White Sands Test Facility Sustainability Program

Photo credit: *NASA*

WSTF History

- Established in 1963
- Tenants of U.S. Army White Sands Missile Range
- Component site of Johnson Space Center
- Capabilities
  - Rocket propulsion testing and evaluation
  - Oxygen systems testing and analysis
  - Hypervelocity impact testing
  - Propellants and aerospace fluids testing and analysis
  - Composite pressure systems testing and analysis
  - Flight Acceptance Standard Testing (FAST)
  - Spaceflight Component Services (SCS)

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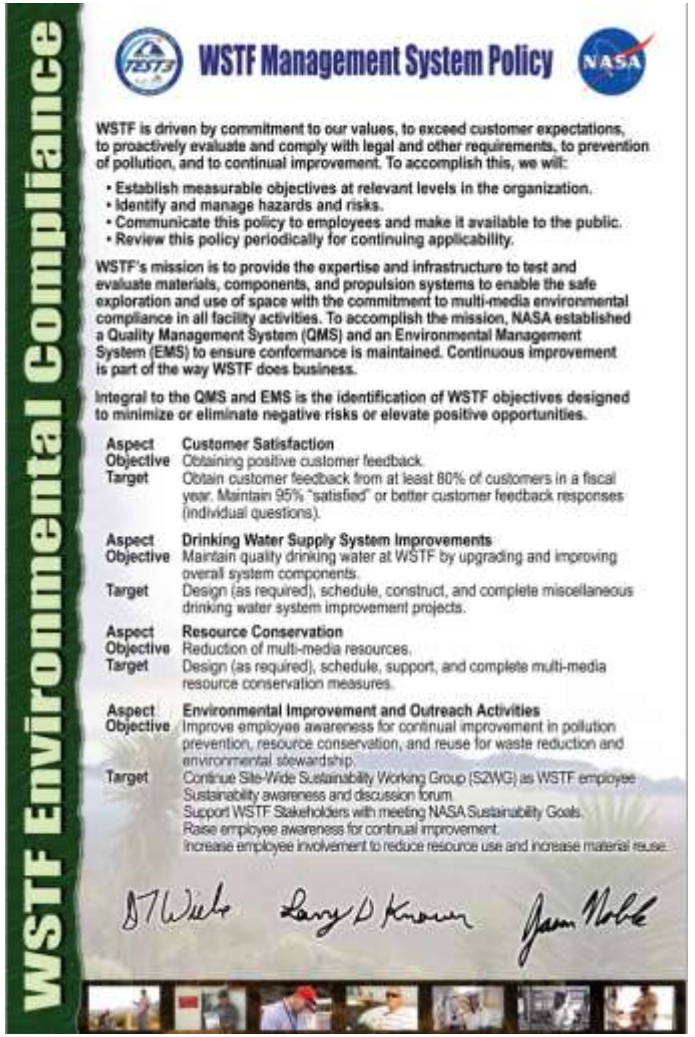
DRIVERS

WSTF Sustainability Program History

- WSTF Sustainability Initiative Team (WSIT) was established in 2005 by the Energy Manager
- WSIT identified the need to raise employee awareness in all aspects of sustainability
- Environmental Management System (EMS) incorporated into the WSTF Integrated Management System
- Environmental Management Programs (EMPs) created to mitigate environmental impacts
- Sustainability EMPs established in 2006 and continue today



DRIVERS

Sustainability Program Drivers

- **President Biden's EO 14057** goals for GHG reductions, energy efficiency, sustainable acquisition, waste management, and more.
- **NASA's Sustainability Plan** in response to EO 14057 lists Priority Actions to support EO goals.
- **FAR Part 23 –** Environment, Energy and Water Efficiency, Renewable Energy Technologies, Occupational Safety, and Drug-Free Workplace
- **RCRA Section 6002 – Federal Procurement**
- **WSTF's ISO 14001 Environmental Management Systems (EMS)** states WSTF is committed to protect the environment from harm and degradation and use resources sustainably.
- **WSTF Integrated Management System (WIMS)** - integrated system of policies, processes, and procedures that enable WSTF to meet its objectives and requirements and perform its operations (including business and financial management, security, product quality, safe operations, client relationships, legislative and regulatory conformance, etc.).

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PRIORITY ACTIONS

Pillars of Executive Actions

100% Carbon Pollution-Free Electricity by 2030, including 50% on a 24/7 basis

100% Zero-Emission Vehicle Acquisitions by 2035, including 100% light-duty acquisitions by 2027

