National Aeronautics and Space Administration

2012
Kennedy Space Center
Sustainability Plan





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Kennedy Space Center is GO for GREEN!

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Section 1: Executive Summary

The federal government has made a commitment to sustainability in response to increasing public concern and stakeholder expectations about the health of the planet. At its heart, sustainability integrates environmental, societal and economic systems to meet present needs without compromising the ability of future generations to meet their needs. To address these concerns President Obama signed Executive Order (EO) 13514, which recognizes the importance of sustainability in the federal government by providing a focus on federal leadership in environmental, energy, and economic performance.

In June 2010, the National Aeronautics and Space Administration (NASA) responded to the presidential mandate by releasing its Strategic Sustainability Performance Plan (SSPP), which recognizes the importance of realigning environmental practices in a manner that preserves, enhances, and strengthens NASA's ability to perform its mission indefinitely. Kennedy Space Center's commitment to sustainability will support NASA's SSPP and the goals of EO 13514, and also promote, maintain, and pioneer green practices in all aspects of our mission, striving to be an agency leader in everything we do.

Center Director Cabana at the KSC 1 Megawatt Photovoltaic Generation Farm.

Kennedy Space Center's Sustainability Plan (SP) recognizes that the best sustainable solutions use an interdisciplinary approach that involves civil servant and contractor personnel from across the Center. Kennedy's collaborative approach to sustainability relies on the participation of all center employees to develop and implement a plan that has broad support throughout the Center. Through this approach, the Center will pursue projects in support of the following twelve overarching functional goals:

- Reduce greenhouse gas emission by focusing on energy and fossil fuel reductions
- Design and build sustainable buildings, facilities and infrastructure
- Conserve and manage water resources
- Minimize waste and prevent pollution
- Purchase sustainable products and services
- Manage electronic equipment and data centers responsibly
- Integrate sustainability into local and regional planning
- Increase workforce satisfaction through recognizing and promoting individual and collective sustainability efforts
- Promote sustainable food services
- Conserve and improve the resiliency of our natural resources
- Effectively communicate the Center's sustainability initiatives
- Conduct pilot sustainability projects

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STS-125 and STS-126 at launch pads 39A and 39B.

The Kennedy Space Center Sustainability Plan details the integrated strategies and projects necessary to achieve the following benefits:

- Reduce Center costs
- Increase process and energy efficiencies
- Promote smart buying practices
- Increase recycling and decrease waste
- Benefit the community
- Meet or exceed Executive Order and NASA SSPP sustainability goals

Responsibility for meeting these goals lies with Kennedy's Sustainability Officer (SO), the Director of Center Operations, with support from the Kennedy Space Center Sustainability Steering Committee. Cross-functional teams are responsible for the development and implementation of the strategies and projects that address these goals. The Sustainability Steering Committee is made up of the leaders of the cross-functional teams and is empowered to set internal goals and strategies to support the Center's sustainability effort. Employees at all levels are responsible and accountable for integrating sustainability into their day-to-day activities to reduce their environmental impact.

Kennedy Space Center will strive to balance environmental, social, and economic concerns with the Center's obligations as the nation's gateway to space. The Center desires to not only be recognized as a leader for sustainability within the federal government, but also within the external community. Kennedy will collaborate and communicate with employees and the local communities to demonstrate the benefits of a more sustainable society and instill sustainability as a core value.

Kennedy Space Center has accomplished great feats in its storied history. The Mercury, Gemini, Apollo, and Space Shuttle programs used the Center as their launch pad into space, and into history. Kennedy must draw on the innovative spirit that characterized past missions as it strives for sustainable solutions to the challenges of the future. Incorporating sustainability into the Center's work ethic is an important step in enhancing mission performance and becoming a recognized leader in sustainability. Truly, we are Kennedy Space Center, and we are GO FOR GREEN!

Michael J. Benik
Center Sustainability Officer
Director of Center Operations

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Section 2: Introduction

2.0 OVERVIEW

Kennedy Space Center recognizes the importance of sustainability in preserving, enhancing, and strengthening NASA's ability to perform its mission indefinitely. Kennedy developed the 2012 Kennedy Space Center (KSC) Sustainability Plan to reflect the Center's commitment to innovation and leadership in sustainability and support NASA's Strategic Sustainability Performance Plan (SSPP) and other federal mandates. Kennedy's sustainability vision exemplifies the importance the Center places on sustainability:

"Kennedy Space Center will promote, maintain, and pioneer green practices in all aspects of our mission, striving to be an agency leader in everything we do."

American bald eagles along State Road 3 at KSC.

The 2012 KSC Sustainability Plan lays the foundation for realizing this vision by incorporating sustainable practices into key Center activities. The sustainability plan is a one year tactical implementation plan that outlines a series of strategies and projects that will help Kennedy to achieve long range goals, as well as NASA SSPP goals and other federal mandates. Progress and status reports toward implementing the strategies and projects outlined in this plan will be reviewed quarterly, and the plan will be updated annually as the Center's sustainability programs continue to develop. Additionally, Kennedy Space Center's Environmental Management System (EMS) will be adapted to include the Center's sustainability goals, ensuring the continual improvement of sustainability programs and projects.

2.1 SCORECARD

The Sustainability/Energy Scorecard provides a quick snapshot of Kennedy's performance in meeting the sustainability goals outlined in the NASA SSPP. The Center will continue to monitor the performance in each of these categories striving to achieve a "Go for Green" status in each.

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FY 2011 Kennedy Space Center Scorecard
Sustainability and Energy

Functional Area	Description	Score
	**Scope 1 & 2 GHG Emission Reduction Target** Reduction in energy intensity in goal-subject facilities compared with 2003: 18 percent and on track	Green
	**Scope 3 GHG Emission Reduction Target** To be determined	TBD
	**Reduction in Energy Intensity** Energy intensity reduction in goal-subject facilities compared with 2003 baseline: 18 percent and on track	Green
	**Use of Renewable Energy** Use of renewable energy as a percent of facility electricity use. Total of 12.2 percent from renewable electricity sources including 8.5 percent from new renewable energy sources	Green
	**Reduction in Potable Water Intensity** Reduction in potable water intensity compared with 2007 baseline: 14 percent and on track for 26 percent in 2020	Green
	**Reduction in Fleet Petroleum Use** Reduction in fleet petroleum use compared to 2005 baseline: 7 percent but on track for 20 percent by 2015 Reduction in fleet alternative fuel use compared to 2005 baseline: 76 percent and on track for 100 percent by 2015	Red
	**Green Buildings** Sustainable green buildings: 4.2 percent of buildings sustainable and 6.6 percent gross square footage of inventory sustainable	Green
	**Pollution Prevention and Waste Management** Diverted 56 percent of total waste: 60 percent of construction and demolition debris, 26 percent on non-hazardous solid waste	Yellow
	**Sustainable Aquisition** 100 percent of applicable contract actions require use of environmentally preferred products	Green

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FY 2011 Kennedy Space Center Scorecard
Standards for Success

Functional Area	Success Criteria
	**Scope 1 & 2 GHG Emission Reduction Target** Green: Reduced energy intensity (Btu/GSF) in EISA goal-subject facilities by at least 15 percent compared with 2003 and is on track for 30 percent reduction by 2015 Yellow: Reduced energy intensity (Btu/GSF) in EISA goal-subject facilities by at least 12 percent compared with 2003 Red: Did not reduce energy intensity (Btu/GSF) in EISA goal-subject facilities by at least 12 percent compared with 2003
	**Scope 3 GHG Emission Reduction Target** Green: Developed a base year and a complete, comprehensive 2011 GHG inventory Yellow: Plan to develop a base year GHG inventory Red: Have no plans to develop a base year GHG inventory
	**Reduction in Energy Intensity** Green: Reduced energy intensity (Btu/GSF) in EISA goal-subject facilities by at least 15 percent compared with 2003 and is on track for 30 percent reduction by 2015 Yellow: Reduced energy intensity (Btu/GSF) in EISA goal-subject facilities by at least 12 percent compared with 2003 Red: Did not reduce energy intensity (Btu/GSF) in EISA goal-subject facilities by at least 12 percent compared with 2003
	**Use of Renewable Energy** Green: Uses at least 5 percent electricity from renewable sources as a percentage of facility electricity use and at least 2.5 percent of facility electricity comes from new sources (post-1999) Yellow: Uses at least 5 percent renewable energy from electric, thermal or mechanical sources to power facilities and equipment; but less than half was obtained from new sources (post-1999) or part of the requirement was met with thermal and mechanical renewable energy Red: Did not use at least 5 percent renewable energy from electric, thermal or mechanical sources to power facilities and equipment
	**Reduction in Potable Water Intensity** Green: Reduced water intensity by at least 6 percent from final approved 2007 baseline and is on track for 26 percent reduction by 2020 Yellow: Reduced water intensity by at least 4 percent from final approved 2007 baseline Red: Did not reduce water intensity by at least 6 percent from final approved 2007 baseline
	**Reduction in Fleet Petroleum Use** Green: Achieved a 10 percent reduction in petroleum use in its entire vehicle fleet compared to 2005 and is on track for 20 percent reduction by 2015 Yellow: Achieved at least 8 percent reduction in petroleum use in the entire vehicle fleet compared to 2005 Red: Did not achieve at least 8 percent reduction in petroleum use in its entire vehicle fleet since 2005

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FY 2011 Kennedy Space Center Scorecard
Standards for Success

Functional Area	Success Criteria
	**Green Buildings** Green: Demonstrates implementation of Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings (GP) for new, existing and leased buildings; and is on track to meet 15 percent by 2015 by reporting that at least 5 percent of buildings greater than 5,000GSF meet GP as reported in the Federal Real Property Profile (FRPP) Yellow: Incorporates Guiding Principles into all new design contracts for construction, major renovations and leases and at least 5 percent of GSF of its building inventory over 5,000GSF meets GP as reported in FRPP Red: Cannot demonstrate compliance with GP on new construction, major renovations, or leases; and/or less than 5 percent of building inventory, either by number of buildings or GSF, over 5,000GSF meets GP as reported in FRPP
	**Pollution Prevention and Waste Management** Green: Diverted 50 percent or more of non-hazardous solid waste (excluding C&D waste) and diverted 50 percent or more of C&D waste; and on track to do so by 2015 Yellow: Diverted less than 50 percent of non-hazardous solid waste (excluding C&D waste) and diverted less than 50 percent of C&D waste; but on track to do so by 2015 Red: Diverted less than 50 percent of non-hazardous solid waste (excluding C&D waste) and diverted less than 50 percent of C&D waste; and not on track to do so by 2015
	**Sustainable Aquisition** Green: Sustainable products and services comprise 95 percent of new contract actions Yellow: Sustainable products and services comprise more than 50 percent of new contract actions Red: Sustainable products and services comprise less than 50 percent of new contract actions

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Section 3:
Sustainability Plan (SP) Development

Development of Kennedy's Sustainability Plan was accomplished through a collaborative process involving eight core teams. Each core team coordinated one or more cross-functional teams composed of Kennedy employees with expertise in areas relevant to the Center's sustainability effort. The teams were provided sustainability training and a strategic framework to guide in the development of individual plans for each of their focus areas. Work by the cross-functional teams was coordinated by a steering committee which helped align their recommendations with the Center's sustainability vision and common goals. A diagram of the organization and hierarchy of the sustainability teams is shown in Appendix 2.

As Kennedy's sustainability plan is implemented, the core teams will be responsible for monitoring the projects they recommended to ensure their continued success. This approach draws on the knowledge and experience of cross-functional team members within their respective disciplines, while also uniting their efforts around the Center's sustainability vision in a strategic way. Responsibility for meeting the goals outlined in this Sustainability Plan ultimately lies with the Kennedy Space Center sustainability officer, who is supported by the sustainability steering committee.

3.3 Team Descriptions

This section provides the team descriptions and highlights their expertise and focus areas. Each of the teams described below developed goals, strategies and projects to meet or exceed the NASA SSPP goals and objectives. The teams provided valuable input and direction throughout the development of the Kennedy Space Center Sustainability Plan and will be responsible for implementing sustainability projects. A unique identifying icon has been placed beside each team name. Throughout the document, these icons associate the teams with the goal functional areas for which they have provided input.

MASTER PLANNING

- The Master Planning team is led by Kennedy Space Center's Center Planning and Development Office (CPDO) and includes members from environmental, real property, facilities and the Center's Institutional Support Contract. CPDO is responsible for developing and updating the KSC Master Plan and coordinates with internal and external stakeholders in the development of land utilization and business policies to enable both government and commercial use of the Center. Their expertise is important when addressing NASA's Strategic Sustainability Performance Plan (SSPP), Regional and Local Planning goals and incorporating them into the Kennedy Space Center Master Plan.

INFRASTRUCTURE

- The Infrastructure team is comprised of four sub-teams from the facility engineering community that have expertise in design and construction, energy systems, water systems, and operations and maintenance.

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- *New Design and Construction:* This sub-team reviews the design and construction processes of facilities in order to provide environmentally friendly building practices for the future. The design group concentrates on design processes and practices while the construction group concentrates on how facility development influences construction activities. Both groups focus on impacts to the environment.
- *Operations and Maintenance (O&M):* This sub-team examines the current systems and practices already in place for operating and maintaining existing facilities and systems at Kennedy. Additionally, the O&M sub-team establishes goals to reduce the amount of resource consumption involved in day-to-day operations and maintenance activities.
- *Water Systems:* This sub-team analyzes the water distribution system and water use across the Center. The group focuses on methods to reduce consumption while maintaining overall water quality, capacity, and fire protection capabilities for the Center.
- *Energy Systems:* This sub-team explores methods to reduce energy consumption at the Center while maintaining adequate levels of employee comfort. The group develops projects associated with capital improvements, maintenance best practices, employee awareness, and innovative energy reduction techniques.

