

U.S. Nuclear Regulatory Commission 2018 Sustainability Report and Implementation Plan

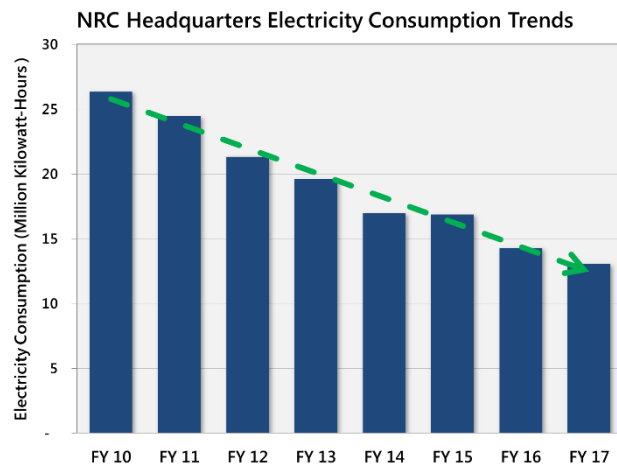
Executive Summary

The U.S. Nuclear Regulatory Commission (NRC) licenses and regulates the Nation's civilian use of radioactive materials to provide reasonable assurance of adequate protection of public health and safety, to promote the common defense and security, and to protect the environment. Protecting the environment is vital to the NRC's mission, as reflected in the agency's commitment to incorporating strategies that promote sustainability into its daily operations. The NRC continues to comply with the goals stated in Executive Order 13834, "Efficient Federal Operations," signed May 17, 2018, and views sustainability as an integral part of its business planning and decision-making.

Facility Energy Efficiency

At its headquarters offices located in North Bethesda, MD, NRC-managed facilities comprise two high-rise office buildings totaling 998,000 gross square feet (GSF): the One White Flint North (OWFN) facility is owned by the General Services Administration (GSA), and the Two White Flint North (TWFN) facility is owned by the Lerner Corporation and leased through GSA. In addition, the NRC occupies office space that is managed by GSA at the Three White Flint North building.

The agency has implemented several energy savings strategies and continues to evaluate trends and identify other potential energy reduction measures. As a result of its robust energy management program, the NRC has cut electrical energy consumption by over 50 percent since FY 2010. This effort has also allowed the agency to meet its reduction target for sustainable buildings. In FY 2017, the NRC realized a 10-percent reduction in energy intensity in facilities when compared to the FY 2015 baseline of 49,448 British thermal units (BtU) per GSF, and a greater than 60-percent reduction in energy intensity compared to the FY 2003 baseline of 112,122 BtU per GSF.



To capitalize on building lease terms and for future office space efficiencies, all 10 floors of the TWFN building are being completely renovated. This major project, which began in FY 2014, is expected to be completed by the end of FY 2019. Design specifications for the TWFN renovation project ensure that, when applicable, the contractor installs ENERGY STAR and energy-efficient equipment. The TWFN renovation project also incorporates several design features that are based on strategies and technologies proven to lower building electrical consumption. One main focus area involves improved office lighting. As each floor is renovated, the NRC is installing new light-emitting diode (LED) light fixtures that are connected to office area occupancy sensors and to the agency's computerized building management

system (BMS). This enables building operators to employ lighting strategies to reduce the use of electricity. Each floor will also be designed to use new technologies to implement light-harvesting techniques in office spaces. Light harvesting allows the agency to dim the LED light fixtures near the building envelope when sufficient natural lighting is available.

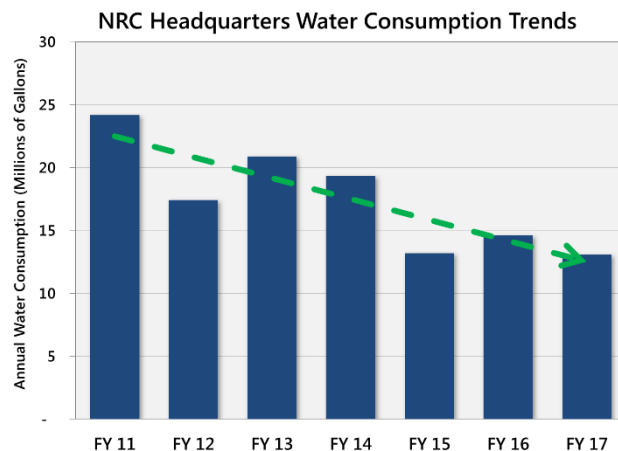
The TWFN renovation project has also made several improvements to the heating, ventilation, and air conditioning (HVAC) system. In FY 2018, all the building chillers were replaced with new high-efficiency, oil-free magnetic bearing chillers to lower electrical use. In addition, each of the floor's large air-handling units will be replaced with high efficiency motors. New variable air volume (VAV) units are being installed, which include digital controls and variable stage heating elements, and will be tied to the TWFN BMS to optimize energy consumption while, at the same time, maintaining office area comfort.

To reduce office space in the future, OWFN floors will be renovated when funding permits to incorporate many of the same design features used in the upgraded TWFN building. To date, three floors have been renovated with the vastly improved LED lighting and controls, including light harvesting and other passive design features that optimize the use of natural lighting. During FY 2016, GSA completed the replacement of all VAV units on every floor of OWFN. The new VAV boxes have digital controls and variable stage heating. As previously noted, the new VAV units are connected to the agency's BMS to optimize their use during the heating and cooling seasons. Future GSA plans also include the replacement of the building's air-handling units with more efficient units.

Water Use Efficiency

The NRC has implemented several water-saving strategies and continues to evaluate water usage trends to identify other ways to reduce water consumption. As a result, the agency has reduced water use by over 30 percent since FY 2011.

Historically, one of the most significant sources of water consumption is wastewater associated with occupants' use of restrooms. To reduce the amount of water usage associated with wastewater, the NRC has focused on upgrading high-flow restroom fixtures with more efficient low-flow fixtures.



The NRC is also focused on more efficient HVAC operation methods throughout its facilities. With the recent installation of sub-meters, the NRC building maintenance staff is now able to more closely monitor water usage associated with the HVAC system. As a result, the agency has adjusted certain operations in an effort to reduce excessive water usage. The NRC will continue to monitor water usage associated with the HVAC system and will remain proactive in reducing unnecessary water consumption during operation.

In TWFN, the major floor renovation project now underway includes the installation of a domestic hot water recirculation system to significantly reduce the amount of hot water used by building occupants. This system provides instantly available hot water, which eliminates the

need for occupants to run, and thus waste, potable water while waiting for tempered water. Another sustainability design feature included in the renovation project is the installation of a new filtered drinking water system with water fountains that are integrated with a water bottle filler. The new water fountains are expected to reduce plastic bottle waste by the staff.

Waste Management and Diversion

The NRC continues to benefit from the robust recycling and waste diversion program implemented at its facilities. The staff is reminded throughout the year about the recycling program, and the agency strives to make the recycling process as simple as possible to encourage greater participation. As a result of these efforts, the agency recycled over 113 tons of waste in FY 2017 that did not end up in local landfills.

Transportation/Fleet Management

The NRC continuously measures and evaluates various approaches to increase the sustainability and efficiency of its transportation fleet. Of the 17 vehicles located in North Bethesda, three are hybrid vehicles, and eight are flex-fuel capable vehicles.