Net-Zero Emissions Buildings by 2045, including a 50% reduction by 2032

Net-Zero Emissions Procurement by 2050

Net-Zero Emissions Operations by 2050, including a 65% reduction by 2030

Climate Resilient Infrastructure and Operations

Develop a Climate- and Sustainability-Focused Workforce

Advance Environmental Justice and Equity-focused Operations

Accelerate Progress through Domestic and International Partnerships

https://www.sustainability.gov/pdfs/federal-sustainability-plan.pdf

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PRIORITY ACTIONS

		Actions	CFE	Fleet	Buildings	Procurement	Adaptation	Net-Zero Emmisions Operations by 2050
3	Net-Zero Emissions Buildings by 2045, including a 50% reduction by 2032	Build for net-zero emissions	●	●	●	●	●	●
		Implement the Federal Building Performance Standard	●		●	●		●
		Increase energy and water efficiency	●	●	●	●	●	●
		Reduce waste, minimize use of toxic materials, and drive markets for recycled products			●	●		●
		Achieve higher levels of sustainability in owned and leased buildings	●	●	●	●	●	●
4	Net-Zero Emissions Procurement by 2050	Require major Federal suppliers to publicly disclose GHG emissions and climate risks, and set science-based targets to reduce emissions	●	●	●	●		●
		Launch a Buy Clean intiative for low-carbon materials		●	●	●		●
		Change Federal procurement rules to minimize the risk of climate change, including factoring in the social cost of GHG in to procurement decisions	●	●	●	●	●	●
		Maximize the procurement of sustainable products and services	●	●	●	●	●	●
6	Climate Resilient Infrastructure and Operations	Routinely assess climate vulnerabillities and risks	●	●	●	●	●	
		Modernize Federal policy, programs, operations, and infrastructure to support climate resilient investment	●	●	●	●	●	
		Establish the Climate Adaptation and Resilience Federal Leaders Working Group	●	●	●	●	●	

https://www.sustainability.gov/pdfs/federal-sustainability-plan.pdf

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SUSTAINABILITY REPORTING

Sustainability Application

PRIORITY ACTIONS

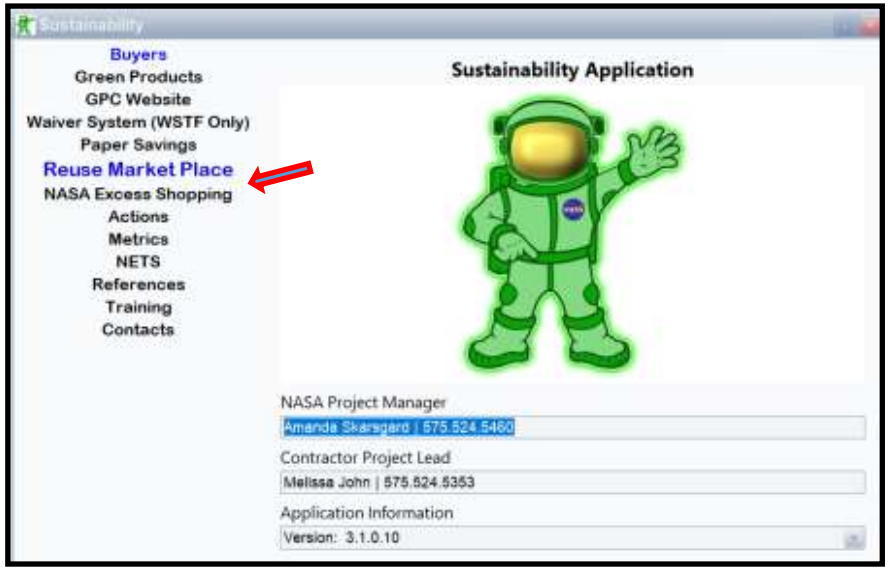
Reducing Waste and Pollution

- Divert at least 50% of non-hazardous solid waste by 2025 and at least 75% by 2030
- Advance waste prevention practices that save natural resources, reduce pollution, reduce waste toxicity, and save money.