LOGISTICS

- The Logistics core team is composed of five sub-teams that have expertise in transportation, food services, acquisition, property disposal, and operational logistics respectively.
  - *Transportation:* This sub-team is comprised of members from the transportation and facility engineering community. The team examines practices to reduce Greenhouse Gas (GHG) emissions inherent to Kennedy Space Center. The group develops goals and strategies to address major aspects of transportation including fleet vehicles, Kennedy Space Center Visitor Complex tour buses, and employee transportation.
  - *Food Services:* This sub-team includes employees with knowledge in food services, facilities, sanitation, environmental, legal, procurement, and budgeting. The group is looking at strategies to improve food service logistics and waste disposal methods.
  - *Acquisition:* This sub-team is comprised of members from the procurement, finance, industrial environmental and accounting communities. This group reviews the Center's acquisition processes relative to federal and agency policies. The team identifies areas to implement sustainable purchasing practices where none currently exist and focus on increasing awareness of sustainability practices.
  - *Property Disposal:* This sub-team is made up of industrial environmental and property disposal personnel that screen, excess, exchange, and sell personal property. The group explores methods to increase solid waste diversion, reduce energy and paper consumption, and include process improvements in day-to-day disposal operations.
  - *Operational Logistics:* This sub-team is responsible for the management of shipping, receiving, storing, packaging, and transporting of institutional and programmatic products. The group investigates consolidation methods for service efficiencies and waste reduction through improved tracking techniques.

ENVIRONMENTAL

- The Environmental core team is composed of two sub-teams that have expertise in efficient resource management and natural resources.
  - *Reduce/Reuse/Recycle:* This sub-team includes personnel who are committed to actively promote waste diversion through recycling and championing sustainability efforts at Kennedy Space Center. The group develops strategies and projects in waste reduction, energy conservation, landfill use, recycling, and employee education.
  - *Natural Resources:* This sub-team includes environmental personnel, including NASA, contractor, and U.S. Fish and Wildlife Service employees. The group develops strategies and projects to address sustainability as it relates to the management of our natural resources and threatened or endangered species at Kennedy. The team has identified two target areas: the scrub habitat and the coastal dune shoreline. The focus of the team will be to ensure a continued viable habitat for the species at the Center while assuring continued access to the area.

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INFORMATION TECHNOLOGY

- The Information Technology (IT) team's goal is to develop, acquire, and manage information technology and communications systems for both Kennedy Space Center's institutional and programmatic customers. Also, the group establishes policies that ensure the Center's information technology assets are acquired and managed consistently with agency and federal regulations. The core team is comprised of four sub-teams, each having knowledge in different aspects of electronic resource management and operations.
  - *Desktop Environment:* This sub-team is responsible for the computing seats used by Kennedy employees on a day-to-day basis to perform their job functions. The team develops projects in energy reduction and environmentally friendly computer purchasing, striving to acquire computers that are Electronic Product Environmental Assessment Tool (EPEAT) and Energy Star certified.
  - *Communication:* This sub-team is responsible for managing and maintaining the telephone and network infrastructure at Kennedy. The team will incorporate an energy efficient communications infrastructure into new designs and retrofits of existing buildings.
  - *Data Center:* This sub-team is responsible for right-sizing and consolidating the computing infrastructure native to Kennedy. By consolidating data center hardware and software systems, energy savings will be realized due to reductions in the power consumption needed to operate and cool the data center resources.
  - *Mobile IT:* This sub-team will further the Center's sustainability efforts by using the ever growing mobile device platform to save energy, reduce paper usage, and improve employee effectiveness.

WORKFORCE SATISFACTION

- The Workforce Satisfaction core team is composed of human resources personnel with knowledge in performance management, training, and employee recognition. This team is responsible for the development of sustainability goals and strategies to advance employee satisfaction, productivity, and morale.

COMMUNICATIONS

- The Communication core team is comprised of public affairs, external relations, education, environmental, and human resources personnel. The group's goal is to increase awareness, understanding, and valuation of sustainability, by advocating it as a Kennedy Space Center core value.

TEST BED AND DEMONSTRATION

- The Test Bed and Demonstration core team is composed of three sub-teams that have expertise in research, facility, and lab operations.
  - *Greening the Labs:* This sub-team is comprised of members of the scientific and engineering community who investigate innovative ways to operate the Kennedy Space Center's labs in a more sustainable manner.
  - *Test Bed and Demonstration-Labs:* This sub-team is comprised of members of the scientific and engineering community who review scientific experimentation methods and identify areas for process efficiency improvements.
  - *Test Bed and Demonstration-Facilities:* This sub-team is comprised of NASA, contractor engineers, and facility O&M personnel. The team is pursuing strategic partnerships with other Kennedy sustainability teams and commercial vendors to perform unbiased, third-party product testing of sustainable and/or bio-based products for potential use in Center facilities.

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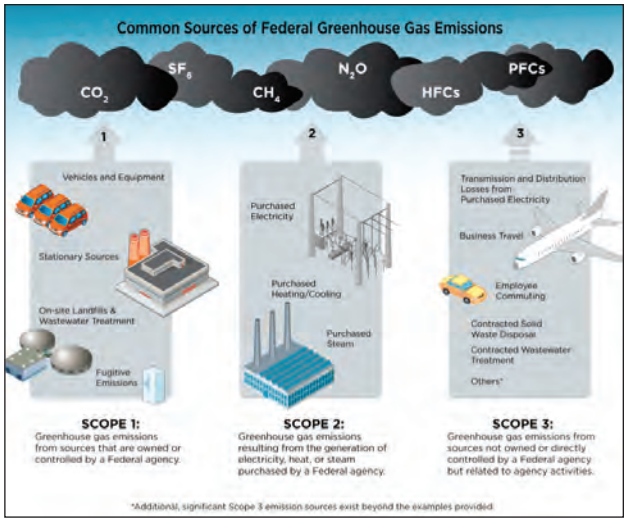
Section 4: Sustainability Goals at KSC

4.1 GOAL 1 - Greenhouse Gas Management

NASA SSPP Goal Description

Scope 1 & 2 Greenhouse Gas (GHG) Emissions Reductions: Scope 1 & 2 (GHG) emissions are categorized as: 1) GHG emissions from sources owned or controlled by a federal agency and 2) GHG emissions resulting from the generation of electricity, heat, or steam purchased by a federal agency. NASA established a Scope 1 & 2 GHG emissions reduction target of 18.3 percent based on an FY 2008 baseline estimate. The initial estimate followed the early guidance of Executive Order (EO) 13514 and was based on energy intensity reductions for goal subject buildings. Scope 1 & 2 GHG emissions can be divided into the following categories:

- Energy and Buildings: Buildings are the number one consumer of energy for NASA; therefore, facility energy intensity directly correlates to Scope 2 GHG emissions. More specific energy and building goals include:
  - Reduce Facility Energy Intensity – Reduce energy consumption per gross square foot of building area by 3 percent annually from the FY 2003 baseline for FY 2006 through FY 2015 (30 percent total).
  - Increase Renewable Electricity Use – Increase percentage of total electricity derived from renewable sources (3 percent FY 2007 – FY 2009; 5 percent FY 2010 – FY 2012; 7.5 percent FY 2013 onward).
- At least 50 percent of the renewable electricity is derived from new renewable sources developed after January 1, 1999.
- Fleet: Fleet vehicles owned by NASA contribute a large quantity of Scope 1 GHG emissions. Therefore, NASA has proposed the following general fleet goals: right size the number of fleet vehicles through optimization, increase the use of low emission and high fuel economy vehicles, replace conventional senior executive fleet with low-GHG emission vehicles, discuss consolidation of shuttle bus operations (if offered), discuss sustainable transportation options through development of alternative fuel infrastructure, direct spending on transportation training, and procure environmentally preferable motor vehicles.



Greenhouse gas source description.

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- More specific fleet goals include:
  - Reduce petroleum use in Fleet Vehicles by 2 percent annually from the FY 2005 baseline for FY 2005 – FY 2020 (30 percent total).
  - Increase alternative fuel use by 10 percent annually from the FY 2005 baseline for FY 2005 – FY 2015 (100 percent total).

Traffic on US-1 following a space shuttle launch.

Scope 3 Greenhouse Gas Emissions Reductions: Scope 3 GHG emissions are characterized as originating from sources not owned or directly controlled by a federal agency, but related to agency activities. NASA established a Scope 3 GHG emission reduction target of 12.6 percent by FY 2020. Other Scope 3 GHG reduction goals include:

- Reduce Scope 3 GHG emissions associated with contracted waste disposal by 23.1 percent by FY 2015, excluding Construction and Demolition (C&D) waste.
- Reduce Scope 3 GHG emissions associated with Transmission and Distribution (T&D) losses from purchased energy by 15.1 percent by FY 2020.

KSC SP Goal Description

Kennedy Space Center is committed to meeting or exceeding Scope 1, 2, and 3 GHG emissions reduction targets established in the NASA SSPP by proactively addressing areas of infrastructure energy consumption, renewable energy production and transportation logistics, striving to one day be a zero net energy center. Kennedy also desires to increase energy awareness across the Center. Kennedy will achieve these goals by pursuing the following:

- Meet or exceed annual NASA SSPP energy, building and fleet goals that contribute to Scope 1 and 2 Greenhouse Gas Emissions Reductions.
- 2 percent increase of Center fleet vehicles will be alternative fuel vehicles (AFV) by FY 2013.
- 1 percent increase of special use fleet vehicles will be AFV by FY 2013.
- Provide education and awareness of AFV tour bus options to the KSC Visitor's Complex and the KSC Education and External Relations Directorate by FY 2013.
- 3 percent reduction in single passenger commuting per year from a FY 2010 baseline. This will be accomplished via increased vanpool ridership, carpooling and telework.

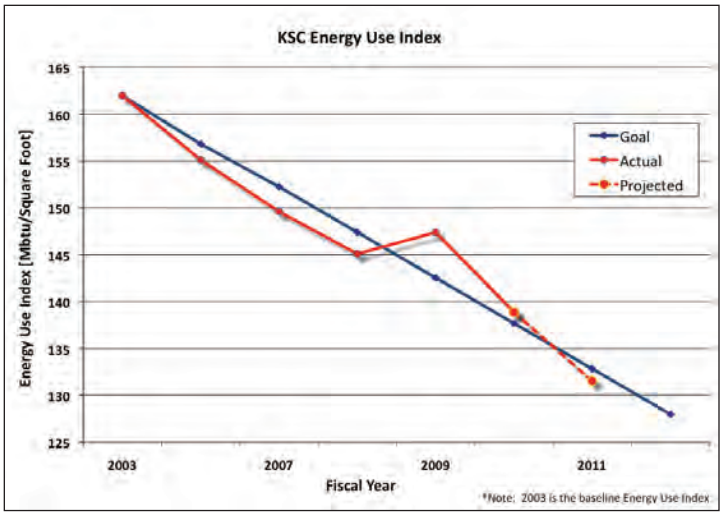

Figure 1. KSC energy use intensity.

4.1.1 Current State

- Facility Energy Intensity (Scope 1 & 2): For FY 2011, Kennedy has reduced facility energy intensity by 18 percent from the FY 2003 baseline.
- Renewable Energy Percentage (Scope 1 & 2): For FY 2011, Kennedy has derived 12.2 percent of its electricity from renewable sources.
- Petroleum Usage Status (Scope 1 & 2): For FY 2011, Kennedy has reduced its petroleum consumption for fleet vehicles by 7 percent from the FY 2005 baseline.
- Alternative Fuel Vehicle Official Numbers (Scope 1 & 2): For FY 2011, 83 percent of the 910 fleet vehicles at the Center are AFV or electric.
- Vanpool Participation (Scope 3): For FY 2011, there are 30 commuter vanpools operating at Kennedy. Vanpool passengers account for roughly 3 percent of the workforce.

4.1.2 Strategies and Projects

Scope 1 & 2 GHG

- Strategy: Right-size the Kennedy Space Center General Services Administration (GSA) fleet to meet mission needs

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  - Projects:
    - *Vehicle Justification Board:* Re-establish the Vehicle Justification Board to validate fleet order requirements from organizations to meet mission needs.
    - *GSA Fleet Sub-Pools:* Create vehicle sub-pools for each major facility to consolidate fleet vehicles.

- Strategy: Promote the alternative fuel vehicle fleet
  - Projects:
    - *Information Outreach:* Kennedy Space Center will develop informational videos and demonstrations to spread awareness of the existing AFV fueling infrastructure and the AFV fleet operating at the Center.
    - *Institutional Contractor Fleet Study:* Kennedy will identify opportunities for contractors to increase their AFV fleet.

- Strategy: Promote and implement energy conservation projects
  - Projects:
    - *Energy Project Database:* Create an accessible energy control measures database.
    - *Energy Efficient KSC Labs:* Perform energy audits of the Kennedy Labs and implement cost effective measures to reduce energy intensity.

- Strategy: Increase understanding and use of renewable energy
  - Projects:
    - *Renewable Energy:* Create renewable energy portfolio standards.

- Strategy: Increase employee awareness of unnecessary energy consumption in order to reduce costs
  - Projects:
    - *Energy Use Campaign:* Create an energy campaign to create awareness.
    - *Power Usage Office Policies:* Distribute office policies regarding energy efficiency to employees.

Florida Power & Light's 10 megawatt solar farm on KSC property along State Road 3.

Scope 3 GHG

- Strategy: Cooperate with the Kennedy Space Center Visitor Complex to promote alternative fuel buses
  - Projects:
    - *Study Contract Language:* Evaluate the feasibility of adding a requirement to the Kennedy Space Center Visitor Complex contract to use alternative fuel tour buses.

- Strategy: Optimize the ordering and delivery processes at Kennedy to eliminate redundant deliveries
  - Projects:
    - *Logistics Delivery Routing System:* Study the logistics delivery routing system to promote bulk deliveries.
    - *Logistics Consolidation Study:* Conduct a study on merging government and contractor institutional logistics services.

