

Fiscal Year 2016 Accomplishment Report

CONTENTS

1> A More Prepared Forest Service: Six Years of the Climate Change Performance Scorecard

7> Annual Greenhouse Gas and Energy Report

10 > Sustainability in Action

11> Corporate Priority Action Items

12> \$1 Million AFFECT Grant will Leverage \$20 Million in Energy Conservation

Six Years of Results from the Climate Change Performance Scorecard: A More Prepared Forest Service

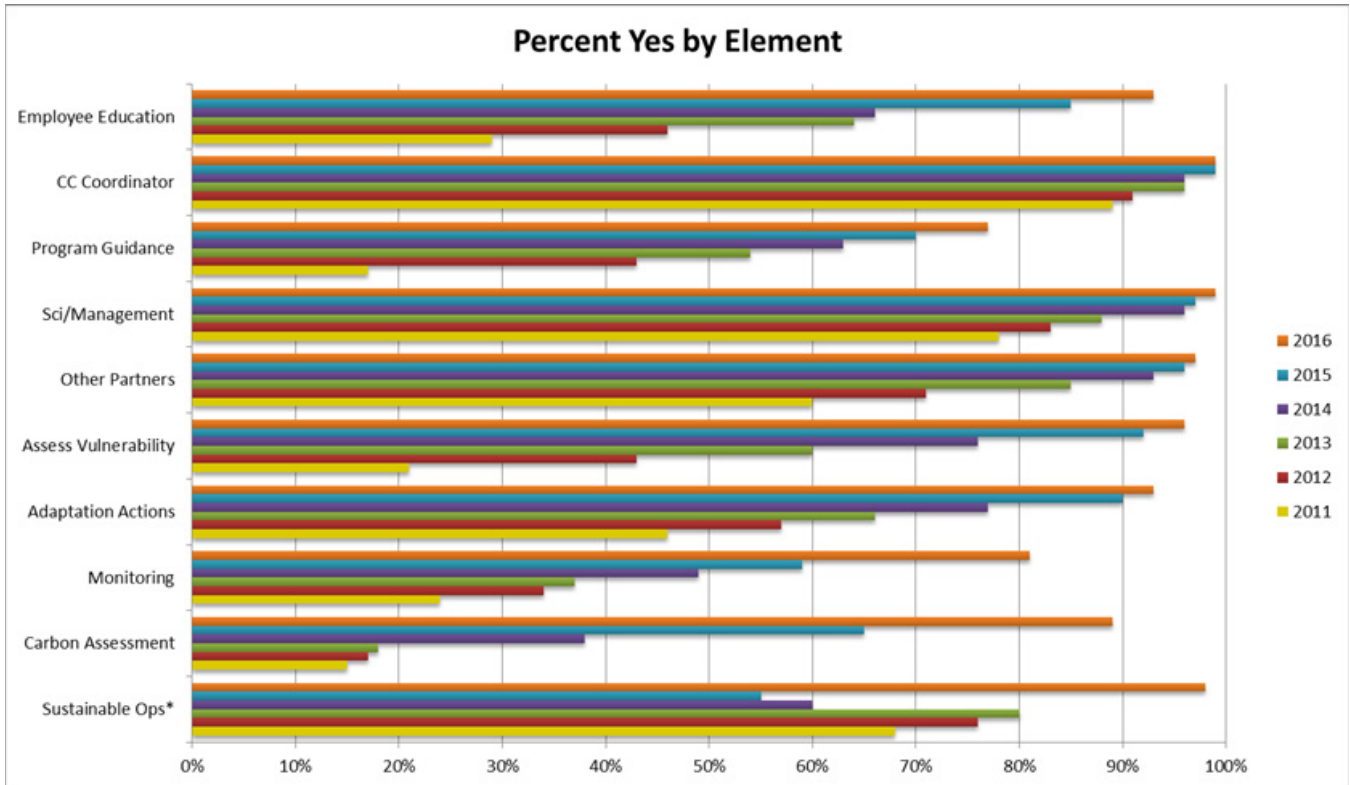
The [Climate Change Performance Scorecard](#) has been in place for six years, from 2011-1016. Over this time, it has shown the agency’s progression from climate change literacy and baseline assessments, to preparing to take action on national forests and grasslands across the country. The importance of the achievements made in the last six years are impressive and wide-ranging, and the agency continues to be a leader in promoting and supporting climate resilience.

In 2011, the Forest Service developed the [National Roadmap for Responding to Climate Change](#), with ten elements divided into four dimensions: Organizational Capacity, Engagement, Adaptation, and Mitigation. Implementation of the four dimensions was mandatory for all Forest Service units. To maintain accountability and to measure progress towards the Roadmap goals, the Forest Service created the [Climate Change Performance Scorecard](#) with ten “yes” or “no” elements to measure a unit’s strengths and weaknesses in preparing for climate change.