WSTF
Recycles, Reduces, Reuses

Single Stream Recycling

Construction & Demolition Recycling



Reuse Market Place

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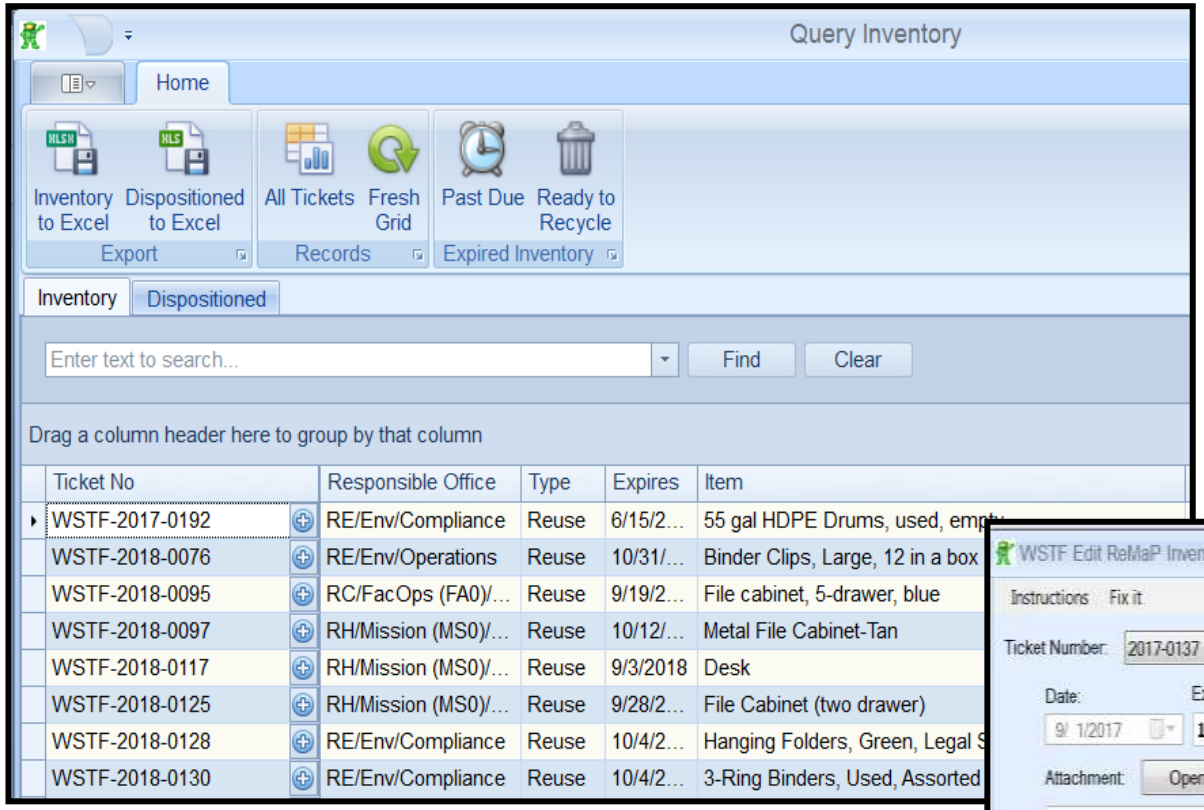
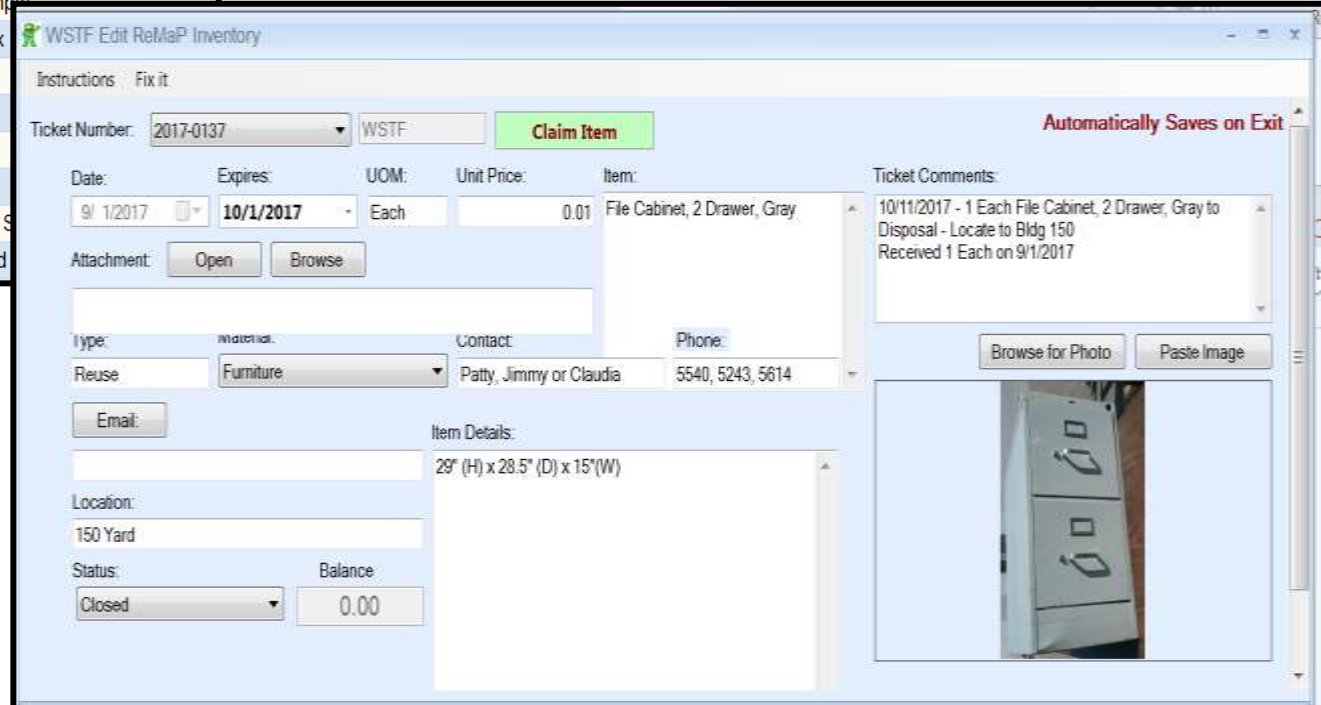
WASTE REDUCTION

Reuse Market Place (ReMaP)





- WM-GP2-0001, General Policies & Processes
- WSI-15-SW-0018, Disposal of Government Property

