems
GeV – Billion Electron Volts
GHG – Greenhouse Gas
HEMSF – High Energy Mission Specific Facility (*critical laboratory mission operation facility*)
HPSB – High Performance Sustainable Buildings
HVAC – Heating, Ventilation and Air Conditioning
Kwh – Kilo Watt Hour
LEED – Leadership in Energy and Environmental Design
MGal – Million Gallons
MTCO2e – Metric Ton CO2 equivalent
Mwh – Megawatt hour
PPA – Power Purchase Agreement
RPS – Renewable Portfolio Standard
SF6 – Sulfur Hexafluoride
TEDF – Technology and Engineering Development Facility
T&D - Transmission and Distribution

Site Sustainability Plan

I Executive Summary

The Thomas Jefferson National Accelerator Facility (Jefferson Lab), a nuclear physics user facility, provides unique capabilities for the study of nuclear physics. Jefferson Lab maintains core capabilities in Nuclear Physics, Accelerator Science, Applied Nuclear Science and Technology, and Large Scale User Facilities/Advanced Instrumentation to support not only its own research program, but broader missions as part of the Department of Energy (DOE) laboratory system, applying these technologies in the national interest.

Jefferson Lab has achieved significant progress and remains on target to meet or exceed the set of diverse sustainability goals for Energy Utilization Intensity reduction, Renewable Energy, Scope 1 Greenhouse Gas (GHG) emissions (Fugitive and Fleet Petroleum management), Pollution Prevention and Waste Reduction, and High Performance Sustainable Building (HPSB) Guiding Principle compliance for existing facilities. Strategies have been identified and are in progress to achieve other significant sustainability goals, including Water Intensity and Scope 2 and 3 GHG reduction, and the Data Center Power Utilization Effectiveness (PUE) target as defined in the DOE Strategic Sustainability Performance Plan (SSPP). The Jefferson Lab sustainability goals are integrated into the Environmental Management System (EMS) in accordance with DOE O 436.1 *Departmental Sustainability.*

In FY 16, Jefferson Lab advanced a Utility Energy Services Contract (UESC) program to finance energy and water efficiency projects and continue progress towards achieving its sustainability goals. To date, the utility selection process, and the Preliminary Audit phase and Feasibility Study Report (FSR) have been completed. The utility selected, AGL Energy Services, a unit of the parent company of Virginia Natural Gas (local utility provider), has completed the FSR, identifying multiple energy and water reduction strategies. Currently, potential projects include a campus wide (interior and exterior) lighting upgrade, central chilled water plant efficiency improvements, and water reduction (domestic water/low flow fixtures) in administrative facilities and industrial water capture and reuse application. When implemented, the identified projects will contribute especially to achieving the Energy Utilization Intensity goal (25% reduction by FY 25 from a FY 15 baseline), water intensity reduction, and the HPSB Guiding Principle compliance goal. Although the UESC project development initiative is comprehensive in scope, Jefferson Lab and Virginia Natural Gas will continue an ongoing relationship to investigate and develop additional UESC projects, beyond the initial scope.

Further, Jefferson Lab is engaged in discussion related to a regional Micro-Grid project with the Newport News/Williamsburg International Airport, City of Newport News and other stakeholders to develop a resilient and secure energy program for the Hampton Roads region. This program has the potential to provide a cost effective and significant quantity of low GHG content energy to help satisfy Jefferson Lab's projected increased electricity requirements, and provide a source of non-potable water (rain water harvesting) for projected increasing cooling tower needs.

As a High Energy Mission Specific Facility (HEMSF), Jefferson Lab's recent expansion of scientific and support facilities will result in significantly increased electrical and thermal energy requirements. Consequently, achievement of the SSPP Scope 2 emission reduction target (purchased electricity) represents a significant challenge. Electricity requirements and related power costs for 12 GeV operations starting in FY 15 are projected to nearly double from the FY 08 baseline.

Major reduction of Scope 2 GHG emissions from purchased electricity requires implementation of a combined set of strategies, including:

- Renewable Energy Credits and/or Green Power Purchasing Agreement
- Electric Utility Renewable Portfolio Standard Achievement of Reduced GHG emissions per Mwh of electric generation
- Regional alternative electric energy supply and/or on-site low GHG electricity generation

As the Jefferson Lab scientific mission continues to expand, thermal energy (cooling tower water) requirements for accelerator operations are also projected to significantly increase. Similar to the projected electricity increases from 12 GeV operations, Jefferson Lab's water requirements are estimated to double from the FY 07 baseline of 50 MGal. Approximately 85% of Jefferson Lab's annual consumption of potable water is primarily consumed in cooling tower operations (evaporation/blow down).

Multiple alternative water reduction strategies are under consideration. Independent consulting firms and a water assessment team from Pacific Northwest National Laboratory (PNNL) conducted on-site water consumption analysis surveys. Water intensity reduction plans are designed to provide alternative water sources to primarily satisfy thermal energy (cooling tower water) requirements. Potential strategies include, Ultra-Pure Water (UPW) system discharge, capture and reuse. Design of the UPW reject water project is complete and was awarded partial implementation funding in the recent SPOFOA. This project is designed to reuse the UPW reject water for cooling tower make-up, saving approximately 5 million gallons of potable water per year. A combination of strategies (reuse, rain water harvesting and domestic water reductions) are required for Jefferson Lab to achieve the challenging 36% water reduction by FY 25 goal included in EO 13963.

Table 1 summarizes Jefferson Lab's current performance status, planned actions and risk of non-attainment (High / Medium / Low). The "Performance Review and Narrative" section of this document provides both narrative detail and data to support the Table 1 summary and Jefferson Lab's progress regarding all SSPP goals.

Table 1 - Executive Summary Table of DOE Sustainability Goals based on the SSPP and new Executive Order 13693

SSPP Goal #	DOE Goal	Performance Status through FY 2016	Planned Actions & Contribution
	Goal 1: Greenhouse Gas Reduction		
1.1	50% Scope 1 & 2 GHG reduction by FY 2025 from a FY 2008 baseline (2016 target: 22%)	Scope 1 & 2 GHG levels decreased (16.4%) compared to the FY '08 baseline as new HEMSF accelerator and related operations continued to increase in FY '16.	Scope 1 maintain successful fugitive emission reduction practices Scope 2 requires multiple lower GHG content electric supply strategies, and increase of REC purchases to maintain interim goals.
1.2	25% Scope 3 GHG reduction by FY 2025 from a FY 2008 baseline (2016 target: 7%)	Scope 3 GHG decrease (6.7%) vs. FY '08 primarily from reduced T&D losses and increased REC purchases.	Implement commuting emissions reduction program (alternative work schedule) to reduce controllable Scope 3 GHG emissions.
	Goal 2: Sustainable Buildings		
2.1	25% energy intensity (Btu per gross square foot) reduction in goal-subject buildings, achieving 2.5% reductions annually, by FY 2025 from a FY 2015 baseline	FY '16 actual energy intensity decreased .3% (89,488 BTU / GSF) vs new FY '15 baseline (89,778 BTU / GSF)	Implement UESC funded energy reduction strategies in all goal subject buildings to continue BTU / GSF reduction towards new 25% vs FY'15 baseline goal
2.2	EISA Section 432 energy and water evaluations	Completed 100% of required energy and water evaluations in current EISA audit cycle	Continue annual energy and water audits and benchmarking targeting a minimum 25% per year rate
2.3	Meter all individual buildings for electricity, natural gas, steam and water, where cost-effective and appropriate.	***Completed*** installation of Advanced Metering System for all individual building level and processes for electric, gas & water.	***Metering goal achieved***. Additional metering to be installed for new construction and future renovation projects as appropriate.
2.4	At least 17% (by building count or gross square feet) of existing buildings greater than 5K (GSF) to be compliant with the *revised* Guiding Principles for HPSB by FY 2025, with progress to 100% thereafter	Current HPSB compliance =***25% (by GSF***), including two major LEED Gold certified facilities	UESC funded projects under development targeted to increase HPSB compliance in additional buildings.
2.5	Efforts to increase regional and local planning coordination and involvement	Jefferson Lab is engaged with a regional alternative energy generation initiative designed to provide a resilient and sustainable source of electric energy and industrial water supply	As a stakeholder, continue participation with local authorities and the project development firm as described in narrative section 2.5
2.6a	Net Zero Buildings: 1% of the site's existing buildings above 5,000 gross square feet intended to be energy, waste, or water net-zero buildings by FY 2025.	No applicable existing buildings currently planned to achieve net-zero energy, waste or water by FY 2025.	Identify future applicable projects as appropriate
2.6b	Net Zero Buildings: All new buildings greater than 5,000 gross square feet entering planning process designed to achieve energy net zero beginning in FY 2020	No new net zero energy, waste or water buildings scheduled for design start in FY 2020 currently identified.	Identify future applicable projects as appropriate

