

National Science Foundation
2019 Sustainability Report and Implementation Plan



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2019

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Executive Summary

The National Science Foundation (NSF) is an independent federal agency created by the National Science Foundation Act of 1950 to promote the progress of science, advance national health, prosperity, and welfare, and secure the national defense. The Foundation fulfills its mission primarily by issuing limited-term competitive grants and by sponsoring awardee organizations that conduct basic scientific research. The Foundation is committed to leading by example in sustainability by operating in an environmentally and economically sound manner. Improving sustainability supports the NSF mission by making better use of Foundation resources, including energy, supplies, and personnel. The Foundation is working to incorporate environmental, energy, and sustainability management in its activities, leadership, and operations, while complying with all related statutes, regulations, and executive orders, including this Sustainability Report and Implementation Plan (SRIP). To integrate sustainability into all facets of NSF operations and meet the goals and targets stipulated, NSF identifies two primary strategies:

- **Maximizing Sustainability of Workspaces:** NSF will continue to utilize and expand the energy conservation and sustainability capabilities of the office space occupied by the Foundation through use of an energy management system and sustainable business practices.
- **Human Capital Investment:** NSF will raise awareness of sustainable practices and their impact on NSF objectives. By training employees on NSF's sustainable practices, NSF will empower the workforce to integrate sustainability into daily operations.

The most significant advancement in the Foundation's sustainability comes from the new headquarters (HQ) lease through the General Services Administration (GSA), which provides NSF with a higher performing and more sustainable space. The building achieved a Silver certification by the U.S. Green Building Council Leadership in Energy and Environmental Design (LEED) Core and Shell program. With many facets of sustainability embodied in a higher performing building, the building reduces the Foundation's overall environmental footprint and operating costs while providing a healthier environment for employees through features such as the use of building materials with low levels of volatile organic compounds. The Foundation began occupying the new HQ in August of 2017. NSF continues to make sustainability a part of its day-to-day operations in ways such as acquisition and renewable energy purchases. The Foundation will work with the building management to identify opportunities to reduce both electricity and water utilization.

In FY 2019 and beyond, NSF is committed to meeting goals and targets outlined in all applicable statutes, regulations, and Executive Order (E.O.) 13834. NSF supports the achievement of the goals and metrics laid out by statute, executive order, the Council on Environmental Quality, and the Office of Management and Budget (OMB). These goals are essential to protect natural resources and reduce the environmental impact of the Foundation's activities. Due to the operational nature of NSF the following sections have been removed: Efficiency Measures, Investments, and Performance Contracting; Transportation/ Fleet Management; Sustainable Acquisition/ Procurement. (see endnote for explanations). ^{i,ii,iii}

The signature below indicates NSF's approval of, and commitment to, the goals set forth herein:

Javier E. Inclán
Chief Sustainability Officer
Acting Division Director, Division of Human Resource Management

Date

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Implementation Summary: Facility Management

1. FACILITY ENERGY EFFICIENCY

FY18 Energy Intensity Progress (Btu/GSF):

N/A Unknown reduction from FY03

72% reduction from FY08¹

69% reduction from FY17

FY19-FY20 Plan:

1% reduction in FY19 from FY18

1% reduction in FY20 from FY19

Implementation Status:

NSF made great achievements in energy efficiency due to the NSF HQ relocation in FY 2018 to a newly constructed LEED Silver-Certified GSA-leased office building. While the new office space contributes greatly to NSF's progress in energy efficiency, NSF is working to identify any feasible opportunities which further promote energy efficiency for future years.

- In FY 2018, NSF completed a transition of operations to a recently constructed LEED Silver-Certified GSA-leased office building, providing increased benefits in facility energy efficiency to the agency.
- NSF will continue to work with the building management to identify possible energy reduction efforts as required under E.O. 13834.

Priority Strategies & Planned Actions

Utilize new building energy management system and zoned utility meters to monitor electricity energy use, evaluate trends, and where appropriate, work with building management to improve energy utilization.

2. RENEWABLE ENERGY

FY18 Renewable Electricity Use:

100% of total electricity in FY18

FY19-FY20 Plan:

100% of total electricity in FY19

100% of total electricity in FY20

Implementation Status

NSF currently pursues REC purchases to offset 100% of the electricity used by the HQ building. The REC purchasing strategy is part of the LEED Silver certification of the building and will continue to maintain certification.

- In FY 2018, a REC purchase of 6,000 MWh was made to offset the NSF annual electricity use. NSF purchased RECs that were green e-Certified Solar.
- The 100% REC purchase strategy was developed as part of the LEED Silver certification process, benefiting both the building certification as well as renewable energy requirements.
- In FY 2019, NSF will continue to purchase 100% RECs to meet both the required annual renewable energy targets and LEED Silver certification requirements.

¹ NSF established its sustainability program and first full-time sustainability officer in 2008, which established the ability to baseline energy utilization.

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Priority Strategies & Planned Actions

- NSF will continue to purchase 100% RECs in FY 2020 and FY 2021.
- Each year NSF will reevaluate the REC purchasing strategy and ensure that the appropriate RECs are being purchased. The NSF HQ's electricity usage is currently too low to justify contracting for energy.
- The new GSA-leased building NSF currently occupies does not include any on-site renewable energy. NSF will investigate the feasibility of installing building-integrated renewable energy later, but this is not a priority for FY 2020 or FY 2021.