- Strategy: Seek IT solutions to enable an expanded telework program to reduce employee commuting
  - Projects:
    - *Laptop Computers:* Conduct a study on the feasibility of transitioning desktop computers to laptops.

- Strategy: Increase employee participation in vanpools and carpools to reduce Scope 3 GHG emissions
  - Projects:
    - *Vanpool/Carpool Preferred Parking:* Perform a study to examine the implementation of preferred parking for vanpool/carpool vehicles at major facilities.
    - *Traffic Mapping Study:* Study traffic mapping of vanpool/carpool participants through short commuting surveys to identify CO_2 reductions.
    - *Mobile/Web Phone Application:* Develop an application for facilitating vanpooling/carpooling.
    - *Excess Parking Lot:* Partner with Brevard County to utilize abandoned parking lots for use as vanpool/carpool parking areas.

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4.1.3 Goal-Specific Accomplishments

- Kennedy Space Center's Alternative Fuel Program Manager, Bruce Chesson, was recognized as a 2011 Sustainability All-Star by Green Fleet Magazine.
- Kennedy Space Center projects that have been awarded the Federal Energy Management Program "You Have the Power" award:
  - Energy Projects, FY 2008: Through a Utility Energy Services Contract with Florida Power & Light, Kennedy implemented facility energy modifications that resulted in energy savings of more than 8.4 million kWh and 168,000 therms of natural gas.
  - Life Support Facility, FY 2009: Kennedy's first LEED Silver facility reduces the facility's annual water usage by 45 percent and is 22 percent more energy efficient than the 2005 baseline energy standards.
  - NASA Solar Photovoltaic Partnership, FY 2010: Through an Enhanced Use Lease with Florida Power & Light, Kennedy received a one megawatt photovoltaic power generation system that is estimated to produce 1,803 megawatt-hours and save over $187,000 annually.
  - Vehicle Assembly Building (VAB), FY 2002: Through an Utility Energy Services Contract with Florida Power & Light, Kennedy implemented energy conservation measures including chilled water system redesign and energy efficient lighting upgrades at the VAB. The project saves approximately 8.5 million kilowatt-hours annually.
- Kennedy Space Center recipients of the Federal Energy Management Program "You Have the Power" Award:
  - Samori Ball and Frank Kline – Replaced diesel fueled electricity generators at remote waste management site with a five kilowatt solar photovoltaic system.
  - Dr. Fulin Gui – Optimized operations of HVAC systems in facilities that serve critical spacecraft processing areas with energy conservation measures to avoid $1.5 million in energy costs.
  - Chris Iannello – Implemented energy savings projects that have saved Kennedy more than $250,000 annually.
  - Ruth Ann Strunk – Designed and implemented advanced energy tracking and financial reporting systems that provide reliable energy information that helps the Center save money.

KSC Vehicle Fleet at Beginning of FY 2011	
Sedans Gasoline	29
Sedans AFV	208
Sedans CNG	23
Light Duty Truck Gasoline	124
Light Duty AFV	436
Light Duty CNG	17
Low Speed Electric Vehicles	73
Total Fleet Vehicles	910
Total AFV and Electric Vehicles	**757**
Total Gasoline Vehicles	**153**
Percentage of Alternatively Fueled Fleet	**83%**

Table 1. KSC vehicle fleet composition.

Alternative fuel vehicles roadshow.

Alternative fuel vehicles in front of the VAB.

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4.2 GOAL 2 - High Performance Sustainable Design/Green Buildings

NASA SSPP Goal Description

NASA will comply with the, "Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings (Guiding Principles)," in all new construction, major renovation, or repair and alteration of federal buildings. It will also assess and demonstrate that at least 15 percent of the agency's existing government-owned buildings, agency direct leased buildings, delegated authority leased buildings, and Federal Real Property Profile (FRPP)-reported leased buildings meet Guiding Principles by FY 2015 (5,000 gross square footage threshold for existing buildings and building leases). NASA will demonstrate annual progress toward 100 percent conformance with Guiding Principles for its entire building inventory by 2015 and thereafter. Additionally, NASA will incorporate sustainable practices into agency policy and planning for new federal facilities and leases, and into lease renewal strategies. NASA will demonstrate the use of cost-effective, innovative sustainable building landscape strategies to minimize energy and materials consumption and decrease fertilizer, herbicide, and pesticide application. NASA will operate and maintain its buildings in a manner that reduces energy, water, and material consumption, while achieving a net reduction in agency deferred maintenance costs. NASA will optimize the performance of the agency's real property portfolio by disposing and consolidating excess and underutilized property, co-locating field offices, consolidating activities across metropolitan and regional locations, increasing telework opportunities, and expanding internet or electronically delivery services. Lastly, NASA will conserve, rehabilitate, and reuse historic federal properties, using current technology and best practices.

KSC SP Goal Description

Kennedy Space Center will meet or exceed the agency's High-Performance Sustainable Design/Green Building goals by working towards achieving 100 percent fully sustainable (zero net resource use) facilities, reducing or consolidating unnecessary infrastructure and implementing construction standards for sustainable building design across the Center. Kennedy will achieve these goals by developing recurring plans to reduce and recover energy. In addition, Kennedy will decrease water consumption across the Center. Kennedy's immediate goals to achieve zero net resource use include:

- 5 percent of existing buildings meeting the Guiding Principles by FY 2013
- 20 percent of existing buildings meeting the Guiding Principles by FY 2016
- Design all new facilities to meet LEED Gold or better, with a goal to maximize energy efficiencies points in the LEED standard by FY 2016

4.2.1 Current State

Kennedy Space Center is conducting comprehensive facility evaluations to identify opportunities for reducing energy and water consumption. The Center is also conducting Facility

Aerial view of the Propellants North facility.

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Condition Assessments (FCAs) that will evaluate the condition of facility systems and will reveal investment opportunities that contribute both to O&M reduction, as well as, energy and water efficiencies. Currently, Kennedy's baseline design requirements call for new facilities to achieve a Leadership in Energy and Environmental Design (LEED) Silver certification from the U.S. Green Building Council (USGBC) at a minimum.

- Kennedy has two facilities currently seeking LEED Gold certification for new construction
  - Fuel Storage Area #1 Propellants South Facility and the Ordnance Operations Facility
- Kennedy has one facility currently seeking LEED Silver certification for Existing Buildings: Operations & Maintenance (EBOM)
  - Operations Support Building (OSB) II
- Kennedy has one facility seeking LEED Silver certification for commercial interiors
  - Operations and Checkout (O&C) Facility

4.2.2 Strategies and Projects

- Strategy: Enhance Kennedy Space Center's energy data capture efforts in order to recognize efficiencies and increase understanding of energy usage
  - Projects:
    - *Provide Hands-On Facility Audit Experience:* Utilize existing internship and/or co-op programs to train students on using audit equipment to walk down facilities or systems to ensure efficient operations.
    - *Comprehensive Campus Trending Software Package Study:* Identify and procure software with the ability to provide energy usage trends and visualizations.
    - *Real-Time Electric Consumption Displays:* Develop requirements and review existing software/network capabilities to transfer data from the Kennedy Complex Control System (KCCS) and Automated Utility Data Reporting Information System (AUDRIS) to new displays that will show real time energy consumption at major facilities.

- Strategy: Audit the energy impacts of facility operations and systems throughout the Center in order to increase employees' understanding of energy impacts across various systems

Interior design of Propellants North.

  - Projects:
    - *Facility HVAC Set-Point Standardization and Audit:* Produce a standard thermostat set-point for various occupancy types and implementation of standards through existing base contractor audits.
    - *Comprehensive Lighting Technology Study:* Evaluate available lighting technologies, with the intent to reduce electrical consumption and heat generation.

- Strategy: Meet or exceed the goals within the Guiding Principles put into place by the O&M group in an effort to promote cost savings and increase efficiencies across the Center

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- Projects:
  - *Guiding Principles:* This project will create a Kennedy Space Center definition of the Guiding Principles and create a checklist for assessing Guiding Principles at Kennedy facilities.
  - *Sustainable Building and Retro-Commissioning Process:* Develop a Kennedy specific retro-commissioning process and a formal prioritized plan for implementation at all applicable facilities.
  - *Retro-Commissioning Training Program:* Develop and implement a training program to educate facility and O&M engineers in principles and practical applications of retro-commissioning.
  - *LEED EBOM Certification:* Retro-commission the Operations Support Building (OSB) II with the intent to achieve a LEED EBOM certification.

- Strategy: Optimize O&M processes to position the Center to make more efficient use of its resources
  - Projects:
    - *Standardize Equipment Specifications:* Develop detailed specifications for the standardization of component equipment (e.g. control systems).
    - *Automated Predictive Equipment Study:* Study the feasibility of implementing an automated predictive equipment condition monitoring system.

- Strategy: Develop a multi-phased plan for the construction of new facilities to eliminate or reduce the negative environmental impacts of buildings, improve building performance, reduce long-term O&M costs, and increase worker productivity
  - Projects:
    - *Sustainable Design Kennedy Documented Procedure (KDP) Flowchart:* Visually identify a process of when, where, and how to refer to sustainable policies and procedures for project formulation, implementation and closeout.
    - *Sustainable Design Checklist and Statement of Work Enhancements:* Ensure resource-efficient methods are being observed during the project design phase including enhancements to the current contractor statements of work to increase sustainable practices.
    - *Modify Kennedy Space Center's Existing Lessons Learned Database:* Ensure that any sustainable practices that were successful (or unsuccessful) in the past will be made available for future use.

4.2.3 Goal-Specific Accomplishments

- On August 24, 2011, Kennedy Space Center received its first USGBC LEED Platinum facility rating for the Propellants North Administration and Maintenance Facility. The project included over 80 kilowatts of solar arrays installed which enabled the facility to become Kennedy's first zero net energy facility.
- In 2009, the Life Support Facility received a LEED Silver certification.
- On October 26, 2011, the Electrical Maintenance Facility received USGBC LEED Gold certification.

Ordnance Operations Facility.

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4.3 GOAL 3 – Water Use Efficiency and Management

NASA SSPP Goal Description

NASA will reduce potable water consumption intensity by at least 26 percent prior to FY 2020 by identifying and implementing water reuse management strategies. The agency will also reduce industrial, landscaping, and agricultural water consumption use by at least 20 percent in the same timeframe. NASA also aims to achieve the objectives established by the Environmental Protection Agency (EPA) in the Stormwater Management Guidance for Federal Facilities. Additionally, NASA will strive to incorporate appropriate reduction strategies for non-potable water use into agency level policy and planning.

KSC SP Goal Description

Kennedy Space Center will reduce overall water use by 40 percent on Center by FY 2020. The Center will continue to comply with, and strive to exceed, the agency's water use efficiency and management goals by implementing strategies incrementally. Further, the Center will continue to act in accordance with the stormwater management guidance provided. Kennedy will achieve these goals by pursuing the following:

- 15 percent reduction in overall potable water consumption (to include landscaping water and water that is not metered separately) by FY 2013.

4.3.1 Current State

Kennedy is currently conducting a multi-phase water distribution system revitalization project that includes components such as, a center-wide leak detection analysis, pipe cleaning and repairs, installation of water meters, partial segregation of fire and potable water systems, and pipeline replacements. Kennedy also has proactively begun installing low flow fixtures in facilities, as needed, and has procurement processes in place requiring their use.

4.3.2 Strategies and Projects

- Strategy: Gather information and educate employees on water use at Kennedy Space Center
  - Projects:
    - *Water Use Center-wide Educational Campaign:* Host a center-wide educational program that will inform the workforce on ways to reduce water consumption.
    - *Installation of New Facility Water Meters:* Install water meters in new facilities to enhance data gathering and monitoring for improvements in water use, leak detection, and problem awareness.
    - *Database of All Water Meters, Sub-meters, and Historical Use Data:* Develop a database to collect and analyze historical water usage for all meters, and create trends to track progress and anomalies.

- Strategy: Reduce the demand on the water system by focusing on the primary water users and develop specific projects to reduce their water utilization at the point of consumption
  - Projects:
    - *Installation of Low Flow Fixtures:* Expand upon the current procurement approach by requiring all new or replaced fixtures meet low flow designation guidelines.

Water meter attached to backflow preventer.

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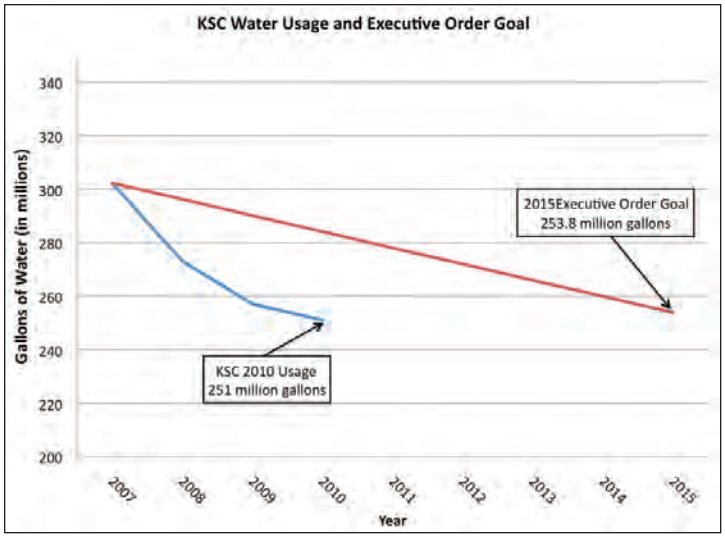

Figure 2. KSC annual water usage.

Kennedy utilizes elevated water storage tanks for emergency situations.

- *Irrigation Reduction and Xeriscaping:* Utilize xeriscaping and rainwater harvesting to reduce the need for potable water usage for landscaping. Additionally, Kennedy will study the feasibility of using stormwater harvesting for irrigation needs at the KSC Visitor Complex.