SSPP Goal #	DOE Goal	Performance Status through FY 2016	Planned Actions & Contribution
	Goal 3: Clean & Renewable Energy		
3.1	"Clean Energy" requires that the percentage of an agency's total electric and thermal energy accounted for by renewable and alternative energy shall be not less than: 10% in FY 2016-2017, working towards 25% by FY 25.	Multiple geothermal heat pump systems annually produce and consume on site approximately 6,550 MBTUs of thermal energy.	Develop on-site clean energy generation projects (primarily SolarPV) through UESC funding.
3.2	"Renewable Electric Energy" requires that renewable electric energy account for not less than 10% of a total agency electric consumption in FY16-17, working towards 30% of total agency electric consumption by FY 2025.	Purchased Renewable Energy Credits equivalent to 10% of total Mwhs of electric energy consumed in FY '16	Increase Renewable Energy Credit purchase to, at a minimum, maintain interim annual goal percentage, working towards the 30% goal by FY 25.
	Goal 4: Water Use Efficiency and Management		
4.1	36% potable water intensity (Gal per gross square foot) reduction by FY 2025 from a FY 2007 baseline. (2016 target: 18%)	Jefferson Lab potable water annual consumption increased 13% vs the FY 2007 baseline due to increased cooling tower consumption for HEMSF operations	Implement water reduction projects in FY 17 included in a set of UESC strategies. Identify, develop significant alternative (rain water) process water sources, and implement as cost effective.
4.2	30% water consumption (Gal) reduction of industrial, landscaping, and agricultural (ILA) water by FY 2025 from a FY 2010 baseline.	N/A, Jefferson lab does not consume non-potable water for ILA use.	Consumption of ILA (non-potable) water is not included in future water use plans.
	Goal 5: Fleet Management		
5.1	30% reduction in fleet-wide per-mile greenhouse gas emissions reduction by FY 2025 from a FY 2014 baseline. (2016 target; 2017 target: 4%)	Achieved 12% reduction in fleet-wide per mile greenhouse gas emissions reduction from 2014 baseline vs the 2014 baseline.	Continue strategies implemented for previous several years to minimize petroleum consumption and increase low GHG emission alternative fuel vehicle use.
5.2	20% reduction in annual petroleum consumption by FY 2015 relative to a FY 2005 baseline; maintain 20% reduction thereafter. (2015 target: 20%)	Fleet annual petroleum consumption decreased to 2,085 gallons in FY '16, approximately ***52%*** below the FY 2005 baseline, ***exceeding the 2% annual reduction rate goal.***	Jefferson Lab has ***exceeded*** the FY 2015 goal, and will maintain a 20% (minimum) annual reduction target
5.3	10% increase in annual alternative fuel consumption by FY 2015 relative to a FY 2005 baseline; maintain 10% increase thereafter. (2015 target: 10%)	Fleet annual alternative fuel consumption (E85) increased 1,439 gallons in FY '16, approximately 267% above the FY 2005 baseline, exceeding the 10% annual goal.	Jefferson Lab has exceeded the FY 2015 goal, and will maintain a 10% (minimum) annual reduction target rate

SSPP Goal #	DOE Goal	Performance Status through FY 2016	Planned Actions & Contribution
5.4	75% of light duty vehicle acquisitions must consist of alternative fuel vehicles (AFV). (2016 target: 75%)	***100%*** of light duty vehicle fleet are AFVs, exceeding the FY 16 target of 75%	***100%*** of light duty vehicle replacements are scheduled to be AFVs
5.5	50% of passenger vehicle acquisitions consist of zero emission or plug-in hybrid electric vehicles by FY 2025. (2016 target: 4%)	N/A	Limited passenger vehicle fleet (4) vehicles. Replace existing vehicles with zero emission &/or plug-in hybrids as vehicles are scheduled for replacement and available to achieve 50% goal.
	Goal 6: Sustainable Acquisition		
6.1	Promote sustainable acquisition and procurement to the maximum extent practicable, ensuring BioPreferred and biobased provisions are 95% of applicable contracts	FAR clauses regarding sustainability included in all appropriate acquisition contracts	Continue current best practices that achieve 95% goal. Implement measure procedures in FY '16 to assure
	Goal 7: Pollution Prevention & Waste Reduction		
7.1	Divert at least 50% of non-hazardous solid waste, excluding construction and demolition debris.	Annual non-hazardous solid waste diverted from landfill / recycled = ***66%***	Continue current best practices that contribute to exceeding the 50% goal.
7.2	Divert at least 50% of construction and demolition materials and debris.	Annual construction materials diverted from landfill / recycled = ***91.6%***	Continue current best practices that contribute to exceeding the 50% goal.
	Goal 8: Energy Performance Contracts		
8.1	Annual targets for performance contracting to be implemented in FY 2017 and annually thereafter as part of the planning of section 14 of E.O. 13693.	In FY 16 Jefferson Lab advanced a UESC program from preliminary audit to Feasibility Study Report completion.	Scheduled to initiate initial UESC contract award / task order in FY 17
	Goal 9: Electronic Stewardship		
9.1	Purchases – 95% of eligible acquisitions each year are EPEAT-registered products.	***100%*** of eligible products purchased in FY '16 were compliant with EPEAT (bronze, silver or gold) registration	Continue EPEAT product registered procurement at levels exceeding the 95% target.
9.2	Power management – 100% of eligible PCs, laptops, and monitors have power management enabled.	100% of power management eligible IT devices were power management enabled.	Continue 100% level of power management for all eligible equipment
9.3	Automatic duplexing – 100% of eligible computers and imaging equipment have automatic duplexing enabled.	Automatic duplexing (double sided printing) is set on 98.3% of computers by default	Maintain automatic duplexing policy for 100% of eligible computers
9.4	End of Life – 100% of used electronics are reused or recycled using environmentally sound disposition options each year.	Property Management standard procedures assure that ***100%*** of all excess ADP equipment is processed through an excess / disposal system to an accredited recycle organization.	Continue environmentally sound disposal / recycle practices for ***100%*** of used electronic systems

SSPP Goal #	DOE Goal	Performance Status through FY 2016	Planned Actions & Contribution
9.5	Data Center Efficiency. Establish a power usage effectiveness target in the range of 1.2-1.4 for new data centers and less than 1.5 for existing data centers.	ECMs included in a Utility Infrastructure Modernization plan designed to achieve PUE of 1.4 for existing data center.	Currently, no additional / new data centers planned

Goal 10: Climate Change Resilience

10.1	Update policies to incentivize planning for, and addressing the impacts of climate change.	See Section 10.1.1 for progress	Complete vulnerabilities analysis, then proceed to resilience planning process
10.2	Update emergency response procedures and protocols to account for projected climate change, including extreme weather events.	Emergency response policy and procedures updated Nov. 1, 2016	Continue regular update review process to assure implementation of best practices
10.3	Ensure workforce protocols and policies reflect projected human health and safety impacts of climate change.	See Section 10.1.1 for progress	Complete vulnerabilities analysis, then proceed to resilience planning process
10.4	Ensure site / lab management demonstrate commitment to adaptation efforts through internal communications and policies.	See Section 10.1.1 for progress	Complete vulnerabilities analysis, then proceed to resilience planning process
10.5	Ensure that site / lab climate change adaptation policies and programs reflect best available current climate change science, updated as necessary.	See Section 10.1.1 for progress	Complete vulnerabilities analysis, then proceed to resilience planning process

II Performance Review and Plan Narrative

Goal 1 Greenhouse Gas Reduction

1.1 *50% Scope 1&2 GHG Reduction by FY '25 from FY '08 Baseline*

1.1.1 Performance Status

Scope 1 and 2 emissions to date have increased from FY 08 due primarily to increased accelerator operation in FY 16. Fleet Petroleum emissions have decreased in FY 16 compared to FY 08 from increased alternative fuel (E-85) consumption and reduced gasoline use. Scope 2 emissions have decreased slightly compared FY '15, but remain above FY 08 levels, again due primarily to accelerator operations commissioning of Jefferson Lab's accelerator upgrade from 6 GeV to 12 GeV, contributing to a combined Scope 1 and 2 increase of approximately 8.5% compared to the FY 08 baseline. However, as accelerator operations resume in FY 17 and increase to full 12 GeV levels in subsequent years, Scope 2 emissions will nearly double compared to FY 08 until the planned multiple reduction strategies reach full implementation.

1.1.2 Plans, Actions and Projected Performance

Scope 1

As indicated in Table 2, Scope 1 GHG emissions have a minimal impact on Jefferson Lab's total GHG emission content. A successful SF6 capture program will continue to minimize fugitive emissions; energy efficiency strategies will limit natural gas emissions from building heating systems, and increased alternative fuel use will enable Jefferson Lab to maintain low vehicle and equipment emission levels.

Scope 2

As indicated in the Executive Summary Section, significant projected increases in Scope 2 electricity will require multiple strategies, including alternative (low GHG) electricity sources, innovative HEMSF efficiency improvements projects, conventional ECMs, and increased REC purchases to achieve the 50% GHG emissions reduction goal.

Table 2 - Scope 1 and 2 GHG Emissions FY 08 – FY 16

Scope 1 GHG Fugitive Emissions, Natural Gas, Fleet Petroleum (gas/diesel/E-85) Emissions

	MTCO2e	MTCO2e	MTCO2e	
Scope 1 GHGs	FY 08	FY 16	Difference	% Change
Fugitive Emissions	1,821.1	57.3	-1,763.8	-96.9%
Mixed Refrigerants	0	.3	.3	
Fleet Petroleum	58.8	9.7	-49.1	-83.5%
Total Scope 1	1,879.9	67.3	-1,812.6	-96.4%

Scope 2 GHG Emissions, Purchased Electricity

	MTCO2e	MTCO2e	MTCO2e	
Scope 2 GHGs	FY 08	FY 16	Difference	% Change
Electricity	65,763.2	71,333.2	+5,570	+8.5%

Scope 1 and 2 GHG Combined

	MTCO2e	MTCO2e	MTCO2e	
	FY 08	FY 16	Difference	% Change
Scope 1	1,879.9	67.3	-1,812.6	-96.4%
Scope 2 (Electricity)	65,763.2	71,333.2	+5,570	+8.5%
RECs		-14,791		
Total Scope 1 & 2	67,703.6	56,609.2	-11,094.4	-16.4%

Goal 1.2 ***25% Scope 3 GHG Reduction by FY 25 from FY 08 Baseline***

1.2.1 Performance Status

Table 3 defines Scope 3 GHG emissions by category for FY 16 compared to the FY 08 baseline. As indicated, except for staff commuting and business travel emissions, other "controllable" Scope 3 emissions are stable or declining, and have minimal contribution opportunity to achieve a 25% reduction goal. Achieving the Scope 3 reduction goal will primarily rely on implementing a successful staff commuting emissions reduction program. Designated carpooling and low emission vehicle parking spaces were implemented in FY 13 and FY 14.