The goal was for each national forest and grassland unit to respond “yes” to seven of the ten elements by FY2016, including one in each of the four dimensions. All 113 administrative units met the agency’s goal! This sustained progress is shown in Figure 1 below.



Figure 1 - Forest Service Progress on the Climate Change Performance Scorecard



Overall Scorecard Results

- » In FY2016, every national forest administrative unit responded “yes” to seven or more elements with one “yes” in each dimension. This is a 65 percent increase in units achieving their targets in FY2011.
- » The largest percent increase in national forest units answering “yes” between FY2011 to FY2016 was seen in Element 1: Employee Education (approximately 64 percent), Element 6: Assessing Vulnerability (approximately 75 percent) and Element 9: Carbon Assessment and Stewardship (approximately 74 percent). This progress is a result of the targeted investments made by the Office of Sustainability and Climate (OSC) over the past three years.

Organizational Capacity PROGRESS

Element 1: Employee Education - In FY2011, less than 30 percent of units reported that all employees were provided with climate change training. This low response prompted the OSC to invest in the [Climate Change Resource Center](#) (CCRC) to produce climate change educational modules for all employees.

This year the CCRC produced their third module, "[Responses to Climate Change.](#)" which along with the two previous modules, "[Climate Change Science and Modeling.](#)" and "[Climate Change Effects on Forests and Grasslands](#)" give an in-depth introduction to basic climate change science, the effects of climate change on forest and grassland ecosystems, and how we can respond to climate change with management.

These and other positive efforts to provide employee education have led to a **64 percent increase** in the units responding yes to Element 1 in 2016.

Element 2: Climate Change Coordinators – Nearly all units (99 percent) have reported “yes” in designating a Climate Change Coordinator. This achievement has helped the agency build the organizational capacity needed to support climate education and resource resilience, and provides a point of contact on each unit for information. It also ensures that these individuals receive the proper training, time, and resources to successfully support their programs.

Element 3: Program Guidance – Six years ago this element had the second lowest “yes” response rate with 17 percent. Many field units needed additional national and regional guidance on how best to account for climate considerations in program delivery. Since then the OSC has worked to ensure that the necessary tools and guidance are available at the local level. These efforts have led to an increase of 60 percent in “yes” responses since 2011.

The OSC continues to work with regional and national personnel to develop climate change language to enhance and inform program guidance, such as using the Watershed Condition Framework to assess and track the impacts of climate change on water resources.

Organizational Capacity SUCCESSES

Alaska Region: Both national forests in Region 10 were engaged in significant planning efforts throughout FY2016 that will help to provide future program guidance.

The **Chugach National Forest** has completed a state of the art **Climate Vulnerability Assessment** and are developing substantial and innovative climate change program guidance for their revised plan.

The **Tongass National Forest** is nearing completion of the first substantial **Forest Plan Amendment using the 2012 Planning Rule**. This amendment contains a significant analysis of the carbon costs of the Tongass NF forest management program and a detailed discussion of the carbon calculus for promoting the use of locally-derived biomass energy as an alternative to fossil fuels in rural communities.

Eastern Region: The Climate Change Task Force on the **Green Mountain NF** developed the FY2016 **Green Mountain Climate Change Response Action Plan** that guides how the forest can integrate climate change issues and responses into existing programs and activities. Implementation began in March 2016.

S
U
C
C
E
S
S
E
S

Engagement Success

The [National Climate Change Vulnerability Assessment Story Map](#), developed in collaboration between OSC and the Pacific Northwest Region, showcases areas across the country where vulnerability assessments have been completed. Detailed information is available for each of the 32 assessments which can be filtered based on the resource types assessed (e.g., hydrology, infrastructure, recreation).

Southwest Region: The **Carson National Forest** in Region 3 is working as part of the Taos Valley Watershed Coalition to implement projects on the Questa and Camino Real Ranger Districts.

This partnership is using a proactive landscape-scale strategy that goes beyond the restoration of historical conditions to increase forest and watershed resilience where large fires and insects threaten long-term impairment to ecological function.

Partners include local communities, The Nature Conservancy, New Mexico State Forestry, New Mexico Wildlife Federation, Taos County, Taos Pueblo, Taos Ski Valley, Taos Soil and Water Conservation District, Town of Taos, and Trout Unlimited.

SUCCESSES

Engagement Progress

Element 4: Science-Management Partnerships –

Nearly every unit across the agency has recognized the importance of managers and scientists working together to address the challenges of climate change, with **99 percent responding “yes”** to this element. These partnerships provide land managers with the latest in climate science information to help inform their decision-making process, and help scientists to focus their research toward areas of greater need.

Element 5: Other Partnerships – This element has been successful in creating partnerships with other agencies, tribes, community organizations, and local stakeholders. Working together as part of an all-lands approach has allowed us to look at problems and respond with solutions at a landscape scale, rather than an administrative scale.