- Strategy: Reduce flushing through water distribution system alterations
  - Projects:
    - *Revitalize Water and Waste Water Systems Phase 2 - Construction:* Complete the second phase of the Revitalize Water and Waste Water Systems project to improve the reliability and maintenance of Kennedy's water systems. This project entails enhancing water metering, creating a water circulation loop, and installing a new water quality analyzer at the Center.
    - *Revitalize Water and Waste Water Systems Phase 3 - Construction:* Begin construction on the third phase of the Revitalize Water and Waste Water Systems project to greatly reduce water flushing throughout Kennedy by establishing a water recirculation loop, installing small diameter parallel potable water piping, and reducing the water main pipe diameter. Additionally, automated flushing systems will be installed to achieve improved water quality.
    - *Revitalize Water and Waste Water Systems Phase 4 - Design:* Design the fourth phase of the Revitalize Water Systems project to continue water main size reductions at various locations in order to reduce flushing requirements and enhance water quality.

4.3.3 Goal-Specific Accomplishments

- Kennedy Space Center has completed Phase 1 of its multi-phase Revitalize Water and Waste Water Systems Project which included conducting center-wide research and analyses on leak detection and pipe corrosion.
- Kennedy Space Center has reduced water consumption by 14 percent from a FY 2007 baseline year.

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4.4 GOAL 4 – Pollution Prevention and Waste Management

NASA SSPP Goal Description

NASA is committed to decreasing the volume of materials placed in the waste stream through source reduction of pollutants and waste. NASA's goal is to divert 50 percent of construction and demolition (C&D) debris along with 50 percent of non-hazardous solid waste by FY 2015. To achieve these goals, NASA is increasing compostable and organic material diversion and reducing printing paper usage. A reduction in acquisition, use, and disposal of hazardous chemicals and materials will be coupled with an increased use of acceptable alternative chemicals and processes to promote waste stream diversion and assist in FY 2020 GHG reduction targets.

KSC SP Goal Description

Kennedy Space Center will work diligently to meet the agency's Pollution Prevention and Waste Management goals. Additionally, the Center has a long-term vision of achieving zero solid waste disposal by FY 2021, excluding hazardous waste. Kennedy will achieve these goals by:

- Diverting 50 percent of non-hazardous solid waste (excluding C&D materials and debris) by FY 2013
- Diverting 50 percent of C&D materials and debris by FY 2013
- Reducing 15 percent of chemicals used by the NASA chemistry labs by FY 2013

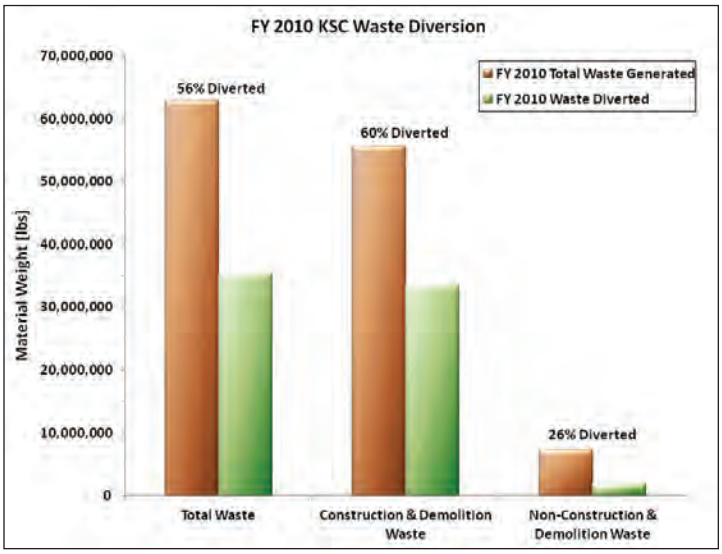

Figure 3. FY 2010 waste diversion.

4.4.1 Current State

Kennedy Space Center has an extensive set of waste diversion programs that include C&D and non-C&D materials. The Center continually seeks innovative ways to increase recycling and reuse rates. A portion of Kennedy's FY 2010 diversion figures are noted in Figure 3:

4.4.2 Strategies and Projects

- Strategy: Reduce paper usage center-wide
  - Projects:
    - *Electronic Procurement Process:* Study the ability to establish an electronic acquisition process to include the ability to receive electronic proposals.
    - *Hard Copy Reductions Center-wide:* Review guidance and procedures to determine processes to reduce printing.
    - *Paper Reduction Communication Campaign:* Initiate a promotional campaign throughout Kennedy Space Center to encourage paper reduction and to utilize double-sided printing.
    - *Webinars and Videoconferencing:* Educate center employees on the use of webinars and videoconferencing for paperless training and meetings.
    - *Paperless Benchmarking:* Benchmark paperless operations and archiving in order to find ways to implement electronic processes at Kennedy.

- Strategy: Explore diversion methods in the idle property disposal process to reduce Kennedy's waste stream volume
  - Projects:
    - *Idle Property Education Program:* Create an online educational program for property custodians and procurement officers to identify available excess property prior to its external acquisition.
    - *Excess Equipment Donation Partnership:* Pursue an agreement with GSA through the Stevenson-Wydler Technology Innovation Act of 1980 to increase donations of excess equipment to educational institutions.
    - *Office Supply Reutilization Program:* Formalize a reutilization program to screen idle office supplies for use in the Kennedy Space Center Swap Shop.

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Shuttle launch pad 39B deconstruction.

- *Transformer Recycling Contract:* Pursue a contract to recycle electrical transformers rather than disposal of non-compliant transformers through hazardous waste.

- Strategy: Reduce the chemical volume introduced into the Kennedy Space Center waste stream though chemical consolidation, right-size ordering, and use efficiencies
  - Projects:
    - *Center-wide Chemical Inventory Consolidation Study:* Initiate a study to determine the most frequently used and wasted chemicals at Kennedy. The study will be the initial work necessary for chemical inventory consolidation in the future.
    - *Improved Chemical Utilization-NASA Labs:* Initiate a chemical consolidation program among NASA managed labs to educate users on right-size chemical procurement and use methods.

- Strategy: Consolidate redundant institutional logistics services with the intent of expansion to other programs across the Center
  - Projects:
    - *Institutional Logistics Consolidation Study:* Determine the effectiveness of consolidating institutional logistics services such as shipping, receiving, and delivery.
    - *Inventory Control Point Study:* Perform a study for an Inventory Control Point concept where commonly used institutional items and chemicals will be stored in a centralized location for use by both NASA and contractors.

- Strategy: Increase Kennedy's solid waste diversion rate by developing a compostable and organic material recovery program
  - Projects:
    - *Composting Facility Study:* Perform a study to identify the economic benefits of an onsite composting facility.
    - *Compostable Study:* Study what components of the Kennedy waste stream are compostable to help with economic analysis of a center composting facility.
    - *Community Partnering:* Partner with local communities on a feasibility study for the development of a centralized composting facility.

- Strategy: Develop new practices and infrastructure to increase Kennedy Space Center's solid waste diversion rate, for C&D and non-C&D waste streams
  - Projects:
    - *Material Recycling Facility Study:* Perform a study to determine the feasibility and cost effectiveness of the creation of a Material Recycling Facility which would serve as a central recycling facility for Kennedy.
    - *Tipping Fee:* Study the use of charging "tipping fees" at the Kennedy landfill to encourage projects and programs to segregate waste streams and divert waste from the landfill.

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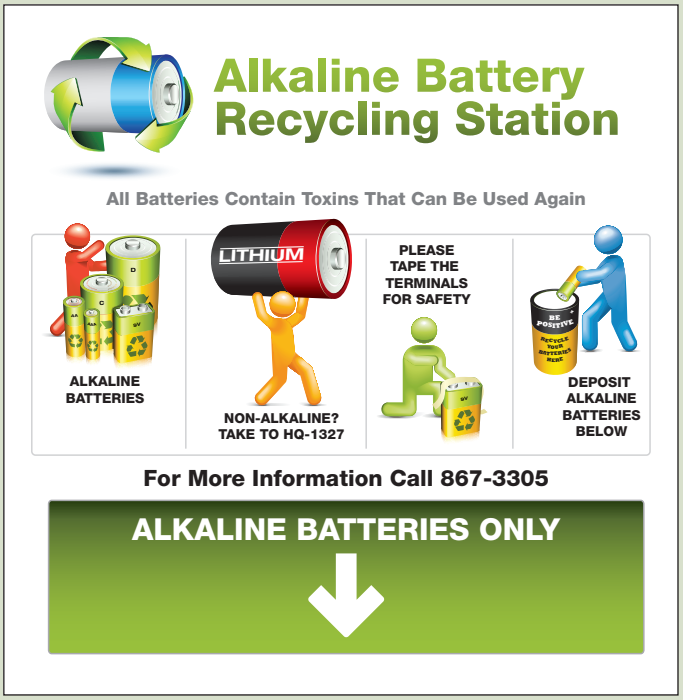
- *Recyclable Product Expansion:* Investigate opportunities for recycling items such as batteries, ceiling tiles, carpet, insulation, glass and plastic not already included in the current glass, aluminum, plastic recycling program (GAP).
- *Federal Acquisition Regulation (FAR) Update:* Pursue an update to the FAR to allow direct donation to private entities (e.g. Habitat for Humanity).
- *Phonebook Elimination:* Investigate methods to eliminate phonebook production to reduce excessive printing.

4.4.3 Goal-Specific Accomplishments

- An informational campaign has been initiated to advertise the excess property databases and promote "Excess is the First Source of Supply."
- A study has been initiated to identify materials in the Kennedy Space Center office environment and cafeteria waste streams that can be targeted for recycling.
- In May 2011, KSC initiated a new paper recycling process to handle records destruction from the Space Shuttle Program Transition and Retirement (T&R). It is anticipated that the new process will recover 671,000 lbs. of fiber by the end of 2011.
- Office supplies recovered from the closeout of the Space Shuttle Program have been donated to local educational institutions.
- The shorewall revetment project along the NASA Causeway was completed with used concrete diverted from several center demolition projects.
- Crawlerway rock, collected from refurbishment activities, is being used as landscaping material across Kennedy.

Demolition debris from the Mission Control Center.



Artwork for Alkaline Battery Recycling Station.

Demolition debris from the Vertical Processing Facility.

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4.5 GOAL 5 – Sustainable Acquisition

NASA SSPP Goal Description

NASA is committed to increasing the use of environmentally preferred products, chemicals, and processes. Accordingly, NASA will strive for 95 percent of new contract actions to utilize products and services that are energy efficient, water efficient, biobased, non-toxic or less toxic, environmentally preferable, non-ozone depleting, or made with recycled content. NASA will also update its purchasing plans, policies, and programs to include additional environmentally preferable practices ensuring federally mandated sustainable products and services are included in all relevant acquisitions.

KSC SP Goal Description

Kennedy Space Center will work diligently to meet the outlined agency acquisition goals by modernizing and streamlining its current acquisition process to assure environmentally preferable products and services are procured. Kennedy will achieve these goals by pursuing the following:

- Perform a feasibility study for the creation of a centralized requisition office by FY 2013.
- Educate and train 100 percent of credit card holders and 30 percent of contract specialists by FY 2013.
- Perform audits of 20 percent of all credit card transactions to reinforce green purchasing practices by FY 2013.
- Monitor acquisitions to measure performance against 95 percent sustainability goal in FY 2012 and FY 2013.
- 75 percent of uncoated printing and writing paper purchased at Kennedy will contain 50 percent postconsumer fiber by FY 2013.

4.5.1 Current State

Kennedy Space Center's acquisition process is governed by the FAR and the NASA FAR Supplement which outline regulations congruent with Executive Order (EO) 13514. Statements of work are written to prefer sustainable materials in Kennedy construction designs. Kennedy's FY 2010 environmentally preferred purchases can be seen in Figure 4.

4.5.2 Strategies and Projects

- Strategy: Increase sustainable purchasing awareness and provide practical resources to encourage the purchase of environmentally preferred products and services
  - Projects:
    - *Acquisition Communication Campaign:* Initiate a communication campaign to educate the Kennedy community on current purchase regulations involving the use of environmentally friendly products and services.
    - *Purchasing Resource Guide:* Develop a resource guide to educate personnel on tools available to simplify the search for environmentally friendly products prior to purchase.
    - *Environmentally Friendly Supplier List:* Compile a list of known environmentally friendly suppliers for commonly used items to increase ease of source identification.
    - *Training for Acquisition Staff:* Create a training module to educate and train purchasers on available energy efficient, recycled products, and current green guidance regulations.

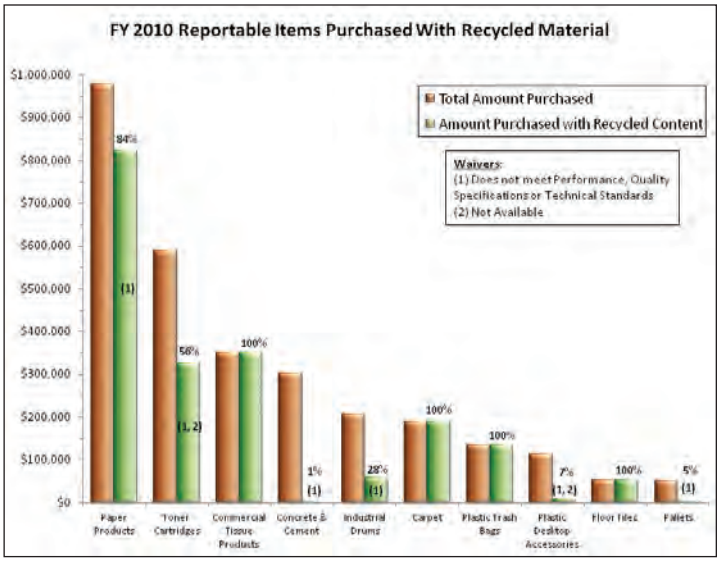

Figure 4. FY 2010 sustainable purchases.