3. WATER EFFICIENCY

FY18 Water Intensity Progress (Gal/GSF):

13% increase from FY07

47% increase from FY17

FY19-FY20 Plan:

1% reduction in FY19 from FY18

1% reduction in FY20 from FY 19

Implementation Status

NSF has relocated to a LEED Silver-Certified, GSA-leased office building, which should contribute to the overall water efficiency of NSF operations. NSF acknowledges an increase of water usage from previous reporting periods. Speculation is that the increase is due to the ongoing construction for commercial occupation on the first floor of the building since NSF's water usage is not metered separately. To identify possible sources of excess water utilization, NSF assessed the toilet and water fixture sensors to ensure proper sensitivities. This audit indicated that the sensor sensitivities were normal. NSF continues to work with the building manager to identify any possible excess water usage.

Priority Strategies & Planned Actions

- NSF will assess and verify the efficacy of the water savings features in the new NSF HQ building and work with the building manager to implement any recommended improvements.
- NSF is planning a water balance assessment to identify all water use and identify water savings opportunities.

4. HIGH PERFORMANCE SUSTAINABLE BUILDINGS

Implementation Status

NSF consists of one large high-performance sustainable GSA-leased building as of the beginning of FY 2018. The NSF HQ is a LEED Silver-Certified building under the LEED Core and Shell Rating system and, therefore, meets the high-performance sustainable buildings goal. NSF's three occupancy agreements (OAs) with GSA are reported in the FRPP by GSA. However, GSA reaches out annually to NSF to validate the OA data for reporting purposes.

- Under this LEED Silver certification, NSF works with the building management to verify various energy efficiency and sustainable practices for its tenants, such as LED lighting and daylight controls, a building energy management system, a waste diversion program to achieve net zero solid waste and use of recycled materials.

Priority Strategies & Planned Actions

- NSF will continue to collaborate with the building manager to maintain LEED Silver certification.
- NSF has no future plans for new construction or pursuing acquisition of existing buildings.

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5. WASTE MANAGEMENT AND DIVERSION

FY18 Non-hazardous Waste Management and Diversion:

184 metric tons of non-hazardous solid waste generated* (54% of the 184 metric tons recycled)

N/A sent to treatment and disposal facilities

**not including construction and demolition waste*

Implementation Status

NSF disposes of solid waste using a variety of methods designed to maximize re-use, single-stream recycling, and conversion to energy in lieu of landfills.

- The facility occupied by NSF HQ staff has an active recycling program. No solid waste from HQ is disposed in landfills because all of it is either sent for recycling or incinerated by a waste-to-energy facility.
- Programs like “Computers for Learning” are employed to donate unwanted electronics such as computers and audio/visual equipment to schools.
- The USPS Blue Earth Recycling program is administered at NSF where small electronics are sent to a documented e-waste recycling and recovery vendor which either refurbishes items for resale or recovers raw materials for recycling.

Priority Strategies & Planned Actions

- NSF will continue to use employee outreach to improve source reduction and recycling.
- NSF will work with building management to ensure all recycling streams are being measured separately, including separation of retail recycling.
- NSF will work with building management to ensure that the net zero solid waste contract is being properly administered by the waste vendor.

Implementation Summary: Cross-Cutting Operations

1. ELECTRONICS STEWARDSHIP

FY18 Electronics Stewardship Progress:

100% of newly purchased or leased equipment met energy efficiency requirements

100% of equipment with power management enabled*

100% of electronic equipment disposed using environmentally sound methods

**excluding exempted equipment*

Implementation Status

- NSF uses Blanket Purchase Agreements to ensure that 100% of its computers, laptops, and monitors comply with the requirements of the Electronic Product Environmental Assessment Tool (EPEAT) and EPA’s ENERGY STAR rating.
- 100% of computer and monitor acquisitions meet the criteria for sustainable electronics. Currently all power management settings for NSF’s central computing devices are set with power management enabled, without the ability for users to change these settings.

Priority Strategies & Planned Actions

- NSF will track power management and central printing power management as part of each Directorate/Office’s sub-metered energy usage. NSF will closely track its power usage effectiveness to ensure the new facility operates at a high level.

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2. GREENHOUSE GAS EMISSIONS

FY18 Scope 1 & 2 Greenhouse Gas (GHG) Emissions:

- 85% reduction from FY 2008
- 62% reduction from FY 2017

Implementation Status

NSF's strategy and approach for managing and reducing GHG emissions is based almost entirely on the operations performed at the NSF HQ. In FY 2018, NSF relocated to a LEED Silver-Certified building, which has provided great reductions in greenhouse gas emissions primarily due to the reductions in electricity and natural gas use.

- Monitor all monthly electricity and natural gas consumption.
- The only use of refrigerant is for HVAC equipment, which is operated and maintained by the building manager.

Priority Strategies & Planned Actions

- Identify additional opportunities for facility energy reduction and use of renewable energy to reduce and offset Scope 1 & 2 emissions.
- NSF will work with its HQ lessor to identify and quantify the sources of fugitive refrigerants.

Agency Priorities and Highlights

NOTABLE PROJECTS AND HIGHLIGHTS

Effective FY 2018, NSF relocated its HQ to a LEED Silver Core-and-Shell Certified GSA-leased building. The HQ increases energy efficiency and renewable energy use by the agency, as well as qualifies as a High Performance Sustainable Building for the agency. The building has eight electric vehicle parking spaces with charging stations and eight low emission vehicle parking spaces. NSF provides subsidies to encourage and incentivize the use of bicycles as an alternative mode of transportation.

ⁱⁱ Due to the NSF HQ relocation to a recently constructed GSA-leased building, there are no direct investments or projects that can be made by the agency. All investments would be coordinated by GSA and/or the building owners

ⁱⁱ The NSF HQ fleet consists of only two leased vehicles. Due to the size of the fleet, it is unfeasible to establish meaningful targets for reduction.

ⁱⁱⁱ Most of NSF's contracts are professional service contracts, which do not have sustainability attributes.