Element 6: Assessing Vulnerability – In FY2011, approximately 20 percent of units reported developing information about the vulnerability of key resources to climate change. Due to lack of capacity and expertise at the field level, the OSC helped facilitate, conduct, and develop vulnerability assessments as well as adaptation plans (Element 7) for the national forests in the western U.S.

In FY2014, a standard vulnerability assessment framework was implemented across several regions. The four-step process begins with conducting educational workshops/webinars, followed by compiling a vulnerability assessment of key resources to climate change, developing adaptation strategies to the vulnerability assessment, and ending with implementing the vulnerability assessment and adaptation strategies in agency resource planning and management processes.

Adaptation Progress

Element 7: Adaptation Actions – In FY2011, although only 20 percent of NFS units had assessed the vulnerability of their resources, almost 50 percent had developed climate change adaptation plans. This highlighted a fundamental misunderstanding regarding the nature of the assess-adapt-monitor framework laid out in the National Roadmap for Responding to Climate Change. Units cannot develop well-reasoned climate change adaptation plans if they do not first determine

which resources they manage are most vulnerable. To remedy this situation, scientists from Forest Service Research Stations and academic institutions were asked to assist units and regions in carrying out these analyses. By FY2013, results began to reflect the intended application of the Roadmap, as more units reported completing vulnerability assessments before preparing adaptation plans. Today, 96 percent NFS units have successfully completed both.

Element 8: Monitoring - Narrative responses to this element of the Scorecard indicate significant variability in how units understand and apply climate considerations to their monitoring programs. Field units have asked the OSC to clarify expectations and provide additional tools and support mechanisms for carrying out these activities. The OSC is currently assessing how units are monitoring the impacts of climate change and the effectiveness of adaptation actions on particularly vulnerable resources. This assessment will inform new approaches to effective monitoring and aid units in implementing the climate change monitoring requirements of the 2012 Planning Rule.

Mitigation Progress

Element 9: Carbon Assessment and Stewardship - In FY2011, only 15 percent of units reported developing baseline assessments of carbon stocks and disturbance, and integrating carbon stewardship with the management of other benefits on the unit. This low response rate led the OSC to fund several Research and Development Scientists to use the Forest Inventory and Analysis Data and prepare a set of standardized baseline assessments and companion disturbance assessments (draft) for all regions. Since 2011, the number of “yes” responses to Element 9 has risen to 89 percent in 2016, including a 24 percent increase in 2015.

This improvement was aided by the OSC’s completion of the broad-scale carbon assessments for each region as well as the issuance of supplementary Scorecard guidance that clarified exactly what action was required to justify a “yes” response.

SUCCESSSES

Adaptation SUCCESSSES

Northern Research Station and Northern Institute of Applied Climate Science: In 2016, the Northern Institute of Applied Climate Science and US Forest Service Northern Research Station released an updated and expanded edition of [Forest Adaptation Resources: Climate Change Tools and Approaches for Land Managers](#). *The latest edition contains additional* resources to support the development of vulnerability assessments as well as adaptation in urban forests. The Adaptation Workbook has contributed to the development of real-world adaptation projects, such as the bottomland forest restoration project in southern Illinois and Indiana funded in part by the Wildlife Conservation Society’s Climate Adaptation Fund, and involving the Shawnee National Forest and other state, non-governmental, and federal partners.

Southern Region: The **Chattahoochee-Oconee National Forests** have implemented monitoring projects to track climate change impacts and the effectiveness of adaptation strategies. They are working with partners including the **Georgia Forestry Commission and Forest Health Protection** on projects including bird monitoring, assessing changes in abundance and distribution of species at risk and invasive species, monitoring acidification levels in Class 1 airsheds, monitoring air quality values (water quality and ozone) in Wildernesses, and forest health monitoring for hemlock woolly adelgid, gypsy moth, thousand cankers disease, Southern pine beetle, and emerald ash borer.

Mitigation SUCCESSSES

Pacific Southwest Region -

California provides a unique backdrop for Element 9 given the carbon opportunities and work of the state. The release of the Washington Office whitepapers on baseline carbon stocks for all national forests provides baseline assessments; however these national assessments do not take into account some important systems, like chaparral and meadows which are significant areas to monitor.

To address this gap, the Province Ecologist for these forests (based on the Los Padres National Forest) developed a method for estimating carbon stocks in shrub-dominated habitats based on readily available data. Ongoing research on meadow carbon is also underway in the Sierra region.

Northern Research Station (NRS) - The *NRS Forest Science Laboratory in*

Delaware, OH, used microgrant funding in FY2016 to install a drip irrigation system for 2,500 American elm saplings. The system reduces the need for employees to drive to the remote location on the weekends to water the saplings, and conserves over 45,000 gallons of water over the course of an 18-week summer growing season. It is estimated to save over \$5,000 per year in water, salary, and fuel costs.

SUCCESSSES

FY2016 also saw the development of a draft version of a new tool that will help forests understand the effects of disturbances and land use changes on forest carbon. The tool will help forests manage their carbon along with other key ecosystem services.