- Strategy: Develop a method to monitor acquisitions in order to measure environmentally preferred procurement progress
  - Projects:
    - *Data Program:* Analyze contract actions for compliance with 95 percent sustainable acquisition goal

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Newly acquired solar panels are prepared for installation.

- Strategy: Modify the Kennedy Space Center acquisition process to assist purchasers in identifying sustainable goods and services
  - Projects:
    - *Bankcard Purchasing Procedure Update:* Perform an update to Kennedy Documented Procedure, KDP-KSC-P-1652: Bankcard Application, Acquisitions and Cancellation Process for Noncontracting Personnel, to add a list of databases of existing resources for product acquisition so as to discourage personnel from procuring new equipment from external sources.
    - *Environmental Waiver Requirement Update:* Update the environmental waiver criteria for purchases.
    - *Centralized Requisition Office Proposal Team:* Form a team to conduct a study for a centralized requisition office concept to aide purchasers in the acquisition of environmentally preferred products and services.
- Strategy: Increase use of uncoated printing and writing paper containing postconsumer fiber
  - Projects:
    - *Postconsumer Fiber Paper Contract Language:* Establish a team to review existing contractual language and establish new contract language to increase post consumer fiber content in uncoated printing and writing paper.
    - Postconsumer Fiber Paper Study: Investigate use of 50 percent post consumer content fiber in all print centers in lieu of virgin paper.

4.5.3 Goal-Specific Accomplishments

- Section 2 of the NASA Form 1707 (Special Approvals and Affirmations of Requisitions) was updated to include a more extensive environmental checklist and includes links to resources for environmentally friendly products and services.
- An informational email was distributed to purchase card holders notifying them of NASA SSPP guidance and goals for sustainable purchasing practices.
- General Services Administration (GSA) and KSC GREEN product databases were distributed to purchase card holders.
- A method of coding environmentally friendly products for purchase card acquisitions was established.
- Since 2008, more than 5,500 Energy Star compliant computers have been deployed with EPEAT-Gold rated CPUs and monitors.

Workers place R-40 rated insulation material on the roof of one of the Propellants North Administrative and Maintenance Facility buildings.

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4.6 GOAL 6 – Electronic Stewardship and Data Centers

NASA SSPP Goal Description

The NASA SSPP outlines many objectives regarding electronic stewardship and data centers. The agency has set a goal to ensure the acquisition of Electronic Product Environmental Assessment Tool (EPEAT) registered, Energy Star qualified, and Federal Energy Management Program (FEMP) designated electronic office products when procuring electronics in eligible product categories. The agency has also set goals to reduce energy consumption of data centers and increase the quantity of electronic assets disposed of through sound practices, among other environmentally advantageous practices concerning technology.

KSC SP Goal Description

Kennedy Space Center holds a vision to become an agency leader in electronic stewardship. To achieve this goal, the Center will consolidate its data center resources. The Center will also realize energy savings by employing a communication system in which all telephones use Voice over Internet Protocol (VoIP) technology and include settings to reduce power consumption during off hours. Kennedy's vision is to have all electronic products used on Center meet federal requirements for electronic stewardship. The Center will achieve these goals by accomplishing the following:

- 8 percent of telephones are VoIP and have settings to reduce power during off-hours by FY 2013
- Consolidate data centers into one "purpose-built" data center facility

KSC utilizes a significant quantity of electronics equipment.

4.6.1 Current State

Kennedy Space Center is working towards its goal of becoming an agency leader in electronic stewardship. To support that goal, the Center is working to consolidate and right-size its data center infrastructure to reduce energy wasted by powering and cooling excess hardware. Kennedy is leading the way in the Agency Consolidated End-user Services (ACES) contract deployment by working to replace all existing Outsourcing Desktop Initiative for NASA (ODIN) desktop, laptop, and workstation computers with new energy-efficient computing seats. Since 2008, as required by Executive Order (EO) 13423, all desktop and laptop computers, leased by NASA via the ODIN contract, have met the IEEE 1680 American National Standard for the Environmental Assessment of Personal Computer Products. In addition, the Center is working to replace all network printers and multi-functional devices with environmentally responsible new peripherals. Kennedy has started the process of upgrading its communication systems by installing low power VoIP telephones and will increase the number of installations annually.

4.6.2 Strategies and Projects

- Strategy: Inventory and categorize all of the IT hardware on center
  - Projects:
    - *Data Center Hardware Inventory:* Inventory the IT infrastructure and hardware at Kennedy Space Center by using the NASA property management system and any other available tools.
    - *Data Center Consolidation Planning:* Categorize candidates into short, mid, and long term consolidation timeframes.
    - *Data Center Hardware Consolidation and Catalog:* Begin consolidation of short term candidates, then build a data center services catalog and cost model.

- Strategy: Decrease energy and resource usage in the computing environment
  - Projects:
    - *Acquisition of Energy Efficient Computing Systems and Peripherals:* Replace all existing ODIN desktop, laptop, and workstation computers with new energy efficient computing seats. Replace all network printers and

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multi-functional devices with environmentally-responsible new peripherals that include the following features: duplex printing, secure printing, black and white printing by default, automatic display shutdown and CPU hibernation.
    - *ENERGY STAR Features:* Enable ENERGY STAR and other environmentally preferable features on all eligible electronic products provided by ACES.

- Strategy: Expand recycling and reuse capabilities for electronics and computers
    - Projects:
        - *Disposal of Computing Systems and Peripherals:* Establish a recycling agreement with an electronics recycler.
        - *New Computer Contract Requirements:* Establish mandates in new computer contracts that all desktop, laptop, and workstation computers be donated to non-profit organizations after end-of-life (i.e. three years).

- Strategy: Install VoIP telephones in all new and refurbished facilities
    - Projects:
        - *Engineering Solution to Reduce Phone Power Use During Off Hours:* Work with vendors to develop configuration standards for VoIP phones to reduce power usage during off hours.
        - *VOIP Phone Conversion (Communications Distribution and Switching Center CD&SC):* Design and implement a VoIP solution for CD&SC.
        - *VOIP Phone Conversion (OSB II):* Design and implement a VoIP solution for the Operations and Support Building II (OSB II).
        - *VOIP Phone Conversion (SSPF):* Design and implement a VoIP solution for the Space Station Processing Facility (SSPF).

4.6.3 Goal Specific Accomplishments

- The Kennedy Space Center Headquarters Building, through data center consolidation, freed up over 4,000 square feet of space previously used by data center resources, and realized an estimated power consumption savings of over $100,000.

Firing Room 4 in the Launch Control Center.

Mission Directors Center in Cape Canaveral Air Force Station's Hangar AE.

Launch Vehicle Data Center-1 in Cape Canaveral Air Force Station's Hangar AE.

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4.7 GOAL 7 – Regional and Local Planning

NASA SSPP Goal Description

NASA will incorporate regional transportation planning into existing policy and guidance. The agency will increase effectiveness of local energy planning and incorporate sustainable building location into policy and planning for new Federal facilities and leases. NASA will update policy and guidance to ensure that all Environmental Impact Statements (EIS) and Environmental Assessments (EA) required under the National Environmental Policy Act (NEPA) for proposed new or expanded Federal facilities, identify and analyze impacts associated with energy usage and alternative energy sources. In addition, the agency will update policy and guidance to ensure coordination and consultation with federal, state, tribal and local management authorities regarding impacts to local ecosystems, watersheds and environmental management associated with proposed new or expanded federal facilities and support innovation in NASA programs and institutions to protect and enhance human health and the environment.

KSC SP Goal Description

Kennedy Space Center is committed to supporting initiatives outlined in the NASA SSPP. In addition, the Center will strive to ensure all government and commercial users will meet Kennedy's annual sustainability initiatives by 2022. The Center will achieve these goals by pursuing the following:

- Update the Kennedy Space Center Master Plan by 2012.

4.7.1 Current State

Kennedy Space Center's Center Planning and Developing Office is developing the latest version of the Master Plan (MP). The original MP was released in 2002. The updated MP will contain significant changes in land use development and business policies to enable both government and commercial use of Kennedy Space Center in a sustainable manner.

4.7.2 Strategies and Projects

- Strategy: Identify underutilized land and facilities at Kennedy Space Center in order to create additional use opportunities
  - Projects:
    - *Notice of Availability (NOA):* Post NOA announcements of Kennedy assets in order for commercial entities to lease space on Center and provide services.
    - *Facility Comprehensive Evaluation:* The group will review the current conditions of select facilities based on NASA program and commercial requirements in order to provide justification for facility utilization, recapitalization and upgrades as required.

- Strategy: Review Kennedy Space Center's commercial and government policies to increase compliance with sustainability initiatives
  - Project:
    - *Sustainability Assessments:* Identify commercial and government entities not compliant with the Center's sustainability vision and MP goals. A preferred course of action will be communicated to those entities to ensure Center contracts and processes are in alignment with sustainability initiatives.

4.7.3 Goal-Specific Accomplishments

- The Kennedy Space Center Master Planning Group has posted NOAs to advertise available center infrastructure assets following the end of the Space Shuttle Program. This has provided the commercial sector opportunities to lease space at Kennedy.

Aerial view of the Launch Complex 39 future concept.

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4.8 GOAL 8 – Workforce Satisfaction

NASA SSPP Goal Description

The NASA SSPP currently does not have a Workforce Satisfaction goal. Kennedy has added this element to our plan in order to address the social aspect of sustainability.

KSC SP Goal Description

Kennedy Space Center will increase workforce satisfaction by addressing the social element to acquire a sustainable environment. The Workforce Satisfaction Group's long term goal is to achieve 100 percent employee satisfaction with the Center's investment in sustainable initiatives by 2022. Kennedy will achieve these goals by pursuing the following:

- Survey the Kennedy workforce to identify current satisfaction levels by FY 2013.
- Draft performance standards describing sustainable behavior to be used by Center supervisors in the employee performance communication system by FY 2013.

4.8.1 Current State

In 2011, Kennedy Space Center created the Workforce Satisfaction Working Group to develop and facilitate sustainability initiatives that contribute to the productivity, motivation, and morale of the Center workforce.

4.8.2 Strategies and Projects

- Strategy: Identify current satisfaction levels at Kennedy Space Center through the use of multiple feedback tools
  - Projects:
    - *Annual Surveys:* Create and administer an annual survey to capture the workforce's opinions on sustainability and its presence at Kennedy.
    - *Employee Viewpoint Survey:* Analyze existing Employee Viewpoint Survey (EVS) data to determine improvement opportunities and use sustainability initiatives to address these opportunities when appropriate.
    - *Focus Groups:* Facilitate focus groups at Kennedy to foster communication, voice workforce concerns, and provide information on sustainability initiatives.

KSC holds an educational event for employees.

- Strategy: Research other leading federal agency and industry practices related to workforce satisfaction
  - Project:
    - *Benchmark:* Identify other agencies and commercial industries with proven employee satisfaction ratings in sustainability, to study their innovative methods in cultivating a sustainability-conscious workforce.

- Strategy: Incorporate sustainability values into employee performance management
  - Project:
    - *Performance Management:* Recommend performance standards that may be incorporated into employee performance plans to encourage sustainable behaviors.

4.8.3 Goal-Specific Accomplishments

- The Workforce Satisfaction Group, using the 2010 Employee Viewpoint Survey, has identified opportunities to implement sustainability projects in order to fill workforce satisfaction gaps.

Recycling and composting station at the KSC All-American Picnic 2011.

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4.9 GOAL 9 – Food Services

NASA SSPP Goal Description

The NASA SSPP currently does not have a Food Services goal. Kennedy has added this element to our plan in order to address the social aspect of sustainability.

KSC SP Goal Description

The goal of the Food Services Team is to establish a sustainable food service architecture that will:

- Introduce a self-sufficient and sustainable food service structure.
- Utilize concessionaire(s) to provide complementary services to employees.
- Boost employee morale and maintain employee effectiveness.
- Increase cafeteria and snack bar usage, which will ultimately generate revenue.
- Provide a food service environment that will help Kennedy promote and/or build partnerships with private industry.

Space Shuttle appreciation luncheon in the VAB.

4.9.1 Current State

The Food Services Team is currently researching and benchmarking sustainable practices, initiatives, and language to include in the next food services concession agreement to begin October 1, 2012.

4.9.2 Strategies and Projects

- Strategy: Engage the Kennedy Space Center community on food service preferences in order to meet the needs of the Center and boost employee morale
  - Project:
    - *Customer Focus Group:* Conduct focus groups, using sample populations of the workforce, to better understand customer food service preferences.

- Strategy: Benchmark food services programs at other NASA centers and private industry
  - Projects:
    - *Benchmark NASA Centers:* Benchmark the food service architecture of other NASA centers, including Johnson Space Center, Langley Research Center, and Goddard Space Flight Center, to understand best practices.
    - *Benchmark Non-Governmental Industry:* Benchmark the food service architecture of the University of Central Florida, University of South Florida, and Lockheed Martin to understand best practices.

- Strategy: Integrate sustainable principles in baseline food services contract mechanisms
  - Projects:
    - *Sustainability Requirement Development:* Develop food service sustainability requirements to be included in the Statement of Work and Request for Proposal documentation.
    - *Concessionaire Sustainability Plan Review:* Request and review prospective concessionaires' sustainability plans.

4.9.3 Goal-Specific Accomplishments

- The Food Services Team distributed a survey to the Center workforce to ascertain employee food service preferences.
- Paper cups and plastic utensils are 100 percent compostable and biodegradable. Napkins are made from 100 percent recycled fiber and use a bleach-free process. Green chemical products used for dishwashing saved $1,500 in FY 2010. Cafeterias put waste into pulping machines to reduce volume by 90 percent and weight by 50 percent.

