National Science Foundation

Sustainability Report and Implementation Plan

2020

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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.

NSF occupies a single, multi-story building that is leased through the General Services Administration (GSA). The building maintains a Silver certification as rated by the U.S. Green Building Council Leadership in Energy and Environmental Design (LEED) Core and Shell program. The building is an 875,565 square foot building. NSF occupies 682,111 square feet of the building as the only federal government occupant which houses approximately 2,200 NSF employees and contractors. Additionally, the building includes 18,000 square feet of commercial space that is separate from the space NSF occupies.

NSF and the building managers work together to reduce both electrical and water consumption, by analyzing various meter and submeter data to identify possible targets of reduction. Additionally, to assist in the maintenance of the LEED certification, NSF purchases 6,000,000 kWh of Renewable Energy Credits (REC). All building renovations are coordinated with building management and conducted in line with LEED requirements.

NSF discovered a water consumption error in last year's report. Although the Federal space (682,111 square feet) in the building was fully occupied and operational, additional commercial space (18,000 square feet) was under construction and included in the water bill NSF received. The utility bills for water reflected total building use and did not identify and differentiate NSF water utilization. Working with building management, NSF was able to clearly differentiate its water utilization rate and identify NSF's actual usage. The building has no stormwater management requirements.

NSF has implemented a building-wide recycling program to reduce solid waste disposal. Additionally, NSF consolidates both its electronic recycling and battery recycling within the building to ensure the reduction of solid waste streams. NSF has developed metrics for all utility utilization, as well as recyclable and solid waste streams.

NSF directly manages a fleet of two standard fuel vehicles used for NSF operations. The FAST report includes additional vehicles that are not directly managed by NSF and are under internal analysis for reporting applicability.

Agency Priorities and Highlights

AGENCY IDENTIFIED PRIORITIES

NSF is committed to adhering to and advancing the goals of EO 13834, to the maximum extent possible. NSF occupies a single GSA-leased facility. Although GSA leased, NSF directly pays for electricity. The first NSF priority is to measure, analyze, and reduce energy utilization at the NSF headquarters facility.

In NSF's 2019 Sustainability Implementation Plan, the stated goal was to reduce energy utilization by 1% from 2018 utilization and further reduce energy utilization by 1% from 2019 to 2020. The table below demonstrates NSF's accomplishment of this goal.

2008 (Baseline Year) MWh	2017	2018	Percent Reduction from 2017	2019	Percent Reduction from 2018
15, 923	14,348	9,353	35%	7,021	25%[1]

In 2019, NSF implemented several initiatives to support the reduction of the use of electricity at the headquarters facility.

1) A floor-by-floor walk-through was conducted to identify possible areas of excess electrical use. The walk-through identified areas of improvement to include ensuring lights and computer monitors were being shut down upon the exiting of offices. In addition, internal newsletter articles were published to provide energy savings recommendations. The sustainability team also developed a desktop screen saver designed to be a reminder to turn off electronics and lights when not in use.
2) An energy action month outreach event was conducted to emphasize energy efficiency and solicit additional ideas from the building occupants. In response to feedback, the sustainability team developed informational articles, created frequently asked questions for the sustainability web page, and clarified recycling guidelines.
3) Metrics were developed to analyze floor-by-floor electrical use by plug load, lighting, and mechanical systems use. Data gathered informed the creation of an energy visualization tool that indicates areas of high energy consumption. This tool will be shared with the facilities team and building owner to inform the implementation of energy savings initiatives.

Similarly, NSF tracks water utilization on a monthly basis and has seen a reduction in utilization. However, this year NSF identified that utilization rates were inaccurately reported for 2018 in the 2019 report. NSF's reported utilization rate for 2018 was based on the amounts reported in the water bills, however, this represented the building's whole water use rather than representing NSF's operational use.

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[1] The electricity usage data from 2018 included data from NSF's previous building which caused 2018's data to be inflated.

2008 (Baseline Year) kGallons	2017	2018	Percent Reduction from 2017	2019	Percent Reduction from 2018
7663	4846	9739 (reported) 3646 (new estimated)[2]	25%	3313	9%[3][4]

NSF's second priority is to increase sustainability awareness with the over 2,200 occupants at the NSF headquarters facility. The increased awareness level will be accomplished in three ways:

1) Outreach events associated with Earth Day and Energy Action Month
2) Monthly sustainability-focused informational articles through NSF's communication channels
3) Update and revision of NSF's sustainability webpage

NSF's third priority is to develop and analyze utility utilization rates and solid waste diversion rates through the development of key metrics, to include electrical and water utilization, recycling rates, electronic recycling rates, and the measurement of avoidance of the use of single-use plastic bottles through four newly installed water bottle filling stations. The water bottle filling stations have a "Green Counter" that visually displays the number of plastic bottles saved from landfills based on 20 oz. bottles. This data is collected from each water bottle filling station and compiled in NSF's internal quarterly sustainability reports.

Notable Projects and Highlights

NSF's most pertinent sustainability project of 2020 will be re-baselining the entire building. The current baseline was approved in 2008, however, the utilization numbers were established in NSF's old building. The re-baselining effort would provide comparison utilization rates that reflect NSF's 2018 move to a LEED silver, energy-efficient building. NSF will focus on increasing the accuracy and granularity of its utility data to have a more comprehensive understanding of the facility's energy and water consumption.

NSF is planning its first agency-wide Earth Day event for the 50th anniversary of Earth Day and the 70th anniversary of the National Science Foundation. This event will highlight NSF-funded environmental and sustainability research over the last 70 years and will emphasize the sustainable features and programs of the headquarters building. Additionally, NSF is planning various outreach and communication projects such as a "spring cleaning" event to gather and account for excess supplies throughout the building and redistribute them where needed.

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[2] Extrapolated from 2019's reported water usage.

[3] Reduction as compared to the extrapolated usage amount in 2018.

[4] NSF identified utilization rates were inaccurately reported for 2018 in the 2019 report. NSF's reported utilization rate for 2018 was based on the amounts reported in the water bills, however, this represented the building's whole water use rather than representing NSF's operational use.

Lastly, NSF will conduct a waste audit to assess the performance of its recycling program and ensure the implementation of proper recycling practices.