Element 10: Sustainable Operations – FY2016 marked the implementation of the new Element 10 v2.0 and was used as a preliminary assessment period to build support and understanding of the new requirements.

In order to expand the environmental and cost saving benefits of Element 10, the number of units required to report increased in FY2016 from 113 national forests, grasslands, and scenic areas to include 15 new units (Washington Office, Regional Offices, Research Stations, the Northeastern Area, and the International Institute of Tropical Forestry). Of these 128 reporting units, 108 answered “yes” to Element 10, representing an increase from 55 percent in FY2015 to 84 percent in FY2016.

Annual Greenhouse Gas and Energy Report

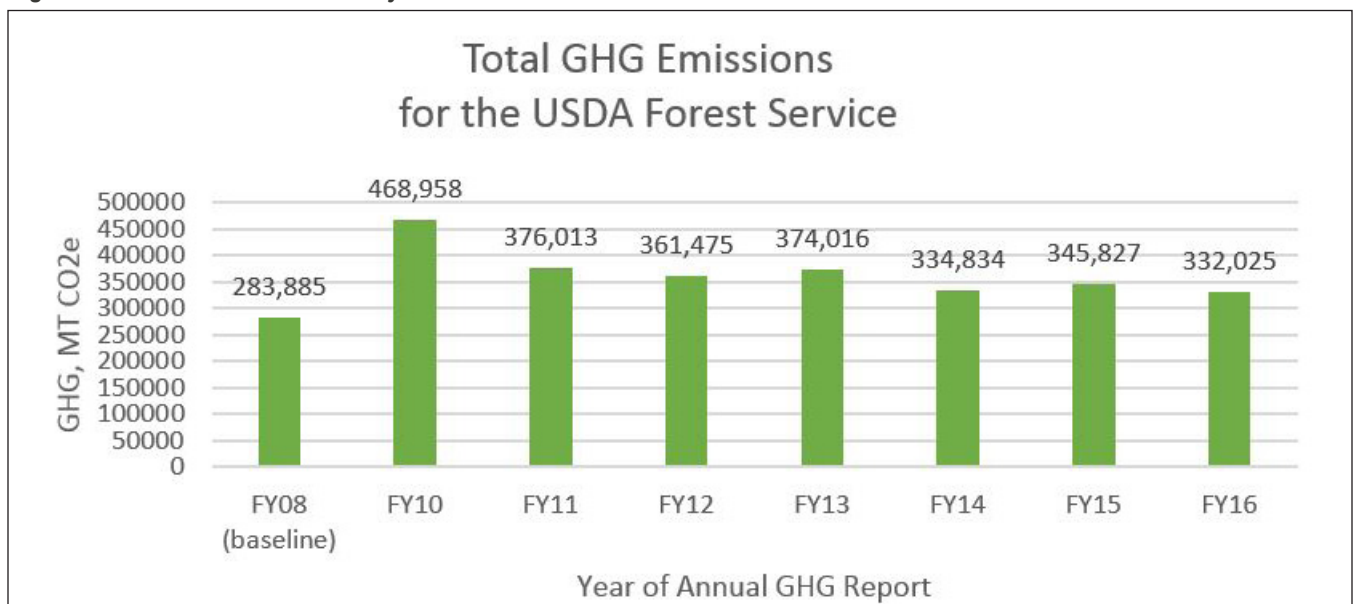
The annual Greenhouse Gas (GHG) and Energy Report includes data for greenhouse gas emissions, energy and water consumption, and other information required by laws such as the Energy Independence and Security Act of 2007 and executive order.

Greenhouse Gas Emissions

Total Forest Service GHG emissions decreased by nearly 4 percent from FY2015 to FY2016. As shown in Figure 1, the trend showing an overall reduction in total GHG emissions since 2010 reflects the agency's progress in such categories as mobile emissions (fleet vehicle use) and purchased electricity. Building energy use decreased by 6.5 percent from FY2015 to FY2016.