KSC cafeterias utilize biodegradable and compostable products.

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4.10 GOAL 10 – Natural Resources

NASA SSPP Goal Description

The NASA SSPP currently does not have a Natural Resources goal. Kennedy has added this element to our plan in order to address the environmental aspect of sustainability.

KSC SP Goal Description

Kennedy Space Center is committed in maintaining a thriving environment for the hundreds of species that inhabit the Center. The long-term goal of the team is to ensure continued viable habitat for threatened and endangered species while assuring continued access to the area. Kennedy will achieve these goals by pursuing the following:

- Initiate a Shoreline Renourishment Project in the LC-39 area, completing the biological assessment and National Environmental Policy Act (NEPA) required environmental assessment (EA) by FY 2013.
- Formalize the process of planning and implementing improved habitat management at Kennedy for endangered species by FY 2013.

4.10.1 Current State

Kennedy Space Center is dominated by undeveloped lands. Uplands, wetlands, mosquito control impoundments, and open water areas, comprise approximately 95 percent of the total Center area. Nearly 40 percent of Kennedy consists of open water areas of the Indian River Lagoon system including portions of the Indian River, the Banana River, Mosquito Lagoon and all of Banana Creek. Approximately 25 percent of the total land area is upland.

NASA maintains dedicated operational control over 4,415 acres of Kennedy which includes areas such as the Shuttle Landing Facility, the Industrial Area and the Vehicle Assembly Building (VAB) area.

The 135,225 acres outside of NASA's operational control are managed by the United States Fish and Wildlife Service's (USFWS) Merritt Island National Wildlife Refuge (MINWR) and the National Park Service's (NPS) Canaveral National Seashore (CNS). The MINWR manages the majority of the lands and manages all prescribed fires on Kennedy. The MINWR and KSC work together to maintain the shoreline adjacent to LC-39 from persistent erosion forces and to protect the Florida scrub-jay habitat through prescribed fire. Both the CNS and MINWR partner with Kennedy in our efforts to sustain the natural habitats on Center, including the current Shoreline Renourishment Project and the Fire Action Team.

4.10.2 Strategies and Projects

- Strategy: Define an initial fire plan for a specific habitat and wildlife species. Identify target species and areas to monitor
  - Projects:
    - *Fire Action Team:* Establish Fire Action Team Working Group to formalize the process of habitat management on Center using controlled burns.
    - *Fire Plan:* Test fire strategies and techniques while monitoring results.

Smoke from a controlled burn at KSC.

- Strategy: Initiate shoreline restoration to ensure viable habitat for threatened and endangered species and reduce launch infrastructure impacts
  - Projects:
    - *National Environmental Policy Act (NEPA) Documentation:* Prepare NEPA documentation to determine the potential environmental impacts of a shoreline restoration and renourishment project.
    - *Environmental Assessments:* Prepare a Biological Assessment (BA) and an Essential Fish Habitat (EFH) assessment for a shoreline restoration project. The assessments will address the proposed action of shoreline protection, to include, sand source location(s), sand placement for beach renourishment,

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Shoreline erosion from Hurricane Jeanne.

Florida scrub-jay.

An alligator utilizes the crosswalk by the Operations and Support Building.

primary and secondary dune reconstruction, and the no-action alternative. Monitoring plan(s) and proposed mitigation plan(s) will be developed if required through consultation with the United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS).

- *Engineering Design:* Complete an engineering design that will assess different shoreline restoration options. The options will be evaluated to determine the most cost effective way to ensure a more stable shoreline.
- *Environmental Permit:* Prepare environmental permit applications for shoreline restoration efforts.

4.10.3 Goal-Specific Accomplishments:

- The Fire Action Team (FAT) was established in April, 2011. Members include habitat managers, fire managers, researchers and project managers from Kennedy Space Center Environmental Management Branch (EMB), Merritt Island National Wildlife Refuge (MINWR), IHA Ecological Program and Cape Canaveral Air Force Station (CCAFS). The FAT was established to formalize the process of habitat management on Center. The general objective is to achieve an adaptive fire management strategy based on scientific research and experience to optimize biodiversity on Center. The first goal of the FAT is to create a favorable habitat environment in specific target areas for the persistence of a protected wildlife species. To date, the team has established an action plan, a target species, (the Florida scrub-jay), and three target areas, (Fire Management Units), in which to begin implementation of the action plan. In August, the MINWR was able to perform the first prescribed burn, in accordance with the action plan, in a subsection of the northern most test unit with successful results.
- Kennedy Space Center constructed a secondary dune along the back dune line adjacent to LC-39 to provide additional shoreline protection between the ocean and launch pads, to provide light shielding for nesting sea turtles and to provide nesting and foraging habitat for the southeastern beach mice. The turtles and beach mice are protected wildlife that Kennedy is responsible for protecting over the long term. The construction and planting of this dune was completed in the Spring of 2011.

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4.11 GOAL 11 – Test Bed and Demonstration-Facilities

NASA SSPP Goal Description

The NASA SSPP currently does not have a Test Bed and Demonstration goal. Kennedy has added this element to our plan in order to address the economic aspect of sustainability.

KSC SP Goal Description

The goal of the Test Bed and Demonstration Team – Facilities (TBDT) is to promote energy conservation, water conservation and pollution prevention initiatives at Center facilities. The TBDT will support the Kennedy Space Center sustainability teams by:

- Working with the other teams, conduct and coordinate pilot projects to test the effectiveness and feasibility of sustainable products considered for large scale implementation in new construction and major renovation projects.
- Document and share the results of pilot test product evaluations with other NASA centers and other governmental organizations.
- Review pollution prevention opportunities and evaluate the effectiveness and feasibility of implementation at Kennedy.
- Identify sustainable products for utilization at Center facilities.

STS-117 solid rocket booster plume trails above the Vehicle Assembly Building.

4.11.1 Current State

The concept for the TBDT sub-team was developed as a result of activities performed in FY 2009 by a predecessor team, the Kennedy Space Center Institutional Service Contract Sustainability Partnering Group. The former group completed multiple pilot projects which were designed to evaluate the performance of sustainable products and systems. A summary of the completed pilot projects is included in the Goal-Specific Accomplishments section.

4.11.2 Strategies and Projects

- Strategy: Develop a comprehensive team charter that defines the role of the TBDT in the Kennedy Space Center sustainability hierarchy
  - Projects:
    - *TBDT Charter:* Write the TBDT Charter to reflect the roles, responsibilities, and deliverables of the TBDT.
    - *TBDT Service Promotion:* Meet with each of the sustainability sub-teams to introduce the TBDT and explain the services provided by the TBDT.

- Strategy: Identify pilot projects that promote Kennedy Space Center's sustainable directive
  - Project:
    - *Identify Sustainable Pilot Projects:* Coordinate with other Kennedy sustainability teams to identify pilot projects that promote the Center's sustainability directive. Pilot(s) will use the Federal High Performance Sustainable Buildings Checklist (Guiding Principles Checklist) where feasible, during the design/planning process.

4.11.3 Goal-Specific Accomplishments:

- Fluorescent lighting systems in separate office locations were replaced with commercial manufacturer lighting systems to examine the energy efficiency of each lighting system. The test systems operated with auto-electronic ballasts that are capable of providing multiple illumination settings within an office area, as well as, auto-adjusting to available ambient light.
- Hand dryers were installed at select restroom locations to evaluate their effectiveness to significantly reduce employee's usage of restroom paper towels.
- Three water-free urinals were replaced with three ultra low-flow urinals to eliminate fixtures from fouling prior to their routine maintenance schedule.

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4.12 GOAL 12 – Communications

NASA SSPP Goal Description

The NASA SSPP currently does not have a Communications goal. Kennedy has added this element to our plan in order to address the social aspect of sustainability.

KSC SP Goal Description

Kennedy Space Center recognizes the importance of sustainability and desires to be a leader within the federal government and the outside community. Kennedy understands social acceptance is a necessary component to sustainability success and will utilize its extensive communication resources to promote within and outside the Center. The sub-team strives to have a well educated and accepting Center workforce of sustainable practices by aiding internal education initiatives. The sub-team also will utilize various media avenues to showcase Kennedy's efforts toward sustainability and demonstrate the benefit of these principles to the outside community.

4.12.1 Current State

Kennedy Space Center communicates sustainability efforts with the NASA workforce through internal newsletters, announcements, fact sheets, educational campaigns, and event promotions. Kennedy coordinates with external organizations, such as congressional delegates, local communities, and media sources, to showcase the Center's sustainability initiatives and progress.

4.12.2 Strategies and Projects

- Strategy: Ensure that the Kennedy Space Center workforce develops an understanding of the meaning and importance of sustainability
  - Projects:
    - *Training:* Introduce an online training course to educate employees on sustainability.
    - *Sustainability Fair:* Host a center-wide sustainability fair, consisting of exhibits, workshops, and vendors.
    - *Electronic Marketing:* Initiate a sustainability campaign through the use of video kiosks, digital signs, and television media.
    - *Newsletter:* Distribute a quarterly sustainability newsletter that provides tips and highlights Kennedy's accomplishments.
    - *Website:* Develop an internal Kennedy sustainability website that will include employee suggestions.

- Strategy: Embed sustainability into the Kennedy Space Center culture
  - Projects:
    - *Contests:* Conduct inter-organizational contests to encourage sustainable practices through friendly competition.
    - *Road Show:* Host a sustainability road show to the various directorates and companies on Center to highlight the different sustainability initiatives at Kennedy.

4.12.3 Goal-Specific Accomplishments

- The Center has implemented a "Sustainability Tip of the Week" that is communicated to all employees.
- Kennedy Space Center has developed a sustainability resource fact sheet that highlights the Center's sustainability initiatives.
- The Center has developed a Comprehensive Sustainability Communications Plan.
- A sustainability slogan and logo were selected through center-wide contests.
- Kennedy, via a center-wide survey, has established a baseline of its workforce's level of knowledge regarding sustainability.
- Public affairs hosted a ribbon cutting ceremony for the Electrical Maintenance Facility (EMF) and a media event for the opening of the Propellants North facility.

KSC Tweetup events are held during launch days.

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Section 5: Conclusion

Kennedy Space Center recognizes that a balance is needed between the use of environmental, social, and economic resources to ensure we preserve today's resources in order to perform our mission tomorrow. With this in mind, strategic sustainability decision-making is needed to ensure we do not diminish or waste these resources.

The 2012 Sustainability Plan lays the foundation for realizing Kennedy's vision to promote, maintain, and pioneer green practices in all aspects of our mission, striving to be an agency leader in everything we do. This plan introduces FY 2012 core team functional area goals in support of achieving Kennedy's sustainability vision, NASA's SSPP goals, and other federal mandates. In summary, this plan will help the Center:

- Reduce greenhouse gas emissions
- Design and build sustainable buildings, facilities and infrastructure
- Conserve and manage water resources
- Minimize waste and prevent pollution
- Purchase sustainable products and services
- Manage electronic equipment and data Centers responsibly
- Integrate sustainability into local and regional planning
- Ensure workforce satisfaction
- Promote sustainable food services
- Conserve and improve the resiliency of our natural resources
- Effectively communicate Kennedy's sustainability initiatives

Multiple bird species call the waters around KSC home.

As Kennedy Space Center embarks on our mission of sustainability, employees at all levels must be responsible and accountable for integrating sustainability into their day-to-day activities to reduce the environmental impact and protect natural resources. With your help, the Center will become a recognized leader in sustainability and an inspiration to other agencies and organizations.

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Appendix 1: Reference Documents

Referenced Documents and Links
NASA Strategic Sustainability Plan
Energy Independence and Security Act 2007
Energy Policy Act 2005
Executive Order 13423 Strengthening Federal Environmental, Energy, and Transportation Management
Executive Order 13514 Federal Leadership in Environmental, Energy, and Economic Performance
NPR 8570.1 Energy Efficiency and Water Conservation
NPR 8820.2F Facility Project Requirements
High Performance Sustainable Building Guiding Principles
NPD 8831.2E Maintenance and Operations of Institutional and Program Facilities and Related Equipment
NPD 6000.1C Transportation Management
KDP-KSC-F2616 KSC Sustainability Steering Committee
Federal Acquisition Regulations (FAR)
NASA FAR Supplement
NPR 8831.2E Facilities Maintenance and Operations Management
NPD 8820.2C Design and Construction of Facilities
NPR 8553.1B NASA Environmental Management System
NPR 8810.2A Master Planning for Real Property
NPR 8810.1 Master Planning Procedural Requirements
NPD 8500.1B NASA Environmental Management
NPR 8530.1A Affirmative Procurement Program and Plan for Environmentaly Preferable Products
NPR 8590.1A Environmental Compliance and Restoration Program
NPD 6000.1C Transportation Management
NPR 6200.1C NASA Transportation and General Traffic Management
NPR 3600.2 NASA Telework Program
NPR 8580.1 Implementing the National Environmental Policy Act and Executive Order 12114
NPD 1000.5A Policy for NASA Acquisition
NPR 8530.1A Affirmative Procurement Process and Plan for Environmentally Preferable Products

