National Science Foundation

Sustainability Report and Implementation Plan

2022

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2022 NSF Sustainability Plan

1. NSF Sustainability Plan Summary

As an organization striving to be a sustainability leader among federal agencies, NSF has a responsibility to address the risk of a changing climate by reducing our Scope 1 and 2 greenhouse gas (GHG) emissions and our resource use and by improving our energy efficiency and productivity. NSF partners with internal and external stakeholders to identify and implement opportunities to reduce our environmental impact across the organization. To manage emissions, NSF is focused on improving vehicle fuel efficiency by reducing the size of its fleet and by beginning to transition to zero emissions vehicles and is developing a plan to reduce building energy usage at NSF headquarters. Finally, NSF has several programs and partners in place to reduce solid waste disposal, increase recycling rates, and grow our sustainability-focused workforce to address the goals set by Executive Order 14057—Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability.

2. Priority Actions Towards Goals

A. 100 Percent Carbon Pollution–Free Electricity

In FY 2021, NSF purchased Renewable Energy Credits from Sterling Planet to offset 29.6 percent of electricity use which helped reduce greenhouse gas emissions by 68.1 percent from the FY 2008 baseline. In FY 2022, NSF will enroll in Dominion Energy's Renewable Electricity Certificate Select program using grid supplied electricity to obtain 100 percent carbon pollution-free electricity by FY 2030.

- FY 2022–2027: NSF plans to reach 100 percent carbon-free electricity in coming years either through Dominion Energy plans without biomass, or using plans offered by other providers. NSF will explore partnerships with GSA, DOE, and other federal agencies to explore most effective ways to reach 100% CFE by 2030, including 50% 24/7 CFE by 2030.

B. 100 Percent Zero-Emission Vehicle Fleet

NSF has and will continue to take steps to establish 100 percent zero-emission vehicle (ZEV) light duty acquisitions by FY 2026, exceeding EO 14057's requirement of acquiring all ZEV light duty vehicles by FY2027. NSF recently submitted its ZEV Strategic Plan outlining annual goals for acquisition of ZEV by type as well as EVSE targets. Two recently installed electric vehicle charging stations at NSF headquarters will support the transition to an all-electric light-duty fleet. Priority actions in FY 2023 include the following:

- Analyze existing facility infrastructure and NSF operational needs to determine viable options for switching to ZEV and potential challenges posed by the transition to an all-electric fleet.
- Meet the targets set in NSF's ZEV Strategic Plan by acquiring 25 light duty ZEVs and 10 L2 EVSE stations

C. Net-Zero Emissions Buildings, Campuses, and Installations

i. Design and Construction for Net-Zero Building Emissions

NSF headquarters in Alexandria, VA, which is leased by GSA, had no construction projects greater than 25,000 gross square feet within the last year and none are being planned for next year. NSF will design for net-zero building emissions if new headquarters construction projects are planned in the future.

ii. Increasing Energy Efficiency

NSF's energy intensity in FY 2021 was 65.9 percent lower than the FY 2008 baseline. This is largely due to the agency's move in FY 2018 from an office that was not Leadership in Energy and Environmental Design (LEED) certified to our current LEED-Silver certified headquarters in Alexandria, VA. NSF will continue to prioritize energy efficiency in FY 2022:

- Consider improving the headquarters building's heating and cooling strategies—especially during non-work hours and over weekends. NSF's building is equipped with motion-sensor thermostats that can be programmed to only heat or cool an area when triggered by motion.
- Make energy usage trends visible to employees to promote awareness and responsibility.
- NSF will implement a new remote work policy and will examine using office space more efficiently, consolidating employees to fewer rooms and floors to reduce the space that requires heating, cooling, and lighting.

iii. Increasing Water Efficiency

NSF's water intensity in FY 2021 was 28.6 percent lower than the FY 2007 baseline. This is largely due to the agency's move in FY 2018 from a non-LEED certified office to our current LEED-Silver certified headquarters in Alexandria, VA. NSF will continue to prioritize water efficiency in FY 2022:

- Examine water consumption at the headquarters office, including potentially adjusting fixtures to make them more water efficient.
- Educate employees on water-saving tips, including through an upcoming monthly NSF sustainability newsletter.

D. Reducing Waste and Pollution

NSF has taken steps to reduce waste and pollution, such as installing new water fountains with a water bottle filling feature to encourage employees to use refillable bottles in place of single-use plastic bottles. In FY 2021, the City of Alexandria approved the NSF recycling plan. NSF will continue expanding our recycling program to continue reducing solid waste in the office. NSF has taken several actions to implement in FY 2022 and beyond:

- Purchase office and cleaning products in bulk to reduce packaging waste and delivery emissions. Reduce plastic bag consumption by installing larger recycling bins that will require less frequent bag replacements.
- Divert waste by beginning to recycle glass inside headquarters and educate employees about ways to reduce food waste, especially at panels and meetings.
- NSF has recently eliminated Styrofoam usage throughout the headquarters building and will look to make this a permanent change.

NSF expects to begin recycling glass by Fall 2022. Upcoming goals will be to properly spread awareness and instructions to employees through the upcoming monthly newsletter and signage posted throughout the building to make the program as effective as possible.