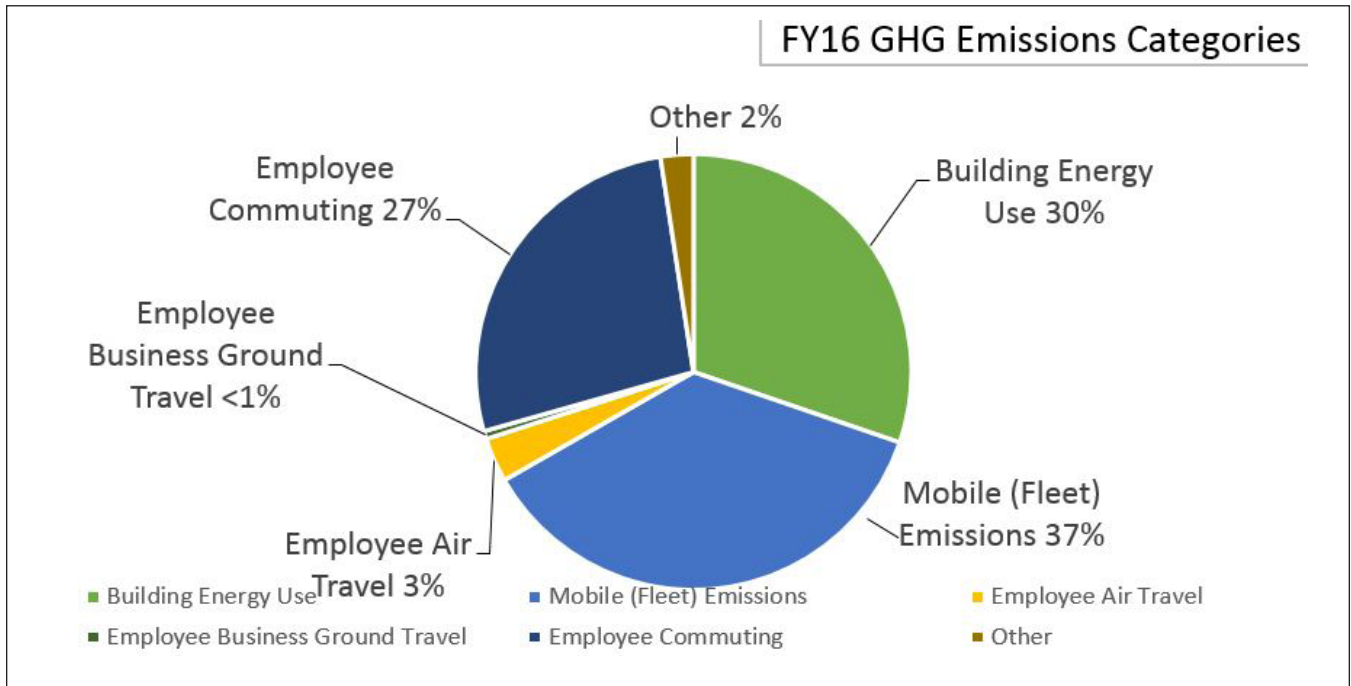
A contributing factor in this change was a substantial decrease in reported stationary combustion emissions (building heat). The winter of 2016 was the warmest on record for the contiguous United States—and the second warmest in Alaska—so it is not surprising that the use of fuels for building heat was substantially lower in FY2016.

Figure 1 - Total GHG Emissions by Fiscal Year



Looking at the distribution of GHG emissions by category can help us prioritize work for the agency in achieving efficiencies. As shown in Figure 2, mobile emissions, building energy use, and employee commuting are our three largest emission categories.

Figure 2 - FY16 GHG Emissions by Category



To improve the accuracy of reporting on emissions from employee commuting, a new commuter survey, administered by the General Services Administration, was deployed agency-wide in FY2016. In addition to the emissions estimate, FY2016 survey results reveal where opportunities exist to lower our environmental footprint from employee commuting.

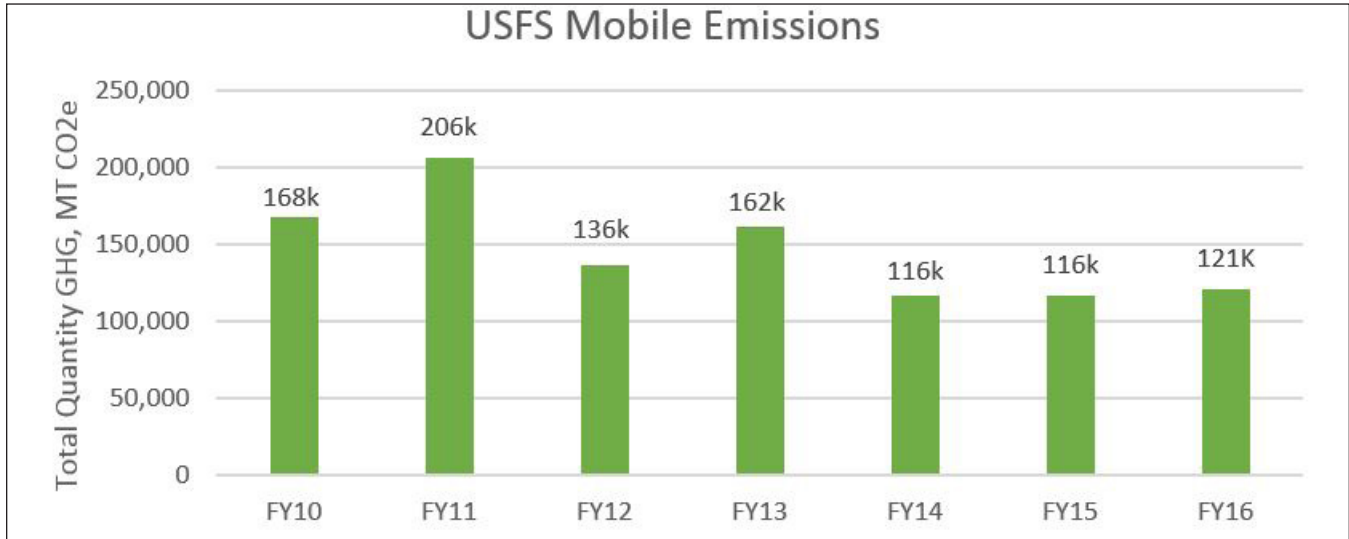
In order to meet reduction targets established in EO 13693 by FY2025, the Forest Service will need to make further investments in renewable energy, building efficiencies, and alternative vehicles, as well as expand the use of telework, alternative work schedules, and commuter benefit programs.