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WASTE REDUCTION

ReMaP Reporting

Recycling and Waste Reduction Program Data Entry

New Record | Query | Send to Excel | Import ReMaP Data | Refresh

Drag a column header here to group by that column

Delete	Input Date	FY	Material	Category	UOM	Amount	Comment	Center
	Click here to add a new row							
	7/5/2022	2022	Chemicals	Reutilized	Dollars	900.00	55 gal of excess IPA from propulsion that was going to be waste was given to Hypervelocity for reuse by J. Corkran.	WSTF
	5/11/2022	2022	Furniture	Reutilized	Dollars	300.00	ReMaP WSTF-2022-0049 2-seater couch.	WSTF
	5/11/2022	2022	Furniture	Reutilized	Dollars	500.00	ReMaP WSTF-2022-0046 Metal bookcase with glass doors.	WSTF
	5/11/2022	2022	Office Supplies	Reutilized	Dollars	5.00	ReMap WSTF-2022-0043 Cardboard 3-Month calendar holder	WSTF
	5/11/2022	2022	Office Supplies	Reutilized	Dollars	30.00	ReMaP WSTF-2022-0044 Wooden 3-month calendar holder	WSTF
	5/11/2022	2022	Electronics/Lam...	Reutilized	Dollars	25.00	ReMaP WSTF-2022-0035 Headphones - New	WSTF
	9/3/2021	2021	Furniture	Reutilized	Dollars	150.00	ReMaP WSTF-2021-0006 Metal Cabinet with Drawers	WSTF
	9/3/2021	2021	Office Supplies	Reutilized	Dollars	150.00	ReMaP WSTF-2021-0007 Ready Made Wall Frame (6)	WSTF
				328		86,268.92		

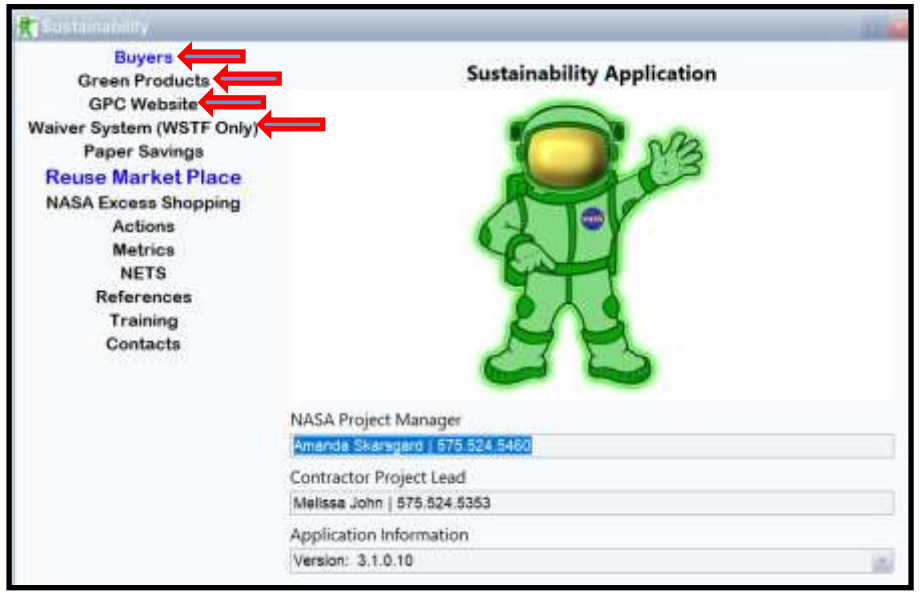
PRIORITY ACTIONS

Sustainable Procurement

- Increase acquisition of sustainable products and services by training acquisition personnel; monitoring the contracting process; and improving sustainable procurements reporting.

Regulatory and NASA Requirements

- FAR Part 23, Sustainable Acquisition Policy
- RCRA 6002 – affirmative procurement
- NPD 8500.1, NASA Environmental Management
- NPR 8530.1 NASA Sustainable Acquisition
- WM-ENV-0001 WSTF Environmental Manual



Green Procurement Compilation

The Green Procurement Compilation (GPC) is a comprehensive green purchasing resource designed for federal contracting personnel and program managers.

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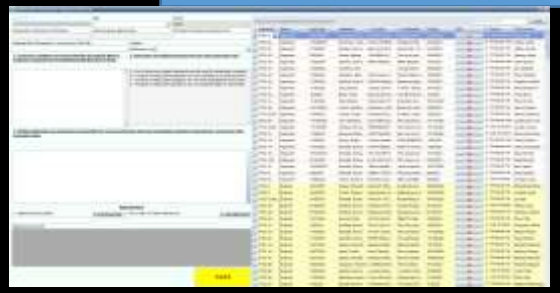
SUSTAINABLE PROCUREMENT

Sustainable Acquisition Process

Step 5: Submit a waiver through Sustainability Application – Waiver System if the item requirements cannot be met.

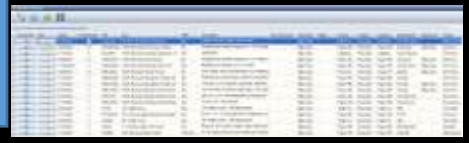


Step 1: Check ReMaP.

Step 2: Check GPC website for statutory requirement(s).

Step 4: Shop for it. Check websites that include recycled content/biobased information. Ask vendors for assistance.

Step 3: Check Sustainability Application - Green Products List.