Table 3 – Scope 3 GHG Emissions FY 08 – FY 16

	MTCO2e	MTCO2e	MTCO2e	
Scope 3 GHGs	FY 08	FY 16	Difference	% Change
T&D Losses	4,258	3,632.3	+625.7	+14.7%
Staff Commuting	1,374.3	1,786.6	+412.3	+30%
Business Air Travel	855.5	856.6	+1.1	-0%
Business Ground	136.6	131.2	-5.4	-4%
Off-Site Landfill	348	98	-240	-72.1%
Off-site Wastewater	4	3.8	+.4	-5%
Total Scope 3	**6,976.4**	**6,508.5**	-467.9	-6.7%

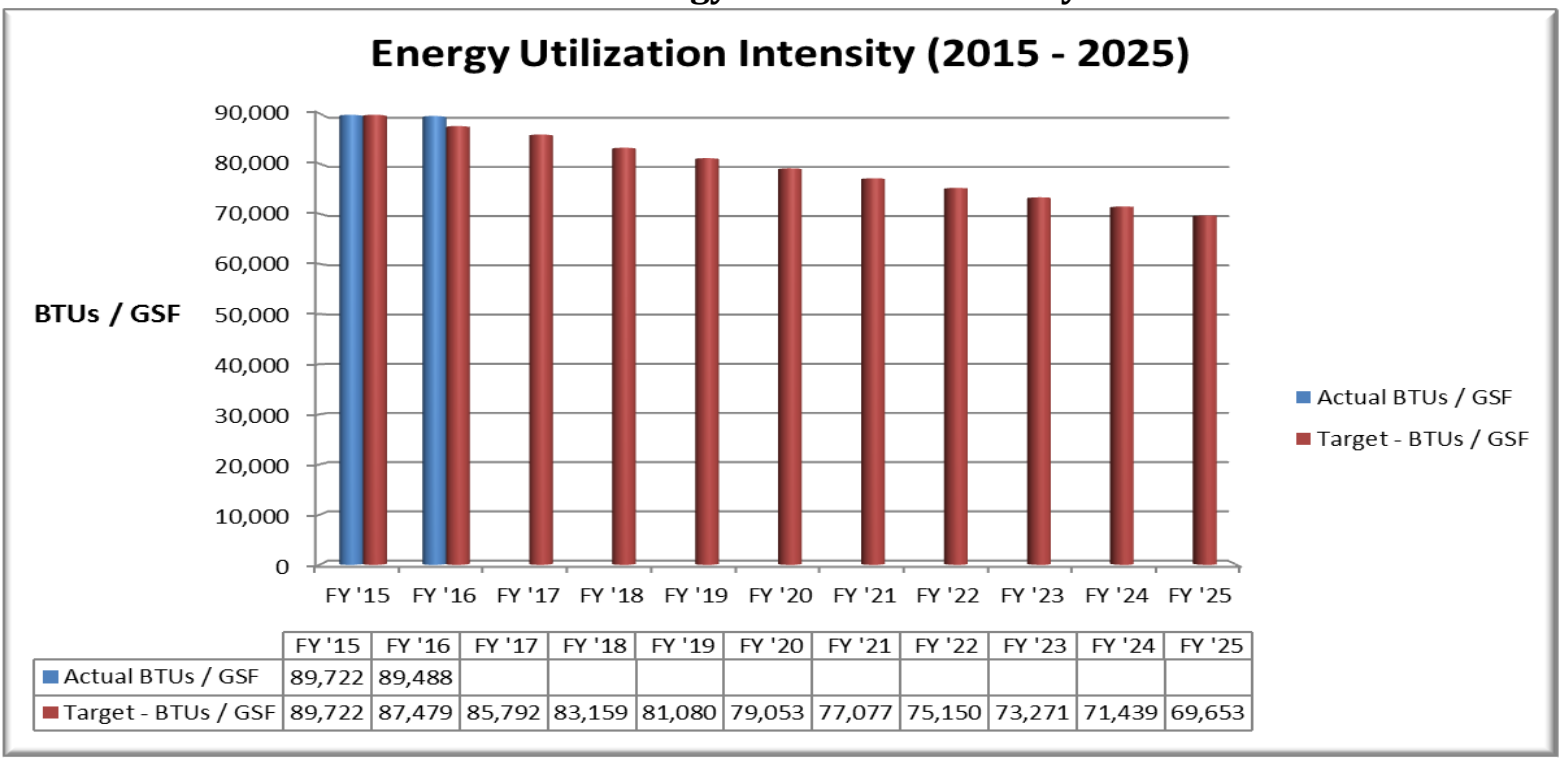
1.2.2 Plans, Actions and Projected Performance

Staff commuting emissions are the single largest (controllable) contributor to Scope 3 emissions. Limited public transportation alternatives are available to the Jefferson Lab location. Subsequently, Jefferson Lab's Human Resources organization is developing an alternative work schedule program to implement in FY '17. Also, a telework strategy is under consideration to complement the alternative work schedule program, and further reduce overall Scope 3 emissions from staff commuting sources.

Goal #2: Sustainable Buildings

Goal 2.1 ***25% Energy Intensity (BTU per Gross square Foot) Reduction Achieving 2.5% reductions annually by FY 25 from an FY 15 Baseline***

Chart 1 - Energy Utilization Intensity



	FY '15	FY '16	FY '17	FY '18	FY '19	FY '20	FY '21	FY '22	FY '23	FY '24	FY '25
Actual BTUs / GSF	89,722	89,488									
Target - BTUs / GSF	89,722	87,479	85,792	83,159	81,080	79,053	77,077	75,150	73,271	71,439	69,653

2.1.1 Performance Status (EO 13693)

Jefferson Lab's Energy Utilization Intensity (EUI) new baseline was established in FY '15 at 89,722 BTUs/Square Foot (30.1% reduction compared to the previous FY 03 baseline of 128,442 BTUs/Square Foot). Jefferson Lab achieved the 30% reduction goal by 2015 defined in EO 13514.

2.1.2 Plans, Actions and Projected Performance (EO 13963)

Jefferson Lab plans to implement Energy Conservation Measure (ECM) projects in existing goal subject buildings that will significantly reduce EUI to achieve the 25% reduction goal defined in EO 13693.

EUI reduction projects planned in FY 17, included in a Utility Energy Services Contract target:

- Interior and Exterior LED Lighting Upgrades
- Advanced Lighting Controls
- Chilled Water Distribution Efficiency Improvements
- SolarPV Electric Generation (on-site)
- Central Chilled Water System Efficiency Improvements

<u>Goal 2.2</u> *EISA Section 432 Energy and Water Evaluations, Benchmarking*

2.2.1 Performance Status

Energy and water audits were conducted during the development of a UESC Preliminary Audit and Feasibility Studies in FY '14, FY '15 and FY '16. Sitewide industrial water audits were completed in FY 13 by two independent consultants and a water assessment team from PNNL. Results from these audits are under consideration for implementation. Energy audits for all covered facilities and benchmarking updates in Portfolio Manager were also completed during the previous 4-year EISA Section 432 cycle.

2.2.2 Plans, Actions and Projected Performance

Complete the balance of energy and water evaluations (approximately 30% per year of covered facilities) and benchmarking. Utilize UESC Feasibility Study to supplement independent audit activity to achieve the 100% energy, water and benchmarking goal by the current EISA Section 432 deadline of June, 2020. Projects completed under the UESC program will include "performance verification", providing measures follow-up.

<u>Goal 2.3</u> *Meter all Individual Buildings for Electricity, Natural Gas, Steam and Water, where cost effective and appropriate*

2.3.1 Performance Status

Jefferson Lab invested significantly during FY 11 (and subsequent years) to complete an advanced Energy Metering and Management System (EMMS) that exceeds goal deadlines for electric, natural gas and water metering. Currently, 100% of the connected electrical load, natural gas service, and water supply are connected to the EMMS. Jefferson Lab does not purchase steam or chilled water.

The EMMS includes a Graphical User Interface (GUI) for system navigation, a high level dashboard for frequent monitoring of energy and water consumption on a building and sub-system basis, and an open Tridium Energy Analysis software package for detailed trending and historical analysis of energy and water operations.

2.3.2 Plans, Actions and Projected Performance

Additional building level metering of energy, natural gas and water is scheduled for installation and integration into the EMMS as new construction projects are completed. All existing High Performance Sustainable Building target facilities are connected to the EMMS and collect data to profile each building with Energy Star Portfolio Manager and measure compliance with guiding principles goals.

<u>Goal 2.4</u> ***At Least 17% (by building count or gross square feet) of Existing Buildings Greater than 5K Gross Square Feet (GSF) to be compliant with the revised Guiding Principles (GP) of High Performance Sustainable Buildings (HSPB) FY '25, with Progress to 100% Thereafter***

2.4.1 Performance Status

Jefferson Lab's current compliance with HPSB Guiding Principles (25.7% of GSF) exceeds the HPSB 2025 compliance goal (17% of gross square footage). Jefferson Lab's initial High Performance Sustainable Building complying with the Guiding Principles was completed in FY 12. A 74,000 Sq. Ft. new construction office and laboratory project, the Technology and Engineering Development (TED) Building earned LEED Gold certification and includes many energy, water efficiency and sustainable features:

Technology and Engineering Development Building

<u>Energy and Water Efficiency</u>

- Geothermal Heat Pump System provides 80% of HVAC requirements

- Greywater Reuse system delivers 100% of sanitation water

- Solar thermal/domestic water heating system

- 44% Potable water reduction/low flow plumbing fixtures

In FY 13, Jefferson Lab completed its second new construction/major renovation project, designed to achieve LEED Gold certification. This most recent project, the Test Lab, included renovation of an existing 95,000 Sq. Ft. laboratory facility and addition of 43,600 Sq. Ft. laboratory and office area. The Test Lab facility earned LEED Gold certification in FY 14, and subsequently qualifies for Jefferson Lab's second facility to comply with the HPSB Guiding Principles.

2.4.2 Plans, Actions and Projected Performance

Future HPSB GP compliant facilities will be achieved through planned building renovations (i.e.: Accelerator Technical Support Building / Bldg #89), designed to achieve compliance. Further, when implemented, Energy Conservation Measures identified in the UESC program will contribute to multiple administrative buildings' compliance with HPSB GPs (i.e.: CEBAF Center / Bldg. #12, Physics Storage/Bldg #72, Services Support Center/Bldg #28). These renovation and UESC-funded retrofit projects will ensure Jefferson Lab's continued progress towards 100% HPSB compliance.

<u>Goal 2.5</u> *Efforts to Increase Regional and Local Planning Coordination and Involvement*

Jefferson Lab is engaged, as a stakeholder, in a regional alternative energy generation and rain water harvesting project with the Newport News/Williamsburg International Airport, City of Newport News and other stakeholders to develop a resilient and secure energy program for the Hampton Roads region.

Mission Statement: The implementation of a resilient energy and security program for the Hampton Roads region, beginning with Jefferson Lab, utilizing the available land at the Newport News/Williamsburg International Airport.