Energy Consumption

Federal requirements have been to reduce the energy intensity (energy used per gross square foot of building) by 3 percent per year to achieve 30 percent total reduction by FY2015 (with 2003 as the baseline year). This was raised to 55 percent reduction by FY2025 by EO 13693. However, variability in the accuracy of energy use data (particularly before FY2015), as well as a baseline that we are not able to replicate, limits the use of this overall number as a measure of effectiveness for our energy efficiency efforts.

Also, energy data reported includes electricity for sites that are not buildings (such as campgrounds) so the energy intensity is not comparable to industry standards. It would be more helpful to analyze a sample of high performance sustainable buildings (HPSBs) as an indicator of progress.

In FY2016, Forest Service fleet and equipment used 13.5 million gasoline equivalent gallons. This is slightly higher than the reported figure in FY2015, but part of an overall downward trend in the Forest Service.

Figure 3 - Mobile Emissions by Fiscal Year

Renewable Energy

The Forest Service was required to use 20 percent renewable energy that meets 2005 Energy Policy Act (EPAct) requirements by FY2020. This goal was raised to 30 percent by FY2025, with 25 percent of energy considered clean energy. In FY2016, 3.2 percent of the electricity used by the Forest Service came from renewable sources. However, the agency could only report 1.9 percent because the EPAct definition does not include conventional hydropower. The 1.9 percent does not show the agency on track to meet either goal, but some of this gap lies with reporting issues. In FY2016, progress was made on this front by partnering with Natural Resource Manager (NRM) to implement new renewable energy attributes within corporate facility databases (Infra). In FY2017, we will work with the field to populate these new data elements to better capture renewable energy information for the next reporting year.

New Construction

Beginning in FY2007, new building designs are required to be 30 percent more energy efficient than the relevant code, in cases where the energy savings would eventually surpass any increase in construction and maintenance costs over the life of the building. Of the 118 buildings the Forest Service has started designing since the beginning of FY2007, 93 percent are at least 30 percent more efficient than ASHRAE 90.1. New designs not meeting the efficiency standards include barracks, warehouses, fire stations, and barns in which energy performance is hard to quantify and measure against building efficiency standards.

Reliability and the Road Ahead

Improvements in building, fleet, and commuter energy consumption reporting have been made through actions such as the Utility Bill Cleanup (UBC), implementation of a new commuter survey, and the development and implementation of data standards. Continued prioritization of the management of the agency's corporate information will be key to obtaining more meaningful reporting metrics in the future. In some cases, as the data improves, we may report decreases in efficiency such as with water consumption. This will, however, be beneficial for efficiency efforts in the future. Without a reliable way to measure results, employees will be less likely to participate in consumption reduction actions.

Sustainability in Action

Net Zero

The Net Zero Network continues to strive toward achieving a balance between our business operations and the environment by providing guidance, expertise, and funding for units to reduce their footprint in the areas of waste, water, fleet, and energy. It aligns our business operations with the agency's mission, makes us leaders in sustainability, and improves our efficiency, resilience, and energy independence. These efforts also help our agency move toward the goal set forth in EO 13693 of converting 30 existing buildings over 5,000 GSF to net zero energy, water, or waste by 2025.

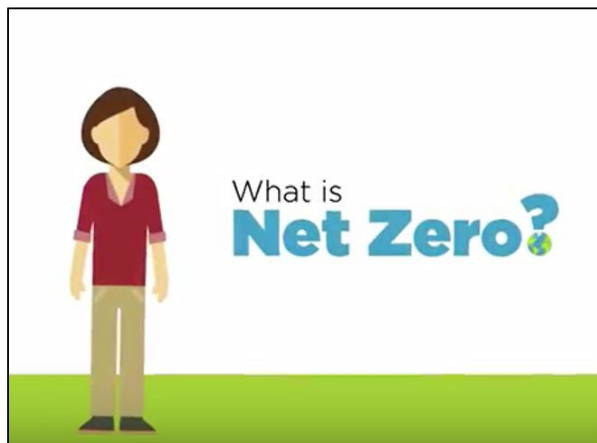
FY2016 saw the number of units participating in the Net Zero Network grow from 13 to 46, with these units creating Net Zero Action Plans and implementing Net Zero principles in the field. The Net Zero Network awarded 23 of these units start-up funding and invested in 15 Net Zero projects. These funds were used to perform energy audits and increase the efficiency of facilities through measures such as improving insulation, installing new heating and cooling systems, and upgrading fixtures.