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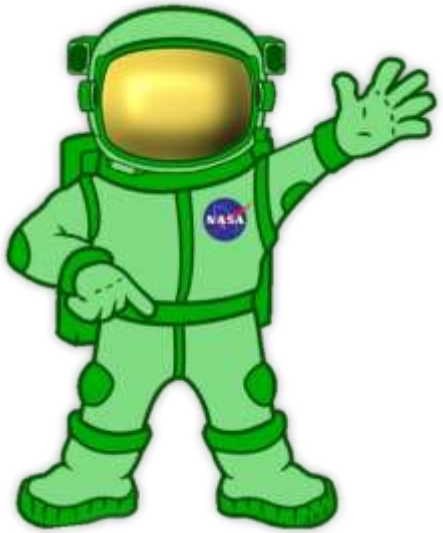
SUSTAINABLE PROCUREMENT

SA Reporting

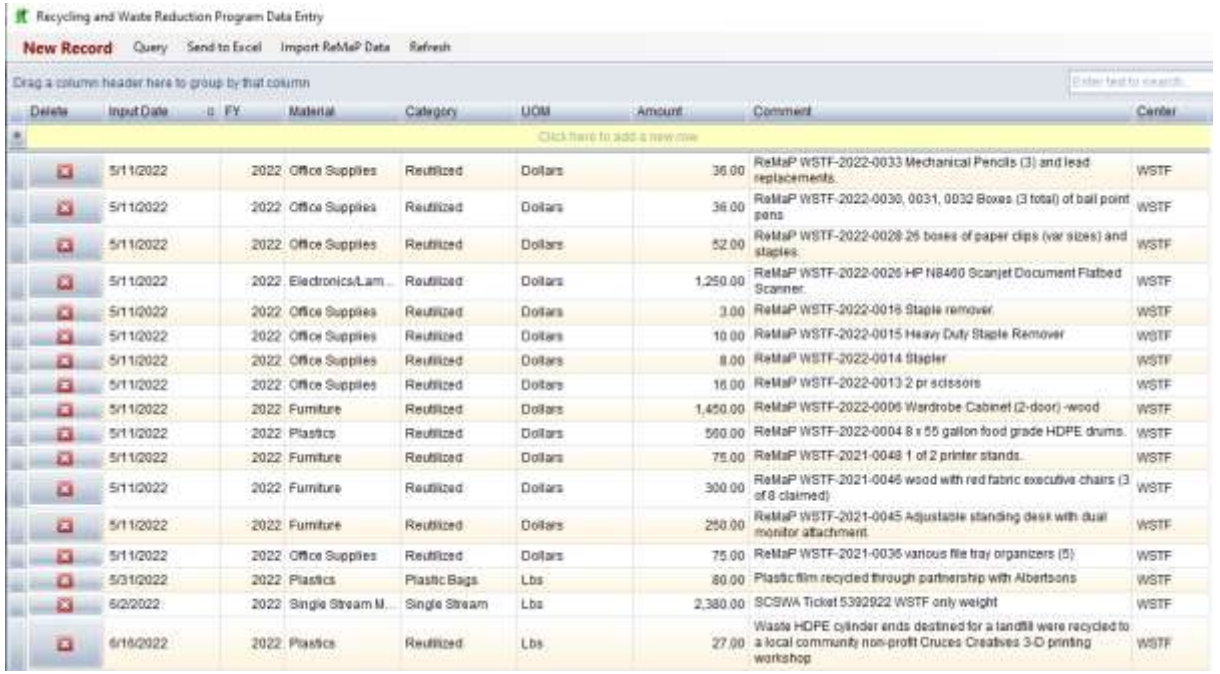


Extrapolate data from
- ReMaP (reuse)
- WSTF contractor's purchases (SA metric)
- Recycling information (waste diversion)
- Waste information (waste diversion)

Data entry into NASA Environmental Tracking System (NETS) by center

NASA Environmental Tracking System (NETS)

NASA HQ reports to Council of Environmental Quality and the Office of Management and Budget