Project Scope: A comprehensive technical and financial solution to meet the energy, water and security requirements of Jefferson Lab and the Newport News/Williamsburg International Airport was developed through a Value Engineering Study.

Project Objectives:

- Meet one hundred percent (100%) of the critical electrical load requirements at both Jefferson Lab and the Newport News Airport with secure, resilient energy that is more efficient and produces less carbon. The total critical load is eleven (11) megawatts (CHL).
- Reduce the potable water requirements of Jefferson Lab by approximately forty percent (40%).
- Increase the security footprint at each facility and emergency response coordination in the region.

Project Design: The proposed project will be constructed in two phases.

- **Phase 1.** Install eighteen megawatts (18 MW) of natural gas turbines, a six megawatt (6 MW) solar array and a (30) million gallon rain water collection capability at the Newport News Airport. The infrastructure required to deliver the electricity and rain water to Jefferson Lab utilizing either Dominion Power or the City of Newport News' right-of-way will be constructed. A comprehensive security study will be done at the airport and Jefferson Lab. Approximately five million dollars ($5M) worth of enhancements will be made at the airport based on the study's findings and the airport's needs. The security investment at Jefferson Lab has not yet been determined and may not be required. Finally, the project leads will conduct a geothermal energy feasibility study at the Newport News Airport in conjunction with the Commonwealth of Virginia's Division of Geology and Mineral Resources, the US Geological Survey, other private sector and academic partners.

- **Phase 2.** Convert all natural gas turbines to geothermal turbines and expand the generation capacity to meet the region's electrical requirement with clean, secure and resilient power.
    - Several independent studies have been completed that indicate a geothermal resource may exist in the Hampton Roads region.
    - The program leads have conferred with the Virginia Division of Geology and Mineral Resources, Department of Mines, Minerals and Energy and the US Geological Survey to confirm the potential for large-scale geothermal energy.

Project Benefits:

- **Phase 1.** Jefferson Lab will meet critical load electrical requirements and nearly meet potable water reduction requirements while achieving budget certainty through a competitive long term Power and Water Purchase Agreement. The Newport News Airport will receive a long term lease for all project lands and revenue for the life of the agreement with Jefferson Lab. In addition, the airport and the city of Newport News will reduce their storm water discharges by thirty (30) million gallons and position themselves as an economic development driver for the region.

- Jefferson Lab, by implementing this project, will be complying with both the Energy Policy Act of 2005 (EPAct 2005) and the Energy Independence and Security ACT of 2007 (EISA 2007) along with subsequent Executive Order (EO) 13693, Planning for Federal Sustainability in the Next Decade.
- **Phase 2.** Both Jefferson Lab and the Newport News Airport will meet one hundred percent (100%) of their electrical requirements with clean, secure and resilient energy. Dominion Power will increase their zero carbon renewable energy portfolio by one hundred to one hundred and fifty megawatts (100-150 MW) depending on the final scope.

2.6 a *Net Zero Buildings - Existing Building: Net-Zero Energy, Water, or Waste (beginning FY '25 / buildings >5K GSF)*

2.6.1a Performance Status

No applicable existing building(s) greater than 5,000 gross square feet currently planned to achieve net zero energy, waste or water in existing.

2.6.2a Plans, Actions and Projected Performance

Evaluate potential net zero energy, waste or water potential existing building base greater than 5,000 gross square feet, and develop plans to comply as appropriate and cost effective.

2.6 b *Net Zero Buildings - New Buildings: Net-Zero Energy, Water, or waste (beginning FY '20 planning and design, buildings >5K GSF)*

2.6.1b Performance Status

No applicable new construction projects, greater than 5,000 gross square feet, currently planned to begin the design process beginning in FY 20 identified to achieve net zero energy, waste or water.

2.6.2b Plans, Actions and Projected Performance

Evaluate potential net zero energy, waste or water potential for new construction or major renovation projects greater than 5,000 gross square feet, and develop plans to comply as appropriate and cost effective.

Goal 3: Clean & Renewable Energy

Goal 3.1 *"Clean Energy" total electric and thermal accounted for by renewable and alternative energy not less than 10% of total electric energy consumption in FY '16 – '17 working towards 25% by FY 25.*

3.1.1 Performance Status
Multiple existing ground source heat systems produce and consume on site approximately 6,550 MBTUs of thermal energy annually.

3.1.2 Plans, Actions and Projected Performance
Develop on-site energy generation projects (primarily SolarPV) through UESC and / or PPA funding vehicles. Further, Jefferson Lab will increase REC purchase through third-party suppliers and comply with new guidance regarding this goal.

Goal 3.2 *"Renewable Electric Energy" total renewable electric energy accounted for not less than 10% of total electric energy consumption in FY '16 – '17 working towards 30% by FY '25*

3.2.1 Performance Status
Ten percent of Jefferson Lab's total electric energy (164,398 MWHs) consumption in FY 16 was accounted for with renewable energy through the purchase of an equivalent amount (16,500 Mwh's) of renewable energy certificates.

3.2.2 Plans, Actions and Projected Performance
Jefferson Lab will continue to comply with the renewable energy requirement for interim goal years and the 30% by FY 25 goal by implementing renewable electric energy generation projects and / or purchasing renewable energy certificates equivalent to the goal levels.

Goal 4: Water Use Efficiency and Management

Goal 4.1 *36% Potable Water Intensity (Gallons per Gross Square Foot) Reduction by FY 25 From a FY 07 Baseline. (FY 16 Target: -18%)*

4.1.1 Performance Status
Approximately 75% of Jefferson Lab's potable water consumption is required for evaporative cooling of High Energy Mission Specific Facilities. Jefferson Lab's FY 16 potable water intensity increased approximately 13% from the FY 07 baseline. Multiple water reduction and / or alternative water source strategies (including rainwater harvesting) have been evaluated during the past several years. To date, except as described in Paragraph *4.1.2*, no alternative water sourcing strategies of significant water intensity impact have been determined to be economically feasible.

4.1.2 Plans, Actions and Projected Performance
Identify, develop all potable water reduction strategies and / or alternative sources, primarily for evaporative cooling tower use, and implement as cost effective. Example; a potable water reclaim project is scheduled for implementation in FY 17 regarding discharge water from an Ultra Pure Water system. This strategy diverts water currently discharged to sanitation to make-up water

supply for a major cooling tower. Estimated annual potable water reduction for this project is approximately 5 million gallons of annual consumption. As potable water consumption for evaporative cooling is anticipated to increase significantly in future years as the scientific mission increases, this project has potential to decrease approximately 6% of total forecast consumption. Domestic water reduction strategies included in a pending UESC program, and elimination of an existing cooling tower will contribute an additional 1 million gallons of annual potable water reduction. Further a proposed alternative energy / water supply project providing a significant quantity of Jefferson Lab's cooling tower water needs (approximately 30 million gallons annually) will contribute to effectively achieving the 36% potable water reduction goal.

Goal* 4.2 *30% Water Consumption (Gallons) Reduction of Industrial, Landscape, and Agricultural (ILA) Water by FY 25 from a FY 10 Baseline

4.2.1 Performance Status

N/A - Jefferson Lab does not consume non-potable water for ILA use.

4.2.2 Plans, Actions and Projected Performance

Consumption of ILA (non-potable) water is not included in future water use plans.

Goal #5: Fleet Management

Goal* 5.1 *30% Reduction in fleet-wide per-mile GHG emissions by FY '25 from a FY '14 baseline (FY '16 target: 3%; FY '17 target: 4% reduction)

5.1.1 Performance Status

Jefferson Lab's FY '16 "fleet greenhouse gas emissions per mile" actual performance (-12% vs a 2014 baseline) exceeded the initial year target of a 3% reduction vs FY 14.

5.1.2 Plans, Actions and Projected Performance

Continue utilization and management of AFV's and fuel efficient fleet vehicles and manage efficiency practices to continue to achieve interim targets and the 30% reduction in fleet-wide per mile GHG emission goal.

Goal* 5.2 *20% Reduction in annual petroleum consumption by FY 15 relative to an FY 05 baseline; maintain 20% reduction thereafter

5.2.1 Performance Status

Jefferson Lab's annual petroleum consumption decreased to 1,322 gallons in FY 16, is approximately 68% below the FY 05 baseline. Consequently, Jefferson Lab has achieved both the FY 15, 20% reduction goal and continues to maintain a 20% plus annual reduction rate.

5.2.2 Plans, Actions and Projected Performance

Both a reduction in Jefferson Lab's total vehicle fleet and specifically all gasoline fueled vehicles will assure the minimum 20% reduction target is achieved.

Goal 5.3 *10% Increase in annual alternative fuel consumption by FY 15 relative to a FY 05 Baseline; maintain 10% increase thereafter*

5.3.1 Performance Status
Jefferson Lab's annual alternative fuel (E-85) consumption increased to 1,919 Gasoline Equivalent Gallons (GEG) in FY 16, or approximately 267% above the FY 05 baseline. Subsequently, Jefferson Lab has exceeded both the FY 15 progress target and continues to maintain a 10% plus annual increase of alternative fuel consumption.

5.3.2 Plans, Actions and Projected Performance
As fleet inventory is replaced, the balance of fleet vehicles will include alternative fuel vehicles only. Consequently, Jefferson Lab's fleet will continue to consume alternative fuel, ensuring achievement of the 10% annual increase goal and 10% increase thereafter.

Goal* 5.4** ***75% of light duty vehicle purchases must consist of alternative fuel vehicles (AFV) by FY 15, and each year thereafter

5.4.1 Performance Status
Jefferson Lab's Light Duty Vehicle fleet consists of (13) vehicles

- (6) Pickup Trucks
- (2) Minivans
- (2) Sedans
- (1) 4X4 Pick-up
- (2) Cargo Van

78% of Light Duty Vehicles purchased since FY 00 are Alternative Fuel Vehicles

5.4.2 Plans, Actions and Projected Performance

One AFV light duty vehicle replaced a DOE owned 26-year old vehicle. Will be replaced with an AFV when it is due for replacement in 2023.

Goal* 5.5** ***20% of passenger vehicle acquisitions consist of zero emissions or Plug-in hybrid electric vehicles by FY '20, working towards 50% by FY '25

5.5.1 Performance Status…N/A

5.5.2 Plans, Actions and Projected Performance

Limited passenger vehicle fleet consists of (4) vehicles. Replace existing vehicles with zero emission and / or plug-in hybrids as vehicles are scheduled for replacement and available to achieve 50% goal.