Wildland fire camps also looked for ways to reduce waste using the ideas of Net Zero, and in 2016 the agency partnered with the National Renewable Energy Laboratory to perform audits of two fire camps. These audits will be used to produce a best practices guide in the future with the goal of achieving Net Zero waste on all large fire incidents by 2030.

Net Zero Video

A [three-minute video](#) was developed that shares the principles of Net Zero and what the Forest Service is doing to achieve its Net Zero goals in the areas of energy, fleet, water, and waste.

It is posted on the US Forest Service YouTube channel, available for sharing both internally and externally.



SPOTlight

The *Chequamegon-Nicolet National Forest* recently completed the first phase of a capital investment project to bring the Northern Great Lakes Visitor Center (NGLVC) closer to its Net Zero goals. This 37,000 square foot facility hosts 125,000 visitors per year, contributing \$5 to \$6 million annually to the local economy. However, since opening in 1998, it has not a good example of sustainable energy use.

The NGLVC began their project with a study by the National Renewable Energy Lab (NREL) that analyzed the energy use of the visitor center and created a plan for increasing its efficiency. As a result of the study, the forest used Capital Investment and Maintenance funding to complete the first phase of a \$2.4 million contract. Completed projects include a 100 kilowatt photovoltaics system, new components to the HVAC system, insulation, LED lights, low flow plumbing fixtures, and new siding.

The Chequamegon-Nicolet NF is proud of the direction the NGLVC is heading by setting a new standard for energy-efficient Forest Service buildings, and for demonstrating sustainability and resilience in a changing climate. Visitor Center Program Manager Jason Maloney says “Really one of the functions of this place—aside from being an educational center and being a very public platform for messages—is an economic engine of sustainability in the area.”

Corporate Priority Action Items (CPAIs)

CPAIs are based on results of field-based projects that are determined to be applicable at a national level and will result in a significant change in behavior, increase in efficiency, and/or cost savings. Two sustainable operations CPAIs are implemented on the corporate scale annually. In FY 2016, the Forest Service focused on items selected by the Executive Leadership Team: **Utility Bill Cleanup and Vehicle Idling Policy**.

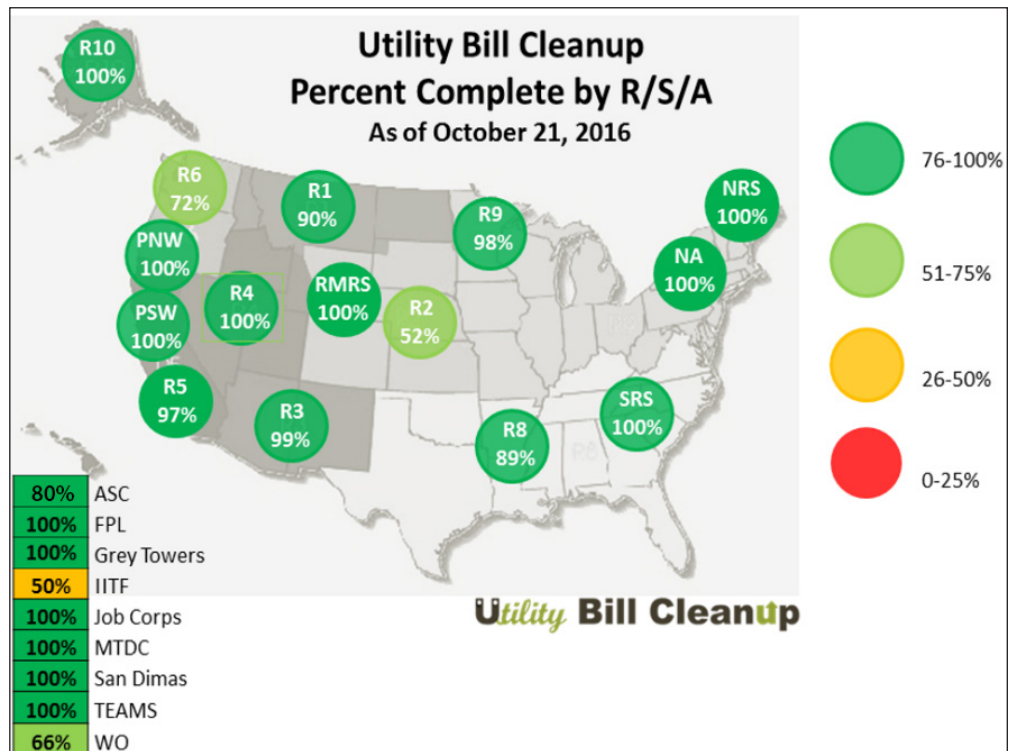
Utility Bill Cleanup

Many Forest Service units have been paying too much for their electricity and other utilities due to a variety of billing errors. The Utility Bill Cleanup (UBC) focused on determining where unnecessary spending was occurring, and developed strategies to eliminate those expenses. The primary issues that were resolved to yield annual savings were: asserting tax exempt status; canceling inactive accounts; reworking account structures to achieve the best utility rates from vendors; and other site-specific issues such as paying for all utilities at a shared, interagency facility.