Recycling and Waste Reduction Program Data Entry

New Record | Query | Send to Excel | Import ReMaP Data | Refresh

Delete	Input Date	FY	Material	Category	UOM	Amount	Comment	Center
	5/11/2022	2022	Office Supplies	Reutilized	Dollars	36.00	ReMaP WSTF-2022-0033 Mechanical Pencils (3) and lead replacements.	WSTF
	5/11/2022	2022	Office Supplies	Reutilized	Dollars	36.00	ReMaP WSTF-2022-0030, 0031, 0032 Boxes (3 total) of ball point pens	WSTF
	5/11/2022	2022	Office Supplies	Reutilized	Dollars	52.00	ReMaP WSTF-2022-0028 26 boxes of paper clips (var sizes) and staples.	WSTF
	5/11/2022	2022	Electronics/Lam...	Reutilized	Dollars	1,250.00	ReMaP WSTF-2022-0026 HP N8460 Scanjet Document Flatbed Scanner.	WSTF
	5/11/2022	2022	Office Supplies	Reutilized	Dollars	3.00	ReMaP WSTF-2022-0016 Staple remover.	WSTF
	5/11/2022	2022	Office Supplies	Reutilized	Dollars	10.00	ReMaP WSTF-2022-0015 Heavy Duty Staple Remover	WSTF
	5/11/2022	2022	Office Supplies	Reutilized	Dollars	8.00	ReMaP WSTF-2022-0014 Stapler	WSTF
	5/11/2022	2022	Office Supplies	Reutilized	Dollars	16.00	ReMaP WSTF-2022-0013 2 pr scissors	WSTF
	5/11/2022	2022	Furniture	Reutilized	Dollars	1,450.00	ReMaP WSTF-2022-0006 Wardrobe Cabinet (2-door) -wood	WSTF
	5/11/2022	2022	Plastics	Reutilized	Dollars	560.00	ReMaP WSTF-2022-0004 8 x 55 gallon food grade HDPE drums.	WSTF
	5/11/2022	2022	Furniture	Reutilized	Dollars	75.00	ReMaP WSTF-2021-0048 1 of 2 printer stands.	WSTF
	5/11/2022	2022	Furniture	Reutilized	Dollars	300.00	ReMaP WSTF-2021-0046 wood with red fabric executive chairs (3 of 8 claimed)	WSTF
	5/11/2022	2022	Furniture	Reutilized	Dollars	250.00	ReMaP WSTF-2021-0045 Adjustable standing desk with dual monitor attachment	WSTF
	5/11/2022	2022	Office Supplies	Reutilized	Dollars	75.00	ReMaP WSTF-2021-0036 various file tray organizers (5)	WSTF
	5/31/2022	2022	Plastics	Plastic Bags	Lbs	80.00	Plastic film recycled through partnership with Albertsons	WSTF
	6/2/2022	2022	Single Stream M...	Single Stream	Lbs	2,380.00	SCSWA Ticket 5392922 WSTF only weight	WSTF
	6/16/2022	2022	Plastics	Reutilized	Lbs	27.00	Waste HDPE cylinder ends destined for a landfill were recycled to a local community non-profit Cruces Creatives 3-D printing workshop	WSTF

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SUSTAINABLE PROCUREMENT

OMB Scorecard

National Aeronautics and Space Administration
FY 2021 OMB SCORECARD FOR FEDERAL SUSTAINABILITY

GOAL ASSESSMENT	METRICS	PERFORMANCE RATING*
GREENHOUSE GAS EMISSIONS FROM STANDARD OPERATIONS	Change in scope 1&2 emissions from FY 2008:	-45.7%
	Change in scope 1&2 emissions from prior year:	-2.3%
	Change in scope 1 facility energy emissions from FY 2008:	-5.2%
	Change in scope 2 facility energy emissions from FY 2008:	-55.5%
	Change in scope 1 fleet energy emissions from FY 2008:	-72.1%
	Change in scope 1 other emissions from FY 2008:	-19.8%
FACILITY ENERGY EFFICIENCY	Change in energy intensity (Btu/GSF) compared to FY 2003:	-41.1%
	Change in energy intensity (Btu/GSF) from prior year:	4.0%
EFFICIENCY MEASURES/ INVESTMENT	Covered facilities evaluated for efficiency opportunities (in terms of covered facility energy use):	57.4%
	Performance contracting investment percentage in FY 2021	78.4%
	Performance contracting investment percentage last 4 years	57.3%
RENEWABLE ENERGY USE	Renewable electricity used (as a percentage of total electricity use):	9.6%
WATER EFFICIENCY	Change in potable water intensity compared to FY 2007:	-35.2%
	Change in potable water intensity from prior year:	-4.7%
HIGH PERFORMANCE SUSTAINABLE BUILDINGS	Percent of eligible buildings meeting sustainability criteria:	21.9%
	Percentage point difference from prior year:	1.7
	Percent of GSF (eligible) meeting sustainability criteria:	26.4%
	Percentage point difference from prior year:	1.4
TRANSPORTATION/ FLEET MANAGEMENT	Change in petroleum fuel use in covered fleet compared to FY 2005:	-71.3%
	Change in petroleum fuel use in covered fleet compared to prior year:	-11.9%
SUSTAINABLE ACQUISITION	Percentage point difference of sustainable contract actions from prior year:	0.2
	Percentage point difference of value of contracts with sustainable requirements from prior year:	1.8

OTHER PROGRESS INDICATORS				
Scope	Sector (MTCO2e)	FY 2008	FY 2020	FY 2021
1 & 2	Total	1,255,260	697,803	681,975
1	Facility	164,612	153,788	156,060
2	Facility	958,712	448,267	426,322
1	Fleet	12,000	3,796	3,347
1	Other	119,936	91,952	96,247
1	Direct GHG intensity of all facilities (kg/GSF):			4.07

Category	FY 2003	FY 2020	FY 2021
Energy intensity (Btu/GSF):	215,906	122,206	127,128
Energy use (Net billion Btu):	6,850	3,839	3,973
Gross Square Feet (thousand):	31,729	31,411	31,254