E. Sustainable Procurement

NSF has incorporated sustainable procurement requirements in solicitations and awards. In coming years, NSF will identify opportunities to further incorporate and strengthen sustainability in agency-wide purchases. Sustainable procurement requirements include purchasing products related to the following categories:

Energy Efficiency/Greenhouse Gas Emissions:

- ENERGY STAR® and Federal Energy Management Program-compliant equipment/products
- Renewable energy products/credits
- Non-Ozone Depleting Substances and/or those covered by the Environmental Protection Agency's (EPA) Significant New Alternatives Policy program (chemicals and/or equipment)

Water Efficiency/Waste Management:

- WaterSense and other water efficient products
- NSF Affirmative Procurement Program for (EPA) Designated Recycled Content

Transportation/Fleet Management:

- Bio-based and USDA-designated Bio-preferred products
- Alternative fuel vehicles and alternative fuels

F. Climate- and Sustainability-Focused Federal Workforce

NSF has a team of employees that are passionate about creating a sustainable workplace and environment known as the "NSF Green Team." The NSF Green Team used the "Employee Education and Engagement" section of EO 14057 as a pillar of its mission and has made strides in employee awareness regarding water and energy efficiency as well as waste reduction action items. We recently updated our website and added resources for employees to learn more. In FY 2022 and beyond, we will work toward the following actions:

- Begin a monthly sustainability newsletter in Summer 2022, which will include information to educate employees on how to become more sustainability-conscious in the office and at home, as well as through actions like clean ups, biking to work, and hosted field trips. The first newsletter will focus on options for commuting to work, including both information on biking to work as well as public transit options.
- Upcoming newsletters will likely focus on recycling and reducing waste inside NSF headquarters as well as energy-saving tips for employees at home.

G. Incorporating Environmental Justice

An important priority of NSF is to ensure that historically underrepresented and underserved groups benefit from advances in science and technology. This includes supporting programs that

fund research aimed at benefiting communities disproportionally affected by climate change, energy costs, pollution, and under-investment in infrastructure. Examples include the following:

- The Smart & Connected Communities (S&CC) program encourages researchers to work with community stakeholders to identify and define challenges they are facing, enabling those challenges to motivate use-inspired research questions. For this solicitation, community stakeholders may include some or all of the following: residents, neighborhood or community groups, nonprofit or philanthropic organizations, businesses, as well as municipal organizations such as libraries, museums, educational institutions, public works departments, and health and social services agencies. The S&CC program supports integrative research that addresses fundamental technological and social science dimensions of smart and connected communities and pilots solutions together with communities.

- The CIVIC Innovation Challenge is a research and action competition in the S&CC domain designed to build a more cohesive research-to-innovation pipeline and foster a collaborative spirit. Building on the S&CC program and the extensive S&CC ecosystem, CIVIC aims to accelerate the impact of S&CC research and deepen cooperation and information sharing across sectors and regions. CIVIC will fund projects that can produce significant community impact within 12 months.

  The Coastlines and People (COPE) program supports diverse, innovative, multi-institution awards that are focused on critically important coastlines and people research that is integrated with broadening participation goals. The objective of this solicitation is to support Coastal Research Hubs, structured using a convergent science approach, at the nexus between coastal sustainability, human dimensions, and coastal processes to transform understanding of interactions among natural, human-built, and social systems in coastal, populated environments.

H. Accelerating Progress through Partnerships

NSF has and will continue to rely on partnerships to become a federal agency sustainability leader and more effectively catalyze the growth of clean energy industries and jobs.

- NSF renewed our memorandum of understanding (MOU) with the Department of Energy's (DOE) Office of Energy Efficiency and Renewable Energy to fund research into decarbonization and help underserved communities that are impacted by the transition to renewable energy sources.
- NSF's partnership with DOE funded the Sustainable Regional Systems program with $30 million to research regional systems that provide critical resources to communities and design solutions that make sustainable, resilient, and equitable future systems.
- NSF will continue to use REC partnerships in coming years to achieve the 100 percent carbon-free goal, from Dominion Energy or others.
- NSF works with other agencies on sustainability work when appropriate, such as with GSA to manage our LEED-Silver certified headquarters office and fleet.

3. Progress Examples

Invested in sustainability research:

In FY 2021, NSF invested $30 million to research sustainable, equitable, and resilient regional systems across the US. "Regional systems" are interdependent human and ecological systems that interact at multiple levels, from rural to urban settings. Two funded programs will study different aspects of regional systems that provide critical resources to communities and to design solutions.

- The first awardee will investigate the causes of food system waste, develop sustainable solutions like rescuing and repurposing unused food, and advance systemic security and reliability. The focus will be on the Great Lakes, Mid-Atlantic, Southeast, and California regions—areas that grow regional foods and have different seasonal crops—to create typologies and generalized models that could transform food systems across the nation.
- The second awardee will investigate headwaters and headwater-dependent systems, food-energy-water systems, and options for oversight and management that will create a more sustainable future for people and ecosystems. The focus will be on three regions—the upper Rio Grande/San Juan River watersheds; the Colorado Front Range corridor; and the inland Pacific Northwest—that share challenges of population growth, wildfires, and shrinking water supplies.

Incorporated facility climate resilience into grant process:

NSF is creating and implementing new internal standard operating guidance related to assessing the conditions of major facilities for NSF staff. One element of this new guidance will require that resilience to climate change (including flood resilience) be reviewed on a regular cadence as part of overall condition assessments.

- The schedule for review will depend on the award period of performance for each facility. The condition assessment itself will generally be conducted by the facility manager, and NSF will subject the assessment to an expert panel to review and inform decisions on needed funding.

Eliminating the NSF headquarters cafeteria:

NSF's cafeteria inside our headquarters will remain closed indefinitely. NSF sees this as an opportunity to significantly reduce our environmental impact by reducing energy and water usage as well as food waste. The cost savings can then be applied to more effective NSF projects.

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