Goal 6 Sustainable Acquisition

Goal 6.1 ***Promote sustainable acquisition and procurement to the maximum extent practicable, ensuring bio preferred and bio based provisions are 95% of applicable contracts***

6.1.1 Performance Status

FAR clauses regarding sustainability are included in 100% of appropriate acquisition contracts.

6.1.2 Plans, Actions and Projected Performance
Continue current best practices that achieve 95% goal. Implement measure procedures in FY 17 to assure performance.

Goal 7 Pollution Prevention & Waste Reduction

Goal 7.1 & 7.2 *Municipal Solid Waste (MSW) and Construction & Debris (C&D) Recycling and waste diversion 50%*

7.1&7.2.1 Performance Status
Jefferson Lab aggressively recycles non-hazardous solid waste. Of the 171.4 tons of non-hazardous solid waste produced in FY 16, approximately 66% or 88.3 tons of building and office waste, paper and metal were recycled and/or diverted from landfill deposit to a local waste to steam energy conversion plant.

Verification of recycled material quantities is reported by the recycling service center, and recorded by Jefferson Lab.

7.1&7.2.2 Plans, Actions and Projected Performance
Jefferson Lab will continue to recycle non-hazardous waste to continue to exceed the 50% waste diversion from landfill goal. Further, Jefferson Lab will continue to participate in a waste-to-energy program. Approximately 19 tons of non-hazardous waste in FY 16 was diverted to the local Hampton – NASA steam plant for incineration.

Goal 7.2 *Divert at Least 50% of Construction and Demolition Materials and Debris*

7.2.1 Performance Status
Construction activity at Jefferson Lab in FY '16 produced approximately 160 tons of construction and demolition materials and debris. One hundred forty seven tons of construction material (approximately 97%) was recycled/diverted from landfill deposit.

7.2.2 Plans, Actions and Projected Performance
Overall construction and demolition materials debris was projected to decline in FY 16 relative to previous years as major new construction activities were completed. Jefferson Lab will continue to recycle construction and demolition materials and debris and is projected to continue to exceed the 50% recycling goal.

Goal 8 Energy Performance Contracts

Goal 8.1 *Energy Performance Contracts: per Section 3(k)(iii) of EO 13693 Achieve Targets for Performance Contracts (UESC, ESPC, ENAB:E, and PPA)*

8.1.1 Performance Status
Sustainability funding plans for FY 17, and beyond include implementation of a UESC program. The UESC process has initially identified several Energy Conservation Measures (ECMs) targeting

Energy Utilization Intensity (EUI), domestic and industrial use water reduction, and district chilled water system efficiency and distribution improvements.

Summary of UESC/Energy, Water, GHG *Estimated* Savings and EUI Reduction:

Water Savings (Gallons)	Electricity Savings (Kwh)	Natural Gas Savings (MBTU)	Total Energy Savings (MBTU)	CO2 (lbs.)	EUI reduction (MBTU / GSF)
4.5 Million	4,600,000	1,175	15,700	2,250,000	82.7

ECMs Categories (preliminary study list)

- Interior and Exterior Lighting Upgrades
- Low Flow Domestic Water Fixtures
- Central Chilled Water Plant Optimization (waterside economizer)
- Chilled Water Distribution (control valves) Efficiency Improvements
- Industrial Waste Water Capture and Reuse
- Boiler Control and Building Automation System Optimization
- Domestic Hot Water Recirculation Control
- SolarPV Electric Generation System

8.2.1 Plans, Actions and Projected Performance
UESC "feasibility study" report, defining technical scope and financial elements (cost / ROI) was completed in FY 16 and currently in procurement review and preparation for contract award. Subsequently, anticipate initial task order award to occur March / April 2017 with implementation of all projects to occur in 2017 (CY).

Goal 9 Electronic Stewardship

Goal 9.1 *Purchases – 95% of Eligible Acquisitions each year are EPEAT – Registered Products*

9.1.1 Performance Status
100% of eligible products purchased in FY 16 were compliant with EPEAT (bronze, silver or gold) registration requirements.

9.1.2 Plans, Actions and Projected Performance
Continue EPEAT product registered procurements at levels exceeding the 95% target.

Goal 9.2 *Power Management – 100% of Eligible desktops, laptops, and monitors have power management enabled*

9.2.1 Performance Status
100% of power management eligible IT devices were power management enabled.

9.2.2 Plans, Actions and Projected Performance
Continue 100% level of power management for all eligible equipment.

Goal 9.3 *Automatic Duplexing – 100% of eligible computers and imaging equipment have*

automatic duplexing enabled

9.3.1 Performance Status
Automatic Duplexing (double sided printing) is set on 100% of eligible printers by default. The total Jefferson Lab-owned quantity of 142 printers, 118 are duplex enabled, and 22 are incapable of duplex printing, subsequently 98.3% of all printers comply with the duplex printing goal.

9.3.2 Plans, Actions and Projected Performance
Maintain automatic duplexing for 100% of eligible computers.

<u>Goal 9.4</u> *End of Life – 100% of used electronics are reused or recycled using environmentally sound disposition options each year*

9.4.1 Performance Status
Property management standard procedures assure that 100% of all excess ADP equipment is processed through an excess / disposal system to an accredited recycling organization.

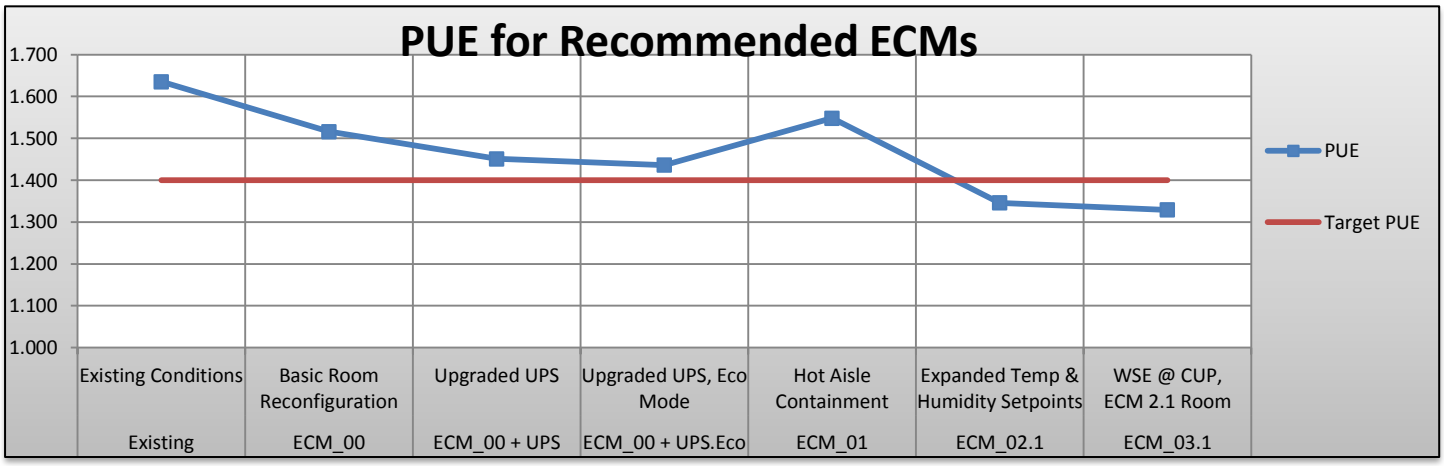
9.4.2 Plans, Actions and Projected Performance
Continue environmentally sound disposal / recycle practices for all used electronic systems.

<u>9.5</u> *Data Center Efficiency - Establish a PUE target in the range of 1.2-1.4 for new data centers and <1.5 for existing data centers*

9.5.1 Performance Status
Jefferson Lab operates two on-site data centers, with a combined square footage of approximately 9,400. Both centers are located in the same facility and independently electrically powered and served with chilled water and Direct Expansion for Computer Room Air Conditioning (CRAC) unit cooling. The current calculated weighted average Power Utilization Effectiveness value is 1.79. Tier I data center PUE = 1.67. Tier III data center PUE = 1.89. No new data center construction is currently planned.

9.5.2 Plans, Actions and Projected Performance
Energy Conservation Measures (ECMs) have been identified in a recently completed study and subsequent 10-year data center plan focused on achieving a weighted average PUE of 1.4. Strategies to achieve the PUE target are indicated in Chart 2 PUE Reduction. Following implementation of ECMs, a Data Center Pro energy assessment will be conducted to determine a more accurate data center profile, and reduced PUE value.

Chart 2 - PUE Reduction

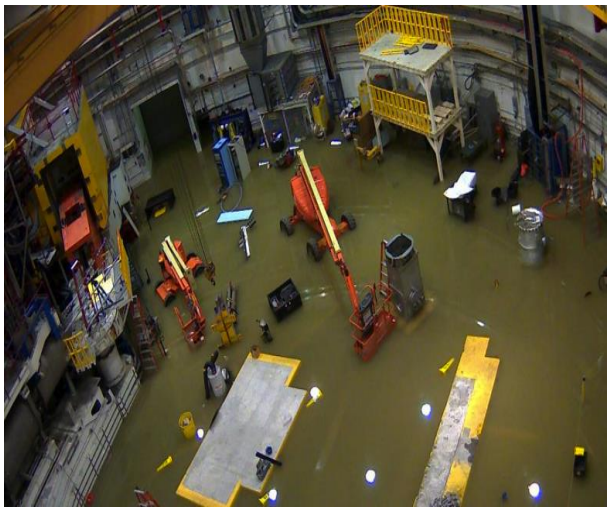


This study evaluated the long term plans for the High Performance Computing and CORE Computing systems. Project requirements include consolidation of these two computing systems into one room, achieving a combined PUE below 1.4, upgrading power and cooling infrastructure to meet the five-year and ten-year peak load projections, and coordinating with the ongoing Utility Infrastructure Modernization of communications project which is upgrading fiber optic cabling.