Implementation cost of ECMs identified within last 4 years ($M):	$135.9
CTS-reported investment in covered facilities in FY 2021 ($M):	na
Total direct investment in FY 2021 ($M):	$7.7
ESPC and UESC investment in FY 2021 ($M):	$27.8
Renewable electricity + non-electric renewable energy used (as a percentage of total electricity use):	23.9%

Category	FY 2007	FY 2020	FY 2021
Facility Water Intensity (Gal per GSF)	73.2	49.7	47.4

Buildings meeting sustainability criteria:	48
Total count of eligible buildings:	219
GSF meeting sustainability criteria (thousand):	3,418
Total eligible GSF (thousand):	12,923
Alternative fuel use as a percentage of total covered fleet fuel use:	14.8%
Covered AFVs (w/bonus credits) as a percent of acquisitions:	153.0%
Light-duty zero-emission vehicles as a percent of acquisitions:	9.64%
Total number of installed EV charging ports to date:	359
Number of applicable contract actions w/ sustainable clauses, FY21:	4,947
Number of applicable contract actions w/ sustainable clauses, FY20:	4,828
Value of applicable contract actions w/ sustainable clauses, FY21:	$3,464.3M
Value of applicable contract actions w/ sustainable clauses, FY20:	$3,125.8M

*Due to the COVID-19 pandemic, the data as reported may appear anomalous and represent exogenous factors beyond the agency's control. The impact on agency performance has not been fully evaluated at this time.

Sources: Agency submitted data from Annual Energy Data Report, EISA 432 Compliance Tracking System, Federal Real Property Profile, Federal Automotive Statistical Tool, SAM.GOV

Source: https://www.sustainability.gov/nasa.html

Btu = British thermal units
GSF = Gross square foot (or feet)
ESPC = Energy Savings Performance Contracts
UESC = Utility Energy Savings Contracts
ECM = efficiency/conservation measure
AFV = alternative fuel vehicle
GHG = greenhouse gas
na = not available

Greenhouse Gas Emissions: Agencies' GHG emission reductions compared to FY 2008 base year by scope and end-use sector will be tracked and reported as an indicator on the Scorecard along with direct GHG emissions intensity from energy use in all facilities.

Facility Energy Efficiency: Agencies are assessed on meeting or exceeding the statutory goal of a 30% reduction in Btu/GSF from a 2003 baseline and demonstrating a reduction from the prior year.

Agency achieved ≥30% reduction compared to 2003 AND achieved a reduction in energy intensity from the prior year.	*Agency achieved ≥30% reduction compared to 2003 OR achieved a reduction in energy intensity from the prior year.*	*Agency did not achieve a 30% reduction in energy intensity compared to 2003 AND did not achieve a reduction in energy intensity from the prior year.*

Identification of Efficiency Measures/Investment: Agencies are assessed on covered facility evaluations. OMB will also track percentage of efficiency investment executed through performance contracts, potential investment in identified ECMs and reported project investment in covered facilities.

≥90% of facility evaluations completed/updated within last 4 years AND agency awarded performance contracts in the fiscal year.	*≥75% facility evaluations completed/updated within last 4 years OR agency awarded performance contracts in the fiscal year.*	*<75% of facility evaluations completed/updated within last 4 years & agency did not award any performance contracts in the fiscal year.*

Renewable Energy: Agencies are assessed on meeting or exceeding 7.5% renewable electricity use annually. OMB will also track non-electric RE use.

Renewable electricity comprised ≥7.5% of total electricity use.	*Renewable electricity combined with non-electric renewable energy sources (thermal + mechanical) comprised ≥7.5% of total electricity use.*	*Renewable electricity combined with non-electric renewable energy sources (thermal + mechanical) comprised <7.5% of total electricity use.*

Water Efficiency: Agencies are assessed on continued reductions in potable water use intensity and a 20% reduction from its 2007 baseline.

Agency achieved ≥20% reduction in potable water use intensity compared to 2007 AND reduced its potable water use intensity from the prior year.	*Agency achieved ≥20% reduction compared to 2007 OR achieved a reduction in potable water intensity from the prior year.*	*Agency did not achieve a 20% reduction compared to 2007 AND did not reduce potable water use intensity from the prior year.*

High-Performance Sustainable Buildings: Agencies are assessed on the number and square footage of owned federal buildings that are sustainable buildings and are tracked in the Federal Real Property Profile (FRPP).

At least 15% of agency owned buildings or GSF meet sustainable building criteria and the agency increased percentage of sustainable buildings or GSF from the prior year.	*At least 15% of agency owned buildings or GSF meet sustainable building criteria OR the agency increased percentage of sustainable buildings or GSF from the prior year.*	*Less than 15% of agency's inventory meets sustainable building criteria AND the agency decreased percentage of sustainable buildings or GSF from the prior year.*

Fleet Management: Agencies are assessed on meeting or exceeding a 20% reduction in petroleum use compared to 2005 and demonstrating a reduction from the prior year. OMB will also track alternative fuel use percentage, fleet acquisitions, and installed EV charging ports.