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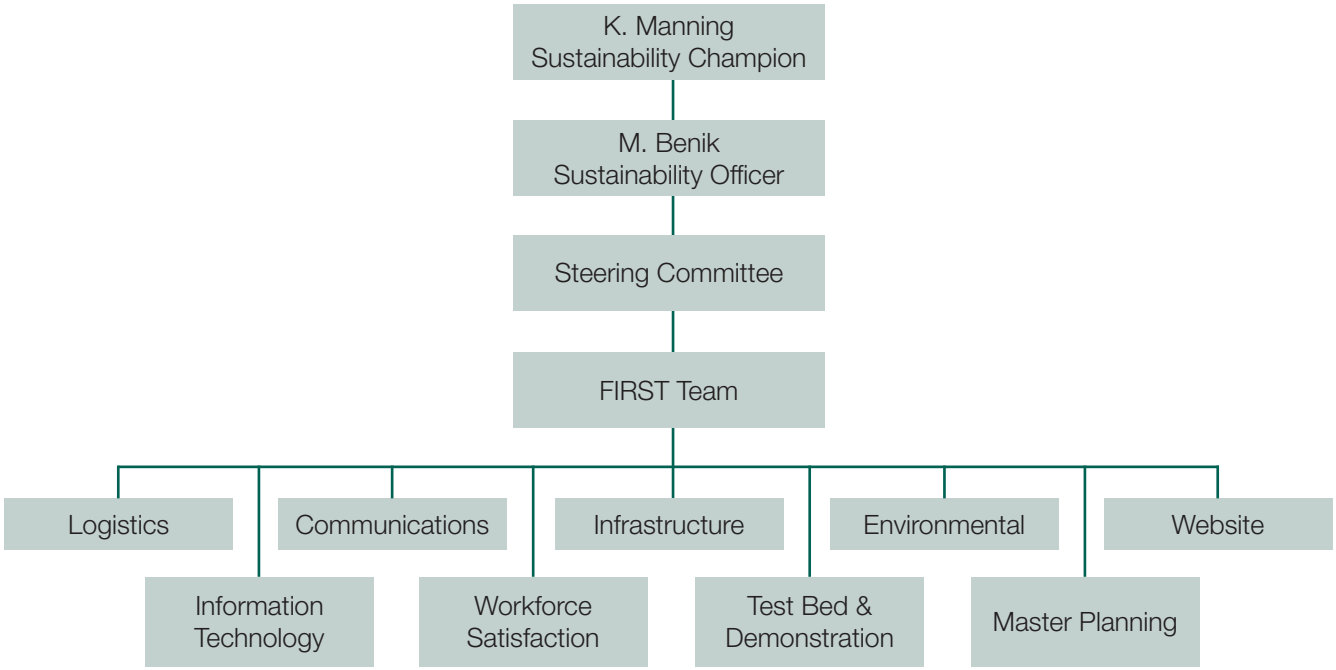
Appendix 2: Sustainability Team Hierarchy

ROLES AND RESPONSIBILITIES

- Kennedy Space Center Sustainability Champion: Advocate for sustainable practices throughout center management and the inclusion of sustainability responsibilities into employee performance plans.
- Kennedy Space Center Sustainability Officer: The Center's representative to the agency regarding all sustainability initiatives at Kennedy.
- Kennedy Space Center Sustainability Steering Committee: Team created to direct the overall strategy and implementation of the sustainability plan, and will report to the champion and officer. The committee also manages the efforts of the sustainability core team working groups.
- Kennedy Space Center Sustainability Core Teams: Leaders from each sustainability plan functional goal area and were established to create sustainability goals, strategies, and projects for their respective areas. The core team will provide periodic reviews of their progress to the steering committee.



Steering Committee

Annette Dittmer—BA
Ben Bryant—IT
Bill Roy—TA
Denise Thaller—TA
Eli Schoen—TA
Ernie Camacho—AA
Frank Kline—TA
Gregg Buckingham—EX
Laura Rochester—OP
Manny Cabrera—TA
Mario Busacca—AA
Tim Griffin—NE
Tracy Young—PA

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Appendix 3: Acronym Listing

ACES:	Agency Consolidated End-User Services
AC:	Acres
AFV:	Alternative Fuel Vehicles
AUDRIS:	Automated Utility Data Reporting Information
BA:	Biological Assessment
C&D:	Construction and Demolition
CPU:	Central Processing Unit
CCAFS:	Cape Canaveral Air Force Station
CDPO:	Planning and Development Office
CD&SC:	Communication Distribution and Switch Center
CNS:	Canaveral National Seashore
EA:	Environmental Assessments
EBOM:	Existing Buildings: Operations & Maintenance
EFH:	Essential Fish Habitat
EIS:	Environmental Impact Statements
EMB:	Environmental Management Branch
EMF:	Electrical Maintenance Facility
EMS:	Environmental Management System
EO:	Executive Order
EPA:	Environmental Protection Agency
EPEAT:	Electronic Product Environmental Assessment Tool
EVS:	Employee Viewpoint Survey
FAR:	Federal Acquisition Regulation
FAT:	Fire Action Team
FCA:	Facility Condition Assessment
FEMP:	Federal Energy Management Program
FRPP:	Federal Real Property Profile
FY:	Fiscal Year
GAP:	Glass, Aluminum, and Plastic
GHG:	Greenhouse Gas
GSA:	General Services Administration
HVAC:	Heating Ventilation and Air Conditioning
IEEE:	Institute Electrical and Electronics Engineers
IHA:	Innovative Health Application
ISC:	Institutional Service Contract
IT:	Information Technology
KCCS:	Kennedy Complex Control System
KDP:	Kennedy Documented Procedure
KSC:	Kennedy Space Center
LC-39:	Launch Complex 39
LEED:	Leadership in Energy and Environmental Design
MINWR:	Merritt Island National Wildlife Refuge
MP:	Master Planning
NASA:	National Aeronautics and Space Administration
NEPA:	National Environmental Policy Act
NMFS:	National Marine Fisheries Service
NPS:	National Park Service
NOA:	Notice of Availability
ODIN:	Outsourcing Desktop Initiative for NASA
OSB:	Operations Support Building
O&C:	Operations and Checkout Building
O&M:	Operations and Maintenance
SO:	Sustainability Officer
SSPF:	Space Station Processing Facility
SSPP:	Strategic Sustainability Performance Plan
SP:	Sustainability Plan
T&D:	Transmission and Distribution
TBDT:	Kennedy Test Bed & Demonstration Team
USFWS:	United States Fish and Wildlife Service
USGBC:	United States Green Building Council
US:	United States
VAB:	Vehicle Assembly Building
VOIP:	Voice over Internet Protocol

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Appendix 4: KSC Sustainability Plan Project Listing

The following is a combined listing of all the projects that were developed for the 2012 Kennedy Space Center Sustainability Plan. The projects listed have a combination of short and long term timelines. Due to the vast number of project submissions, only the Goal Functional Area, Core Team, Point of Contact (POC), and Project Title information are listed.

Goal Functional Area	Core Team	POC	PROJECT TITLE
Greenhouse Gas Management	Information Technology	Jake Rogers	Develop Mobile/Web Application to Promote Carpooling
Greenhouse Gas Management	Logistics	Nicole Rivera	Improve Site Personnel Utilization
Greenhouse Gas Management	Logistics	Bruce Chesson	Right-Size Vehicle Fleet at KSC
Greenhouse Gas Management	Logistics	Bruce Chesson	Market Activities and Educational Workshops to Promote AFV Vehicles
Greenhouse Gas Management	Logistics	Alice Smith	Consolidate Ordering and Deliveries to KSC
Greenhouse Gas Management	Logistics	Sherry Gasaway	Acquire Electronic Tokens to Enable Telework
Greenhouse Gas Management	Logistics	Karen Griffin	Implement and Promote Telework Policies
Greenhouse Gas Management	Logistics	Pauletta McGinnis	Procure Electric Vehicles
Greenhouse Gas Management	Logistics	Bruce Chesson	Baseline Visitors Center Contracts to Use AFV Buses for Touring
High-Performance Sustainable Design / Green Buildings	Information Technology	Jerrami Johnson	Install IP Telephones and Have Settings to Reduce power During Off-Hours
High-Performance Sustainable Design / Green Buildings	Infrastructure	Scott Hunt	Comprehensive Campus Trending Software Package Study
High-Performance Sustainable Design / Green Buildings	Infrastructure	Scott Hunt	Comprehensive Lighting Technology Study
High-Performance Sustainable Design / Green Buildings	Infrastructure	Jason Dehler	Develop KSC Guiding Principles
High-Performance Sustainable Design / Green Buildings	Infrastructure	Jason Dehler	Standardize Equipment Specifications
High-Performance Sustainable Design / Green Buildings	Infrastructure	Scott Hunt	Real-Time Electric Consumption Displays

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High-Performance Sustainable Design / Green Buildings	Infrastructure	Scott Hunt	Facility HVAC Set-Point Standardization and Audit
High-Performance Sustainable Design / Green Buildings	Infrastructure	Jason Dehler	Sustainable Building and Retro-Commissioning Process
High-Performance Sustainable Design / Green Buildings	Infrastructure	Scott Hunt	Provide Hands-On Facility Audit Experience
High-Performance Sustainable Design / Green Buildings	Infrastructure	Jason Dehler	LEED EBOM Certification
High-Performance Sustainable Design / Green Buildings	Infrastructure	Jason Dehler	Automated Predictive Equipment Study
High-Performance Sustainable Design / Green Buildings	Infrastructure	Tom Wilczek	Sustainable Design Kennedy Documented Procedure (KDP) Flowchart
High-Performance Sustainable Design / Green Buildings	Infrastructure	Tom Wilczek	Sustainable Design Checklist and Statement of Work Enhancements
High-Performance Sustainable Design / Green Buildings	Infrastructure	Tom Wilczek	Modify KSC's Existing Lessons Learned Data Base
High-Performance Sustainable Design / Green Buildings	Logistics	Cindy Wise	Energy Efficiency Policy
High-Performance Sustainable Design / Green Buildings	Test Bed/ Demonstration	Kathleen Loftin	Energy Audit Laboratories
High-Performance Sustainable Design / Green Buildings	Infrastructure	Jason Dehler	Automate Facility Condition Assessments
High-Performance Sustainable Design / Green Buildings	Infrastructure	Jason Dehler	Capture and Reinvest All Savings/Paybacks/Rebates Resulting From Sustainable Initiatives
High-Performance Sustainable Design / Green Buildings	Infrastructure	Scott Hunt	Develop Volumetric Models of KSC Campus to Visualize Functional Impacts
High-Performance Sustainable Design / Green Buildings	Infrastructure	Jason Dehler	Establish Resource Conservation Award Criteria
High-Performance Sustainable Design / Green Buildings	Infrastructure	Jason Dehler	Form a Working Group to Standardize All Facets of KSC's Building/Infrastructure Information Management System
High-Performance Sustainable Design / Green Buildings	Infrastructure	Scott Hunt	Implement energy audit/commissioning standard for continuous commissioning and new construction

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High-Performance Sustainable Design / Green Buildings	Infrastructure	Scott Hunt	Integrate Cross-Center Energy Conservation Measure Facility Condition Assessment Databases
High-Performance Sustainable Design / Green Buildings	Infrastructure	Scott Hunt	Research/Evaluate Green Building Certification Program/Guiding Principles
High-Performance Sustainable Design / Green Buildings	Infrastructure	Scott Hunt	Streamline On-Site Research Acquisition; Promote Out-Reach Program for Energy Production Research at KSC
High-Performance Sustainable Design / Green Buildings	Logistics	Brian Kilcommons	Smart Lighting at Warehouse
High-Performance Sustainable Design / Green Buildings	Infrastructure	Scott Hunt	Comprehensive study on emerging energy production technologies
High-Performance Sustainable Design / Green Buildings	Infrastructure	Scott Hunt	Implement Campus Data Center Consolidation in Energy Efficient Facility
High-Performance Sustainable Design / Green Buildings	Infrastructure	Scott Hunt	Implement Campus Space Allocation Standard
High-Performance Sustainable Design / Green Buildings	Infrastructure	Scott Hunt	Implement Outlying Facility/Function Relocation to Common Utility Areas
High-Performance Sustainable Design / Green Buildings	Infrastructure	Scott Hunt	Implement Renewable Energy Projects
High-Performance Sustainable Design / Green Buildings	Infrastructure	Scott Hunt	Continue to increase the use of Renewable Energies
High-Performance Sustainable Design / Green Buildings	Infrastructure	Scott Hunt	Continue to maximize existing space and reduce infrastructure where practical
High-Performance Sustainable Design / Green Buildings	Infrastructure	Tom Wilczek	Sustainable Design Kennedy Documented Procedure (KDP) flowchart
High-Performance Sustainable Design / Green Buildings	Infrastructure	Tom Wilczek	Sustainable Design Checklist and Statement of Work enhancements
Water Use Efficiency and Management	Infrastructure	Tom Wilczek	Modify KSC's Existing Lessons Learned Data Base
Water Use Efficiency and Management	Infrastructure	Kevin Miller	Campaign on Water Use
Water Use Efficiency and Management	Infrastructure	Kevin Miller	Database of all Water Meters, Submeters and Historical Use Data
Water Use Efficiency and Management	Infrastructure	Kevin Miller	New Facility Water Meters
Water Use Efficiency and Management	Infrastructure	Kevin Miller	Convert Additional Areas to Non-Potable Water Consumption

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Water Use Efficiency and Management	Infrastructure	Kevin Miller	Ground Source Cooling System
Water Use Efficiency and Management	Infrastructure	Kevin Miller	Installation of Low Flow Fixtures (yearly)
Water Use Efficiency and Management	Infrastructure	Kevin Miller	Irrigation Reduction & Xeriscaping
Water Use Efficiency and Management	Infrastructure	Kevin Miller	Large User Tie-In
Water Use Efficiency and Management	Infrastructure	Kevin Miller	Localized Water Purification
Water Use Efficiency and Management	Infrastructure	Kevin Miller	PCN 96968.1 - Revitalize KSC Water Systems, Phase 2
Water Use Efficiency and Management	Infrastructure	Kevin Miller	PCN 96968.3 - Revitalize KSC Water Systems, Phase 4
Water Use Efficiency and Management	Infrastructure	Kevin Miller	PCN 98814 - Revitalize KSC Water Systems, Phase 3
Water Use Efficiency and Management	Infrastructure	Kevin Miller	Segregation of Potable and Non-Potable (Fire, Greywater, Rainwater) Water Systems
Water Use Efficiency and Management	Infrastructure	Kevin Miller	Water Softeners at Cooling Towers
Water Use Efficiency and Management	Infrastructure	Kevin Miller	Desalinization Plant
Water Use Efficiency and Management	Infrastructure	Kevin Miller	Rainwater Harvesting
Pollution Prevention and Waste Reduction	Infrastructure	Kevin Miller	Reuse of Flushed Potable Water
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Accept No Packaging with Styrofoam
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Benchmark Alternatives to Office Trash Cans
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Change Contract Language to Require Recycling of Bentonite/Directional Boring
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Change Contract Language to Require Use of at Least 50% Recycled Content
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Change Contract Language to Require Use of Recyclable Blast Media
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Change the FAR to Allow NASA to Donate to Private Entities
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Create an Area for 5-gal Buckets for Drop Off and Re-use
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Deconstruction Instead of Demolition
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Develop Cross-functional Team with Construction of Facilities to Facilitate Recycling Goals
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Educate the Workforce About Composting
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Eliminate Junk Mail/Educate Personnel How to Opt Out of Junk Mail