Goal #10: Climate Change Resilience

10.1.1 Performance Status

Primarily, site flooding from coastal hurricanes and major rain events represent the most significant forms of climate impact to the Jefferson Lab site. Although the Jefferson Lab site is located in the coastal mid-Atlantic/Hampton roads area, in close proximity to several areas more vulnerable to climate change based sea level rise, the site elevation (34 feet above mean sea level), rising sea levels represent a minimal direct threat to Jefferson Lab. However, considering site operation dependencies on utilities external to the Lab site (continuous delivery of liquid nitrogen and helium) and staff access, the assessment report comments that possible roadway transportation interruption is a vulnerability issue to be addressed in future planning. Subsequently, as the assessment report suggests, Jefferson Lab plans to engage The Hampton Roads Transportation Planning Organization who is exploring implications of road transportation vulnerabilities in association with area military installations.



Experimental Hall Flooding / 2012 Event

An adaptation measure to mitigate site flooding damage as previously occurred was implemented in FY 16, including the installation of automated flood retention doors located at the entrances to three sub surface experimental hall facilities. Experimental hall "truck ramp" entrances have been the primary entry point of surface flood waters entering the hall facilities.

New automated flood prevention doors (3) installed to protect sub surface facility flooding and damage.

Further, a team of PNNL sponsored climate scientists, in conjunction with Jefferson Lab staff, completed a comprehensive "Climate Vulnerability Screening Assessment" (assessment) of the lab site, and immediate regional climate conditions. Assessment activities considered a diverse set of information sources, data, and analysis regarding:

- Results of significant historical severe weather events and consequential damages
- Operations and infrastructure vulnerability analysis
- Continuity of utility (power and water) supply exposure
- Potential transportation interruption of Lab staff and critical services
- Effectiveness of emergency preparedness policies and practices
- Impact of potential future increases in precipitation, and temperature variances
- Damage mitigation strategies (manual tunnel ramp flood gates) currently implemented

The final assessment report observes that *"analysis of past and ongoing impacts of climate extremes, adaptation options already implemented, prospective changes in climate, potential impacts on key internal and external systems, and upcoming expansion/investment decisions have been considered in concluding that Jefferson Lab has shown strong adaptive capacity in response to past climate events".*

10.1.2 Plans, Actions and Projected Performance

Incorporate design measures in new construction projects and / or storm water management practices to mitigate the damage from major rain event flooding, Jefferson Lab's primary climate change vulnerability. Update existing climate vulnerability screening assessment to identify and include as appropriate in future planning any additional climate threats to the Jefferson Lab site or region.

III Fleet Management Plan

PURPOSE: Provide an overview of the structure of Jefferson Lab's fleet management program and policies that govern procurement, utilization, and disposition.

FLEET MANAGEMENT ORGANIZATIONAL STRUCTURE

- Fleet management function is provided by Jefferson Science Associates L.L.C., (JSA) the prime management and operations contractor at Jefferson Lab.
- Organized within the Facilities Management and Logistics Division in the Chief Operating Officer Directorate.
- Facility Services Manager performs the Fleet Manager function with the assistance of an administrator, vehicle/motor equipment/materials coordinator, and a fleet mechanic.
- Federal oversight is provided by the DOE Thomas Jefferson Site Office which is provided guidance by a federal property specialist located at the DOE Oak Ridge Office support center.

FLEET PROCUREMENT

- Vehicles are primarily acquired using the GSA leasing program.
- DOE-owned heavy work trucks have been transferred via the DOE excess property system as a cost effective way to acquire special purpose work trucks as a suitable substitute to GSA leasing.

- DOE Contracting Officer authorizes Jefferson Science Associates, LLC to use Government supply sources for the purchase of materials, supplies, equipment, and services required in the performance of JSA's contract.
- A JSA Facility Services Manager is the designated Fleet Manager on the GSA vehicle lease and is the primary contact for the GSA Fleet Service Representative.
- Additions, replacements, and turn-ins are coordinated with the DOE TJSO Contracting Officer's Representative in accordance with the Lab's Mission Essential Vehicle Fleet Size.
- The official fleet size is justified to both the JSA Chief Operating Officer and DOE Site Office Manager, and approved by the DOE Office of Science Deputy Director for Field Operations.

How are vehicles chosen?
- Collaboratively, with the assistance of lab management, the GSA Fleet Service Representative, and advice of DOE property specialists at both DOE HQ and DOE ORO.
- DOE HQ SC-3 approval is required to increase the size of the Lab's Mission Essential Vehicle Fleet Size.
- JSA Fleet Manager is authorized to replace GSA leased vehicles that fall within the scope of DOE and GSA vehicle replacement criteria.

FUEL INFRASTRUCTURE

How does currently available fueling infrastructure dictate vehicle acquisition?
- Only approved alternative fuels are offered in the GSA leasing program.
- Jefferson Lab has its own 1,000 gallon E-85 tank on site.
- Most other alternative fuels offered by GSA are commercially available on the Virginia Peninsula.

VEHICLE USE POLICIES

Are there employee check-out standards?
- Must be for "Official" use.
- Must be a Jefferson Lab or Department of Energy payroll employee who is in possession of a current (not suspended) state driver's license.
- Drivers must be age 21 and over to drive off site and age 18 and over to drive on site.
- Authorizations for non-JSA/Jefferson Lab personnel are kept at a minimum consistent with operational necessity; must be justified and approved in accordance with the Jefferson Lab Property Manual.
- Vehicle insurance considerations must be resolved with the Jefferson Lab Risk Manager.
- Training is required in the following areas to check out a vehicle:
  - GEN 400: Local Driving Conditions for Jefferson Lab Fleet Vehicles: Required for all Jefferson Lab government vehicle and motorized equipment drivers.
  - GEN 401kd: E-85 Refueling Procedures: Required for all Jefferson Lab government work truck drivers.
  - SAF 309: Ford Fusion Hybrid Operators Guide: Required for all hybrid electric vehicle drivers.

Does the site have an anti-idling policy?

No. However, JLab guards will cite drivers for a violation of JLab policy if a vehicle is left running and unattended.

Are drivers provided education on proper driving behavior and fueling requirements?

Local driving conditions familiarization is provided in the following training modules:

- GEN 400: Local Driving Conditions for Jefferson Lab Fleet Vehicles: Required for all Jefferson Lab government vehicle and motorized equipment drivers.
- GEN 401kd: E-85 Refueling Procedures: Required for all Jefferson Lab government work truck drivers.
- SAF 309: Ford Fusion Hybrid Operators Guide: Required for all hybrid electric vehicle drivers.

Jefferson Lab is converting from work trucks to electric utility vehicles for light hauling where possible.

IV Funding

Guidance – Provide table of laboratory funding using preferred categories. Include projects whose primary purpose was (or is) sustainability related.

Jefferson Lab has invested significantly for several years in achievement and/or progress regarding various sustainability goals. Funding was obtained through the sustainable design of two new construction/major renovation LEED Gold facilities. Participation in an ongoing demand response program primarily provided funding for a sitewide metering system, satisfying Jefferson Lab's complete (electricity, water, and natural gas) metering goal. All new construction and renovation projects include sustainability features designed to continually progress all applicable facilities to achieve compliance with the High Performance and Sustainability Building Guiding Principles. In FY 13, two High Energy Mission Specific Support facilities renovation projects (Test Lab and Machine Control Center) were completed through SLI and GPP funding.

Table 4 Summary of Sustainability Project Funding ($K)

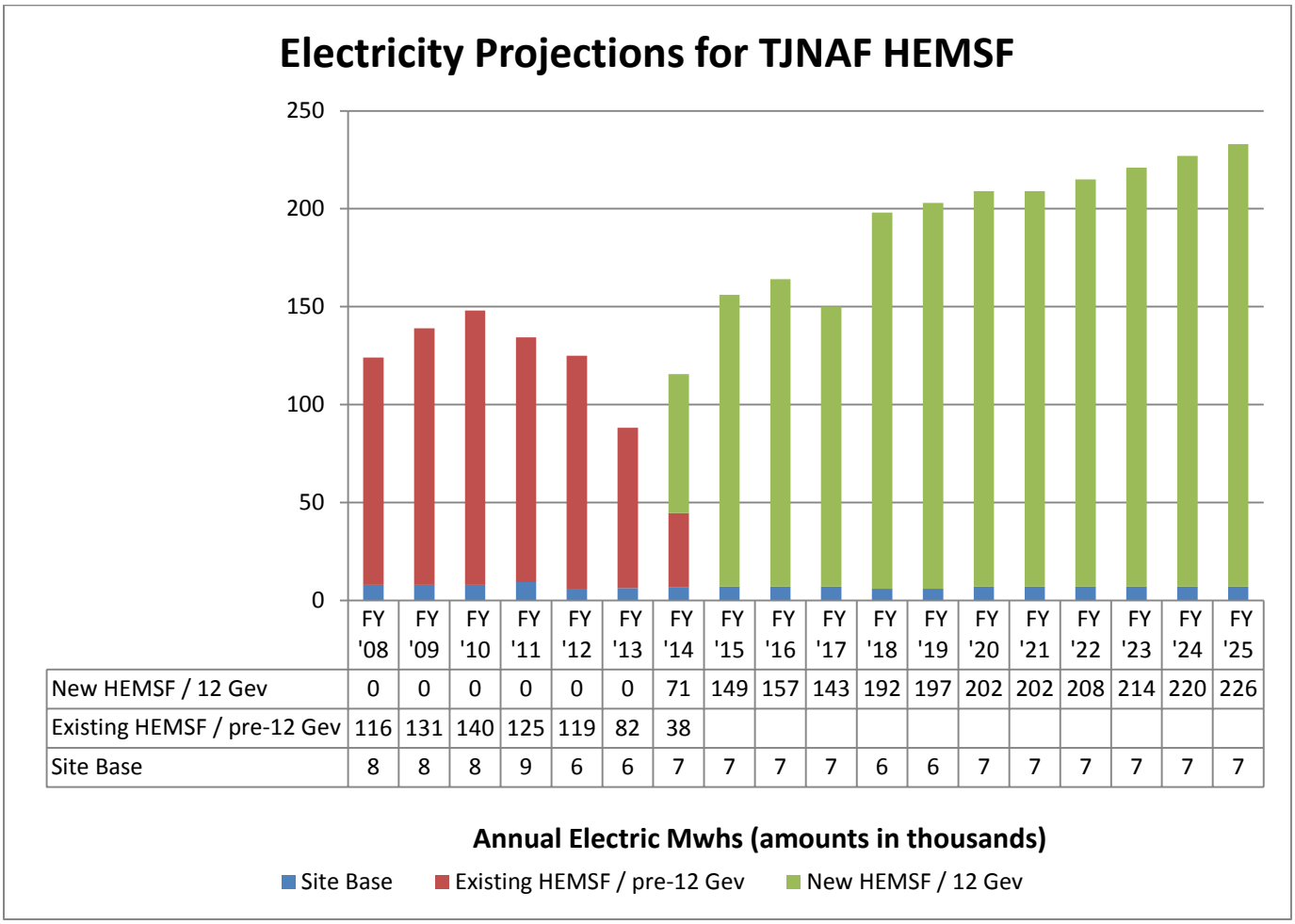
Category	FY 16 Actual	FY 17 Planned / Request	FY 18 Projected
Sustainability Projects (UESC)	0	3,500	0
Sustainability Activities other than projects	0	0	0
SPO Funded Projects (SPO funding portion)	0	69.8	0
Site Contribution to SPO Funded Project	0	62.2	0
ESPC/UESC Contract Payments (if applicable)	0	0	0
Renewable Energy Credits (REC) Costs	6.6	10	12
Total	6.6	3,642	12

V Electrical Energy Projections and High Energy Mission Specific Facilities (HEMSFs)

Guidance – Provide actual and projected electricity use for each HEMSF and the Site Base in a Projected Electricity Use Chart. Show each existing and planned HEMSF individually in the chart and include a data table beneath the chart.