Agency achieved ≥20% reduction in petroleum use compared to 2005 AND achieved a reduction in petroleum use from prior year.	*Agency achieved ≥20% reduction in petroleum use compared to 2005 OR achieved a reduction in petroleum use from prior year.*	*Agency did not achieve a 20% reduction in petroleum use compared to 2005 AND did not achieve a reduction in petroleum use from prior year.*

Sustainable Acquisition: Agencies are assessed on the change from prior year performance of the percentage of contract actions and dollar value of sustainable acquisitions as reported in the FPDS, which include the mandatory clauses for the purchase of biobased, energy-efficient, recycled content and other sustainable attributes.

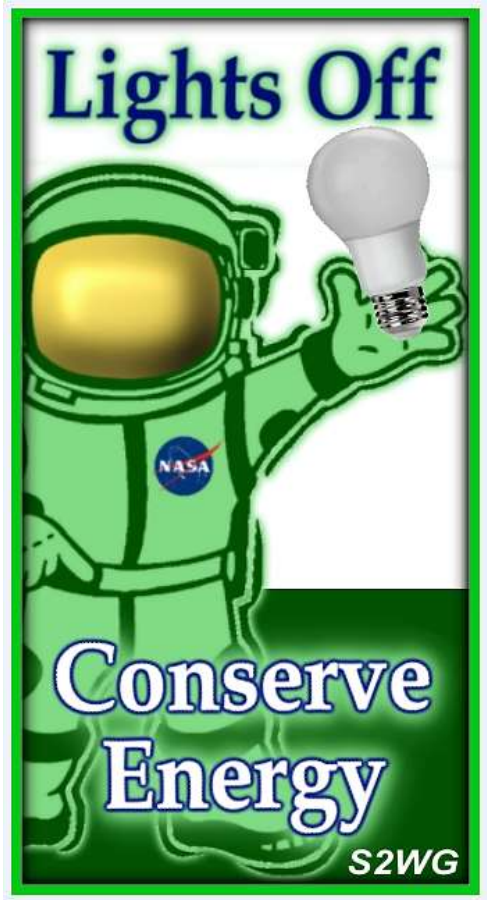
Agency increased percentage of sustainable acquisitions of total actions (both number of actions & dollar value) from prior year percentage levels.	*Agency increased percentage of sustainable acquisitions of total actions (either number of actions or dollar value) from prior year percentage levels.*	*Agency's percentage of sustainable acquisitions from total actions (number of actions & dollar value) remained the same or decreased from prior year.*

PRIORITY ACTIONS

Climate- and Sustainability-Focused Federal Workforce

Foster a proactive, sustainability-focused culture Agency-wide.

WSTF Site-wide Sustainability Working Group (S2WG)



SUSTAINABLE NASA

CLIMATE- AND SUSTAINABILITY-FOCUSED FEDERAL WORKFORCE

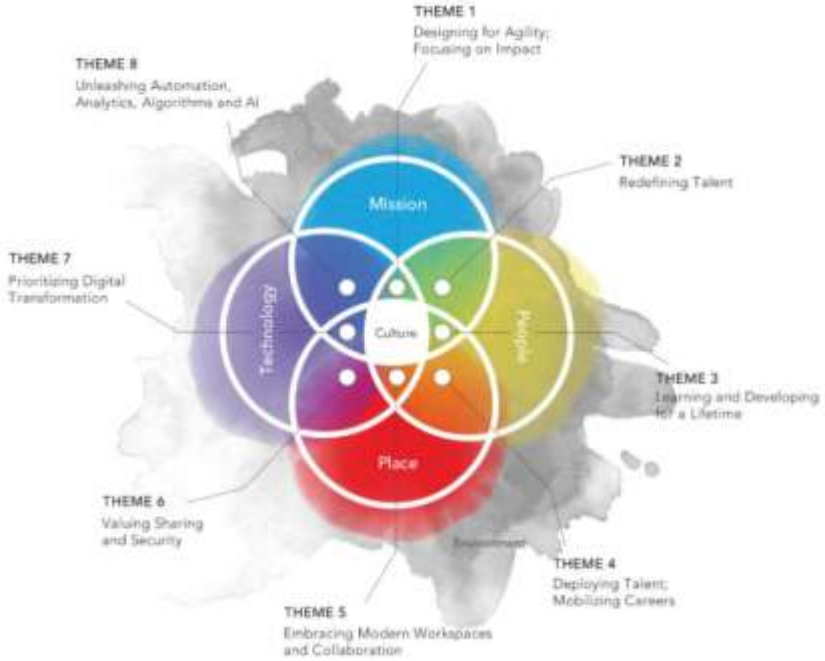
Outreach

S2WG outreach

- What's Going On monthly newsletter
  - Biobased products, Green Star Award
  - S2WG staff initiative ideas
- Porcelain Press biweekly newsletter
  - Green Product of the Month
- WSTF Today articles
- Sustainability Web Page Accessibility
- Sustainable Acquisition training
- Monthly Lunch & Learn presentations
- Periodic meeting with janitorial, facilities, & area staff
- Sustainability staff included in weekly safety walkthroughs of all WSTF areas

Culture Changes

- New employees
- Changing recycling markets
- Executive Order changes



Credit: https://blogs.nasa.gov/futureofwork/2019/10/17/a-marketplace-for-talent/