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Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Ensure all New Facility Construction and Renovations Include Infrastructure for Hand Dryers
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Establish a Team to Review Existing Contractual Language Use Civil Servants to Keep Cost Low
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Exchange Store Will Provide Compostable Bags
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Exchange Stores Will No Longer Provide Single Use/ Non-compostable Bags and Implement Deposit Program
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Find Recycling Opportunity for Dimensional Lumber
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Fund Study for Creation of a Composting Facility
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Fund Study for Creation of a Material Recycling Facility
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Implement Fees to Contractors for Waste Streams Generated to Encourage Composting
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Investigate Opportunities for Recycling Items Not Already Included in GAP
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Investigate Use of 50% Post Consumer Content Fiber in All Print Centers in Lieu of Virgin Paper
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Investigate Ways to Open Restroom Doors Without Using Your Hands
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Stop Distribution of Phone Books
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Optimize Opportunities at RRMF
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Only Accept Paperless Packaging
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Partner With Local Communities for Centralized Composting/Community Garden/Landfill/MRF
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Recycle Cloth
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Recycle Paints
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Ensure All Specs in Tact Requirements Are Up to Date
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Study What is Compostable at KSC
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Use Recycled Plastic Lumber Wherever Applicable
Pollution Prevention and Waste Reduction	Logistics	Cindy Wise	Daily News Advertisement
Pollution Prevention and Waste Reduction	Logistics	Cindy Wise	Diversion Methods for Property Disposal
Pollution Prevention and Waste Reduction	Logistics	Cindy Wise	Electronic Disposal Benchmarking
Pollution Prevention and Waste Reduction	Logistics	Sherry Gasaway	Electronic Vendor Submissions

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Pollution Prevention and Waste Reduction	Logistics	Pauletta McGinnis	Excess Equipment Donation to Educational Institutions
Pollution Prevention and Waste Reduction	Logistics	Bill Roy	Formal Cardboard Reuse Program
Pollution Prevention and Waste Reduction	Logistics	Bill Roy	Formal Shipping Supply Reuse Program
Pollution Prevention and Waste Reduction	Logistics	Karen Griffin	Hard Copy Requirements Determination
Pollution Prevention and Waste Reduction	Logistics	Brian Kilcommons	Hard Drive Shredder
Pollution Prevention and Waste Reduction	Logistics	Bill Roy	Increased Composite and Recycled Pallet Use
Pollution Prevention and Waste Reduction	Logistics	Cindy Wise	Internal Printing Reduction Program
Pollution Prevention and Waste Reduction	Logistics	Pauletta McGinnis	Office Supply Reutilization Program
Pollution Prevention and Waste Reduction	Logistics	David Banks	Paper Reduction Initiatives
Pollution Prevention and Waste Reduction	Logistics	Cathy Remley	Transformer Recycling Program
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Become a Test bed for Bioproducts
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Electronic Retail Transactions
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Design Composting Facility
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Design Material Recycling Facility
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Establish Contractual Language Rewriting Team with Procurement
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Establish Tipping Fee to Encourage Recycling/Diversion
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Replace Equipment in Current Print Centers to be Compatible With Post Consumer Content Fiber
Pollution Prevention and Waste Reduction	Logistics	Cathy Remley	Chemical Recycling Contract
Pollution Prevention and Waste Reduction	Logistics	Cindy Wise	Electronic Record Transfer
Pollution Prevention and Waste Reduction	Logistics	Pauletta McGinnis	Electronic Signature Capability
Pollution Prevention and Waste Reduction	Logistics	Pauletta McGinnis	Electronic Tagging
Pollution Prevention and Waste Reduction	Logistics	Laura Rochester	E-signature Implementation
Pollution Prevention and Waste Reduction	Logistics	Pauletta McGinnis	Hard Copy Requirements Determination
Pollution Prevention and Waste Reduction	Logistics	Cathy Remley	Increase Chemical Sales Through Disposal Office

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Pollution Prevention and Waste Reduction	Logistics	Bill Roy	Inventory Control Point Pilot Program Initiation
Pollution Prevention and Waste Reduction	Logistics	Bill Roy	Inventory Control Point Pilot Program Study
Pollution Prevention and Waste Reduction	Logistics	Bill Roy	ISC Database Expansion
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Centralized Area for Office Supplies/Ordering - MRF
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Eliminate Trash Cans in Each Office
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Establish Composting Facility at KSC
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Establish Informational Kiosks to Replace Printed Posters and Other Printed Media
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Establish Material Recycling Facility at KSC
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Implement Paperless Contract Language
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Mandate Use of 50% Post Consumer Content Fiber in All Print Centers in Lieu of Virgin Paper
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Use Air Dryers for Existing Restrooms
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Use Demolition Debris to Create Artificial Reefs
Pollution Prevention and Waste Reduction	Logistics	Brian Kilcommons	Barcode Scanner Procurement
Pollution Prevention and Waste Reduction	Logistics	Brian Kilcommons	Barcoding System
Pollution Prevention and Waste Reduction	Logistics	Brian Kilcommons	Electronic Inventory System
Pollution Prevention and Waste Reduction	Logistics	Pauletta McGinnis	Reduce Incoming Paper
Pollution Prevention and Waste Reduction	Logistics	Patty Snooks	Forms Warehouse Elimination
Pollution Prevention and Waste Reduction	Logistics	Bill Roy	Inventory Control Point Program Expansion Study
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Alter Existing Contracts to Incorporate Paperless Changes
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Eliminate All Center Copy Machines/Printers and Develop Consolidated Printing Area
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Provide All Contracts With Electronic Tablets/Portable Electronic Devices
Pollution Prevention and Waste Reduction	Environmental	Frank Kline	Create a Waste to Energy Plant
Sustainable Acquisition	Logistics	Pauletta McGinnis	Reduce Outgoing Paper
Sustainable Acquisition	Logistics	Alice Smith	Acquisition Communication Campaign
Sustainable Acquisition	Logistics	Alice Smith	Bankcard Monitoring Program
Sustainable Acquisition	Logistics	Brandi Roberts	Bankcard Purchasing Procedure Update
Sustainable Acquisition	Logistics	Mecca Murphy	Centralized Requisition Office

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Sustainable Acquisition	Logistics	Hien Nguyen	Environmental Waiver Requirement Update
Sustainable Acquisition	Logistics	Brandi Roberts	Green coding
Sustainable Acquisition	Logistics	Brandi Roberts	Purchasing Resource Guide
Sustainable Acquisition	Logistics	Hien Nguyen	Acquisition Process Requirements Update
Sustainable Acquisition	Logistics	Katelyn Johnson	Green Purchasing Training
Sustainable Acquisition	Logistics	Laura Rochester	Shelf Space Lease for Commonly Used Items and Office Supplies
Electronic Stewardship and Data Centers	Logistics	Hien Nguyen	Release Strategy Modification
Electronic Stewardship and Data Centers	Logistics	Pauletta McGinnis	Electronic Recycling Agreement
Electronic Stewardship and Data Centers	Logistics	Sherry Gasaway	Laptop Computer Transition
Electronic Stewardship and Data Centers	Information Technology	Trip Banks	Candidate Move Timeframe
Electronic Stewardship and Data Centers	Information Technology	Trip Banks	Discovery and Inventory
Electronic Stewardship and Data Centers	Information Technology	Trip Banks	Break ground on new Data Center
Electronic Stewardship and Data Centers	Information Technology	Trip Banks	Transition and Retire Shuttle Data Center
Electronic Stewardship and Data Centers	Information Technology	Trip Banks	Transition and Retire Space Station Data Center
Electronic Stewardship and Data Centers	Information Technology	Trip Banks	All new contracts, vendors and partners will use the new Data Center to provide them with Data Center Services
Electronic Stewardship and Data Centers	Information Technology	Trip Banks	Consolidate the Launch Services Data Center into the new Data Center
Electronic Stewardship and Data Centers	Information Technology	Trip Banks	Transition the Kennedy Data Center in the CIF Building into the new Data Center
Electronic Stewardship and Data Centers	Information Technology	Trip Banks	All new contracts, vendors and partners will use the new Data Center to provide them with Data Center Services
Regional and Local Planning	Master Planning	Trey Carlson	Post additional NOA announcements for KSC assets to the commercial sector in order to foster facility leasing of KSC property
Regional and Local Planning	Master Planning	Trey Carlson	Review the current conditions of select facilities an identify ways to improve their sustainability status
Workforce Satisfaction	Master Planning	Trey Carlson	Reassess sustainability agenda and identify KSC and commercial tenants that are noncompliant with sustainability and MP goals
Workforce Satisfaction	Workforce Satisfaction	Lakeesha Flowers	Analyze existing Employee Viewpoint Survey data to identify gaps in employees' satisfaction and determine if sustainability initiatives can be implemented to enhance satisfaction
Workforce Satisfaction	Workforce Satisfaction	Lakeesha Flowers	Create/administer a new annual survey (include items that cover other groups)
Workforce Satisfaction	Workforce Satisfaction	Lakeesha Flowers	Foster the development of focus groups to promote sustainability plan efforts

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Workforce Satisfaction	Workforce Satisfaction	Lakeesha Flowers	Identify other agency's/organizations who are leaders in sustainability and use them as benchmarks for future workforce satisfaction initiatives
Workforce Satisfaction	Workforce Satisfaction	Lakeesha Flowers	Develop a linkage matrix of sustainability efforts with job satisfaction elements
Workforce Satisfaction	Workforce Satisfaction	Lakeesha Flowers	Link to provide feedback on sustainability efforts at KSC
Workforce Satisfaction	Workforce Satisfaction	Lakeesha Flowers	Create computer based training in SATERN (KSC specific)
Workforce Satisfaction	Workforce Satisfaction	Lakeesha Flowers	Energy reduction contest (example) facility with largest reduction gets ice cream in lobby
Workforce Satisfaction	Workforce Satisfaction	Lakeesha Flowers	Promote on Center events that promote understanding of sustainability and KSC's efforts (coordinated with communication team as well)
Workforce Satisfaction	Workforce Satisfaction	Lakeesha Flowers	Provide guest speakers at events that allow workforce to be informed and motivated to participate in sustainability efforts
Workforce Satisfaction	Workforce Satisfaction	Lakeesha Flowers	Identify what current sustainability awards and their owners in order to recognize any possible addition awards
Workforce Satisfaction	Workforce Satisfaction	Lakeesha Flowers	Create a peer to peer award which can be redeemed for nominal prize or picture in building kiosk to be recognized for participating in sustainability efforts
Workforce Satisfaction	Workforce Satisfaction	Lakeesha Flowers	Provide informal sustainability training: lunch and learns, road shows, sustainability day
Workforce Satisfaction	Workforce Satisfaction	Lakeesha Flowers	Establish performance elements, standards, linked criteria for different occupational groups that can be included into employees performance plans
Other - Communications	Workforce Satisfaction	Lakeesha Flowers	Host an annual survey in order to obtain information on how the Center's workforce views sustainability and their satisfaction of KSCs sustainability initiatives
Other - Communications	Communications	Amber Philman	Internal Website
Other - Communications	Communications	Amber Philman	Newsletter
Other - Communications	Communications	Amber Philman	Slogan and Logo
Other - Communications	Communications	Amber Philman	Sustainability Fair
Other - Communications	Communications	Amber Philman	Training Development
Other - Communications	Communications	Amber Philman	External Website
Other - Communications	Communications	Amber Philman	Organizational Contests
Other - Communications	Communications	Amber Philman	Sustainability Video
Other - Communications	Communications	Amber Philman	Training Completion
Other - Natural Resources	Communications	Amber Philman	Campaign
Other - Natural Resources	Environmental	John Shaffer	Biological Assessment
Other - Natural Resources	Environmental	John Shaffer	Environmental Permits
Other - Natural Resources	Environmental	John Shaffer	General Engineering

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Other - Natural Resources	Environmental	John Shaffer	NEPA Documentation
Other - Natural Resources	Environmental	John Shaffer	Complete Permits
Other - Natural Resources	Environmental	John Shaffer	Environmental Assessment
Other - Natural Resources	Environmental	John Shaffer	Final BA
Other - Natural Resources	Environmental	John Shaffer	Final General Engineering
Other - Natural Resources	Environmental	John Shaffer	Shoreline Restoration / Renourishment

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Appendix 5: Acknowledgements

The 2012 Kennedy Space Center Sustainability Plan is the culmination of the great efforts of a combined civil servant and contractor workforce. Over one hundred employees contributed in the year long process of developing goals, strategies, and projects in search of a more sustainable center. It is the responsibility of these dedicated employees to continue to implement the strategies and projects included within this plan. Kennedy would like to thank the following employees for the efforts and sacrifices made during the 2012 Kennedy Space Center Sustainability Plan development and wish them the best of luck during plan implementation.

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