Electricity consumption decreased in FY 12, further in FY 13 and transitioned in FY 14 due to accelerator shutdown periods required for construction activities regarding Jefferson Lab's 12 GeV upgrade program. Accelerator operations resumed in FY 15 and are planned to increase to approximately 30 weeks of operation in subsequent years. Consequently, significant Mwh/year increases are anticipated as indicated in Chart 3:

Chart 3 HEMSF Electricity Projections



	FY '08	FY '09	FY '10	FY '11	FY '12	FY '13	FY '14	FY '15	FY '16	FY '17	FY '18	FY '19	FY '20	FY '21	FY '22	FY '23	FY '24	FY '25
New HEMSF / 12 Gev	0	0	0	0	0	0	71	149	157	143	192	197	202	202	208	214	220	226
Existing HEMSF / pre-12 Gev	116	131	140	125	119	82	38											
Site Base	8	8	8	9	6	6	7	7	7	7	6	6	7	7	7	7	7	7

High Energy Mission Specific Facilities Description

Jefferson Lab's list of High Energy Mission Specific Facilities (HEMSF) includes all facilities and operations critical to support the scientific mission of the laboratory and qualify as HEMSF. A list of HEMSF and respective FIMS identification is shown in Table 5:

Jefferson Lab HEMSF qualified facilities, FIMS identification and size (GSF)

Table 5 – HEMSF List/FIMS

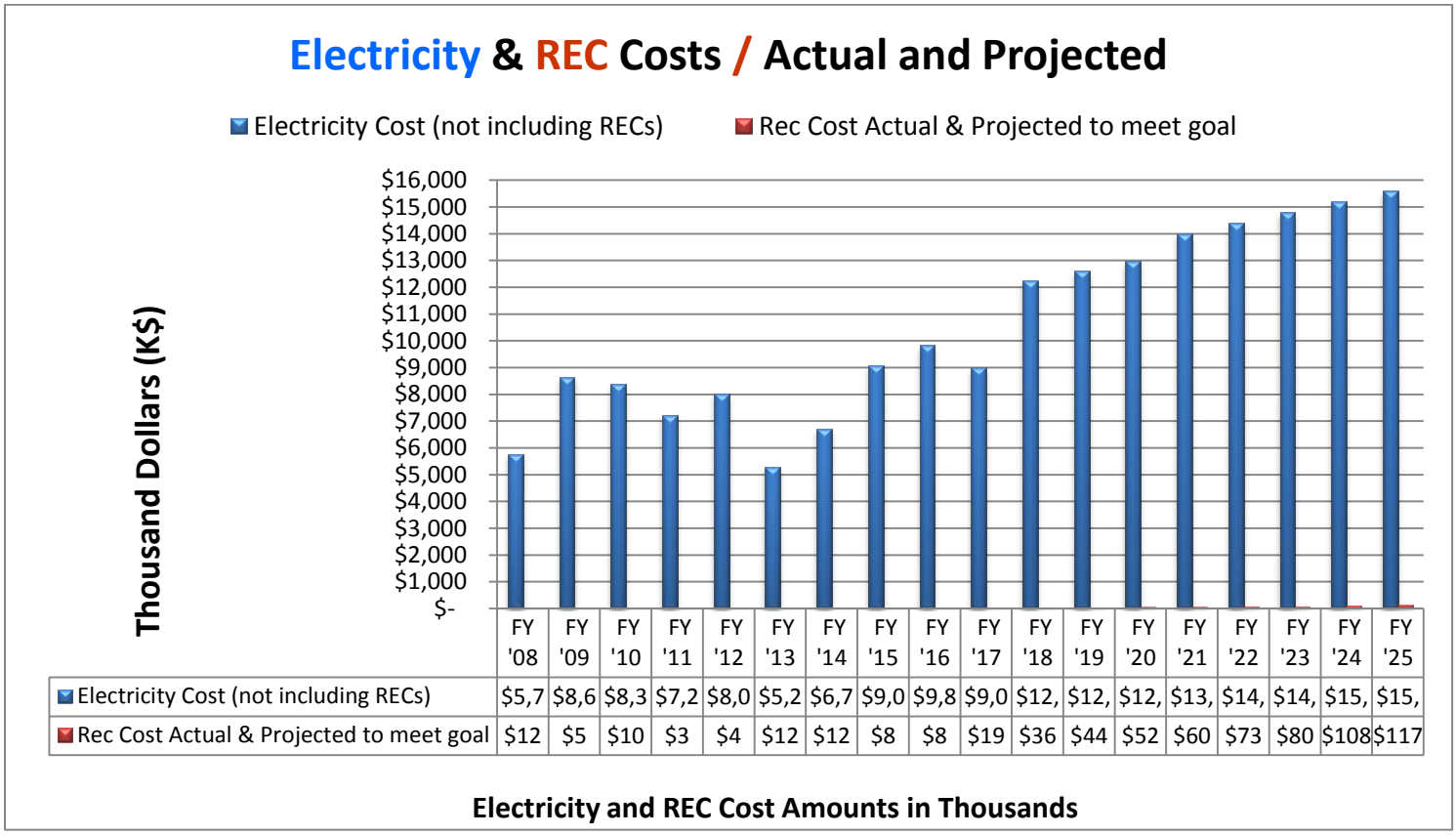
Property ID	FIMS Real Property Unique ID	Property Name	Gross SF.
999	137536	Accelerator Tunnel	113,868
08	130258	Central Helium Liquefier (CHL)	21,731
97	130256	Counting House	17,101
39	137579	East ARC Service (E2)	460
49	137580	East ARC Service (E3)	548
63	137582	East ARC Service (E4)	460
50	137581	East ARC Service (E5)	548
102	130260	End Station Refrigeration (ESR)	3,005
104	208920	End Station Refrigeration (ESR) II	6,638
101	141725	Experimental Hall A	34,861
94	141723	Experimental Hall B	17,706
96	141724	Experimental Hall C	28,415
203	210298	Experimental Hall D	11,110
90	130259	Experimental Equipment Lab (EEL)	54,788
18	134102	Low Energy Recirculating Facility (LERF)	31,893
91	137539	Hall A Beam Dump Cooling	630
95	137550	Hall C Beam Dump Cooling	630
53	137524	Injector Service	3,402
85	130257	Machine Control Center (MCC)	7,626
67	137567	North Access	8,535
21	137589	North Extractor Service (E1)	460
01	137526	North LINAC	12,850
92	137621	Service Building	2,487
38	137565	South Access	8,535
82	137598	South Extractor Service (W1)	2,289
02	137527	South LINAC	12,850
58	130263	Test Lab	142,345
68	137586	West ARC Service (W2)	1,217
56	137585	West ARC Service (W3)	460
40	137583	West ARC Service (W4)	460
45	137584	West ARC Service (W5)	548

Electricity and REC Costs

Guidance – Provide a chart indicating electricity use and REC costs history and projections, including the data table in the chart.

Assumptions include increased annual REC purchase quantities to maintain estimated interim Scope 1&2 GHG reduction goals, and an approximate 5% annual REC cost increase.

Chart 4 Electricity and REC Cost Projection



	FY '08	FY '09	FY '10	FY '11	FY '12	FY '13	FY '14	FY '15	FY '16	FY '17	FY '18	FY '19	FY '20	FY '21	FY '22	FY '23	FY '24	FY '25
Electricity Cost (not including RECs)	$5,7	$8,6	$8,3	$7,2	$8,0	$5,2	$6,7	$9,0	$9,8	$9,0	$12,	$12,	$12,	$13,	$14,	$14,	$15,	$15,
Rec Cost Actual & Projected to meet goal	$12	$5	$10	$3	$4	$12	$12	$8	$8	$19	$36	$44	$52	$60	$73	$80	$108	$117

Electricity and REC Cost Amounts in Thousands

APPENDIX "A" (Excluded Buildings Certification)

DOE BUILDING EXCLUSION
SELF-CERTIFICATION FORM

FROM: Thomas Jefferson National Accelerator Facility
Office of Science

TO: Sustainability Performance Office

Date: December 2, 2016

SUBJECT: SELF-CERTIFICATION FORM FOR THE ENERGY INTENSITY GOAL OF EISA 2007

Each building or group of buildings excluded under the criteria for a Part G or Part H exclusion is/are metered for energy consumption and their consumption is reported annually.

If any building has been excluded under the criteria for Part H for impracticability then all practicable energy and water conservation measures with a payback of less than 10 years have been installed. A justification statement that explains why process-dedicated energy in the facility may impact the ability to meet the goal has been provided in the Dashboard Energy Exclusions Report.

I certify that the buildings listed on the Excluded Buildings List produced by the Dashboard as dated November 21, 2016 for the Thomas Jefferson National Accelerator Facility meet the exclusion criteria in *Guidelines Establishing Criteria for Excluding Buildings* published by FEMP on January 27, 2006.

Richard Korynta
DOE Site Office Official - Name

R. Richard Korynta
DOE Site Office Official – Signature

12-2-16
Date

Contact Information:

Richard Korynta
Federal Energy Program Manager
Phone: (757) 269-7145
Email: Korynta@science.doe.gov

Property Site Name	Property Name	Property ID	Gross SqFt	Excluded Facilities SqFt	Exclusion Part	Exclusion Justification Comment
TJNAF	Accel Maintenance Support (AMSB)	87	6691	0		
TJNAF	Accel Technical Support (ATSB)	89	10152	0		
TJNAF	Accelerator Tunnel	999	113868	113868	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	Accelerator Tunnel Equipment	999E	0	0		
TJNAF	Acid Waste Neutralization	AWN	0	0		
TJNAF	Applied Research Center (ARC)	ARC	26869	0		
TJNAF	Blue Crab Road Warehouse	BC2	9275	0		
TJNAF	Boundary Radiation Monitors	RM	0	0		
TJNAF	Building 92 Cooling Tower 2	92-CT02	0	0		
TJNAF	CEBAF Center	12	127511	11108	G - Metered intensive loads	Building contains two computer data centers which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of the computer data centers are metered and reported annually.
TJNAF	CEBAF Cooling Tower 1	12-CT01	0	0		
TJNAF	CHL Cooling Tower 2	08-CT02	0	0		
TJNAF	CMSA Office	34A	117	117	D - Essentially only lighting	Building consumes essentially only lighting energy.
TJNAF	CTF Cooling Tower 2	57-CT02	0	0		
TJNAF	Canon Communications Hut	205	240	240	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	Central Helium Liquefier (CHL)	08	22038	22038	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	Central Materials Storage Area (CMSA)	CMSA	0	0		
TJNAF	Chemical Storage	32D	126	126	D - Essentially only lighting	Building consumes essentially only lighting energy.
TJNAF	Chilled Water Distribution	CHW	0	0		
TJNAF	Chiller Building	60	4148	4148	G - Metered intensive loads	Building is included in the Test Lab area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	Communications Distribution	COMM	0	0		
TJNAF	Condenser Water Distribution	CW	0	0		
TJNAF	Corrosive Storage	32C	240	240	D - Essentially only lighting	Building consumes essentially only lighting energy.

Property Site Name	Property Name	Property ID	Gross SqFt	Excluded Facilities SqFt	Exclusion Part	Exclusion Justification Comment
TJNAF	Counting House	202	3601	3601	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	Counting House	97	16948	16948	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	Cryo Plant	201	903	903	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	Cryogenics Test Facility (CTF)	57	4098	4098	G - Metered intensive loads	Building is included in the Test Lab area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	East ARC Service (E2)	39	460	460	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	East ARC Service (E3)	49	548	548	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	East ARC Service (E4)	63	460	460	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	East ARC Service (E5)	50	548	548	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	Electrical Distribution	ELEC	0	0		
TJNAF	End Station Refrigeration (ESR)	102	2991	2991	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.

Property Site Name	Property Name	Property ID	Gross SqFt	Excluded Facilities SqFt	Exclusion Part	Exclusion Justification Comment
TJNAF	End Station Refrigeration 2 (ESR2)	104	6638	6638	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	Exit Stair 1	07	728	728	D - Essentially only lighting	Building consumes essentially only lighting energy. Lighting can be no more efficient in a life-cycle cost effective manner.
TJNAF	Exit Stair 2	37	728	728	D - Essentially only lighting	Building consumes essentially only lighting energy. Lighting can be no more efficient in a life-cycle cost effective manner.
TJNAF	Exit Stair 3	61	497	497	D - Essentially only lighting	Building consumes essentially only lighting energy. Lighting can be no more efficient in a life-cycle cost effective manner.
TJNAF	Exit Stair 4	04	728	728	D - Essentially only lighting	Building consumes essentially only lighting energy. Lighting can be no more efficient in a life-cycle cost effective manner.
TJNAF	Exit Stair 5	70	728	728	D - Essentially only lighting	Building consumes essentially only lighting energy. Lighting can be no more efficient in a life-cycle cost effective manner.
TJNAF	Exit Stair 6	42	497	497	D - Essentially only lighting	Building consumes essentially only lighting energy. Lighting can be no more efficient in a life-cycle cost effective manner.
TJNAF	Exit Stairwell	99	461	461	D - Essentially only lighting	Building consumes essentially only lighting energy. Lighting can be no more efficient in a life-cycle cost effective manner.
TJNAF	Experimental Equipment Lab (EEL)	90	54788	54788	G - Metered intensive loads	Building is included in the Test Lab area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	Experimental Hall A	101	34861	34861	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	Experimental Hall B	94	17706	17706	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	Experimental Hall C	96	28415	28415	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.

Property Site Name	Property Name	Property ID	Gross SqFt	Excluded Facilities SqFt	Exclusion Part	Exclusion Justification Comment
TJNAF	Experimental Hall D	203	11110	11110	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	Experimental Staging	23	18000	0		
TJNAF	FM Storage Shed	13	2990	2990	D - Essentially only lighting	Building consumes essentially only lighting energy. Lighting can be no more efficient in a life-cycle cost effective manner.
TJNAF	FM Storage Shed 2	33	776	0		
TJNAF	Fabric Storage 1	64	2774	2774	D - Essentially only lighting	Building consumes essentially only lighting energy. Lighting can be no more efficient in a life-cycle cost effective manner.
TJNAF	Facilities Maintenance Shop	19	2904	0		
TJNAF	Flammable Storage	32B	240	240	D - Essentially only lighting	Building consumes essentially only lighting energy.
TJNAF	General Purpose Building	36	19199	19199	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	Ground Water Monitoring Wells	WELLS	0	0		
TJNAF	Hadron Guard House	51	330	330	G - Metered intensive loads	Building is included in the Test Lab area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	Hall A Beam Dump Cooling	91	630	630	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	Hall A Equipment	101E	0	0		
TJNAF	Hall A Gas Shed	101A	360	360	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	Hall A Storage Shed	90A	0	434		
TJNAF	Hall B Equipment	94E	0	0		
TJNAF	Hall B Gas Shed	96B	693	693	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.

Property Site Name	Property Name	Property ID	Gross SqFt	Excluded Facilities SqFt	Exclusion Part	Exclusion Justification Comment
TJNAF	Hall C Beam Dump Cooling	95	630	630	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	Hall C Equipment	96E	0	0		
TJNAF	Hall C Gas Shed	96C	96	96	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	Hall C Storage Shed	90B	0	510		
TJNAF	Hall D Complex Cooling Tower 1	200-CT01	0	0		
TJNAF	Hall D Equipment	203E	0	0		
TJNAF	Industrial Hygiene Trailer (35)	35	1676	1676	G - Metered intensive loads	Building is included in the Test Lab area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	Injector Service	53	3402	3402	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	K50 Building	08A	731	731	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	LERF Trailer (41A)	41A	2460	2460	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	LERF Trailer (41B)	41B	2460	2460	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	LERF Trailer (41C)	41C	2460	2460	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	Lead Storage	95A	0	1600		
TJNAF	Low Conductivity Water Distribution	LCW	0	0		

Property Site Name	Property Name	Property ID	Gross SqFt	Excluded Facilities SqFt	Exclusion Part	Exclusion Justification Comment
TJNAF	Low Energy Recirculator Facility (LERF)	18	33812	33812	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	Machine Control Center (MCC)	85	7579	7579	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	Material Handling Equipment Storage 1	34	0	2250		
TJNAF	Material Handling Equipment Storage 2	73	0	1800		
TJNAF	Natural Gas Distribution	NGAS	0	0		
TJNAF	North Access	67	8332	8332	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	North Access Cooling Tower 2	67-CT02	0	0		
TJNAF	North Extractor Service (E1)	21	460	460	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	North LINAC	01	12850	12850	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	Parking	PARKING	0	0		
TJNAF	Physics Fabrication	98	6164	6164	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	Physics Storage	72	20321	0		
TJNAF	Potable Water Distribution	WATER	0	0		
TJNAF	Radcon Calibration	54	1017	1017	G - Metered intensive loads	Building is included in the Test Lab area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	Rentention Pond - East	POND-E	0	0		
TJNAF	Retention Pond - North	POND-N	0	0		
TJNAF	Roads	ROADS	0	0		
TJNAF	Sanitary Sewer	SEWER	0	0		
TJNAF	Security Fencing	FENCING	0	0		

Property Site Name	Property Name	Property ID	Gross SqFt	Excluded Facilities SqFt	Exclusion Part	Exclusion Justification Comment
TJNAF	Service Building	200	3636	3636	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	Service Building	92	2487	2487	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	Sidewalks	SIDEWALK	0	0		
TJNAF	South Access	38	8332	8332	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	South Access Cooling Tower 2	38-CT02	0	0		
TJNAF	South Extractor Service (W1)	82	2289	2289	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	South LINAC	02	12850	12850	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	Spill Response Storage	32A	429	429	D - Essentially only lighting	Building consumes essentially only lighting energy. Lighting can be no more efficient in a life-cycle cost effective manner.
TJNAF	Support Service Center (SSC)	28	34739	0		
TJNAF	Tagger Area	204	6654	6654	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	Technology & Engineering Development	55	74300	0		
TJNAF	Test Lab	58	142010	142010	G - Metered intensive loads	Building is included in the Test Lab area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	Test Lab Cooling Tower 1	58-CT01	0	0		
TJNAF	Warwick Boulevard Warehouse	WB	9755	0		
TJNAF	Waste Oil Storage	32E	126	126	D - Essentially only lighting	Building consumes essentially only lighting energy.

Property Site Name	Property Name	Property ID	Gross SqFt	Excluded Facilities SqFt	Exclusion Part	Exclusion Justification Comment
TJNAF	West ARC Service (W2)	68	1673	1673	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	West ARC Service (W3)	56	460	460	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	West ARC Service (W4)	40	460	460	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.
TJNAF	West ARC Service (W5)	45	548	548	G - Metered intensive loads	Building is included in the Accelerator area group of buildings which are separately metered energy intensive loads driven by mission and operational requirements. The energy consumption of this group is metered and reported annually.