This process was completed by units at the national forest level with guidance provided by R/S/A leaders as well as a National Steering Committee. At the end of FY2016, 109 of 130 units reported they were 100 percent complete with the UBC process.

Forty-eight units provided estimates of total annual savings as a result of their UBC, reporting an average savings of \$5,750 per year. This figure, extrapolated to all participating units, creates an estimated savings for the Forest Service of approximately \$750,000 per year.

Just as importantly, utility bill reviews have established consumption baseline data for units that will help identify how energy is being used and where reductions can be made, thus reducing our energy footprint.



Vehicle Idling Practice Update

The Vehicle Idling Practice (VIP) is a collaboration between the Office of Sustainability and Climate and WO Fleet Management. The policy aims to save money and improve human and environmental health through a reduction in unnecessary vehicle idling and associated emissions. Implementation will provide a reduction in per-mile greenhouse gas emissions, and reduce vehicle fuel and maintenance

costs. It also aligns with Executive Order 13963 that directs government agencies to improve fleet and vehicle efficiency by taking actions that reduce fleet per-mile greenhouse gas emissions by at least 30 percent by FY2025.

Direction provided in the VIP includes:

- » Motor vehicles or specialized equipment operated for official government use should limit idling to 30 seconds or less when parked and/or located off the road or trail.
- » When parked the vehicle engine should be turned off, including when dropping off or picking up passengers or equipment. This policy is not applicable when idling is necessary for an agency operational need or safety, or during routine stops for traffic lights or signs.
- » Drivers should follow manufacturer's recommendations for engine warm-up prior to placing the engine under heavy burdens.

Employee education is key to implementation of the VIP. To this end, education efforts will focus on the common myths about vehicle idling, and address them through training and a VIP video (to be released in 2017).

\$1 Million AFFECT Grant will Leverage \$20 Million in Energy Conservation

In December 2016, the Forest Service was notified of a grant from the U.S. Department of Energy (DOE) to advance the financing and implementation of renewable energy projects. The amount of the grant is \$1 million, designed to help implement \$20 million worth of energy conservation measures across the agency through third-party financing.

DOE noted that the Forest Service “demonstrated an impressive understanding of how to institutionalize the **ESPC ENABLE** process within its organization, and there is high-level and broad support throughout the organization.”

Under the grant, a cross-functional team will implement the overarching project named **Constructing an Ongoing National Strategy for Energy Reduction with Validated Efficiency (CONSERVE)**. The first phase of CONSERVE will streamline and standardize the agency's process for developing and awarding **ENABLE ESPCs**, where appropriate. In the second phase, individual projects will be solicited, developed for third-party financing, reviewed, and implemented. The results will be a smoother and more predictable process, reduced utility costs over time, greater funding for needed equipment replacement, reduced energy use, and reduced emissions.

Non-Discrimination Policy - The U.S. Department of Agriculture (USDA) prohibits discrimination against its customers, employees, and applicants for employment on the bases of race, color, national origin, age, disability, sex, gender identity, religion, reprisal, and where applicable, political beliefs, marital status, familial or parental status, sexual orientation, or all or part of an individual's income is derived from any public assistance program, or protected genetic information in employment or in any program or activity conducted or funded by the Department. (Not all prohibited bases will apply to all programs and/or employment activities.) To File an Employment Complaint - If you wish to file an employment complaint, you must contact your agency's EEO Counselor (PDF) within 45 days of the date of the alleged discriminatory act, event, or in the case of a personnel action. Additional information can be found online at http://www.ascr.usda.gov/complaint_filing_file.html.

To File a Program Complaint - If you wish to file a Civil Rights program complaint of discrimination, complete the USDA Program Discrimination Complaint Form (PDF), found online at http://www.ascr.usda.gov/complaint_filing_cust.html, or at any USDA office, or call (866) 632-9992 to request the form. You may also write a letter containing all of the information requested in the form. Send your completed complaint form or letter to us by mail at U.S. Department of Agriculture, Director, Office of Adjudication, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, by fax (202) 690-7442 or email at intake@usda.gov. Persons with Disabilities - Individuals who are deaf, hard of hearing or have speech disabilities and you wish to file either an EEO or program complaint please contact USDA through the Federal Relay Service at (800) 877-8339 or (800) 845-6136 (in Spanish). Persons with disabilities who wish to file a program complaint, please see information above on how to contact us by mail directly or by email. If you require alternative means of communication for program information (e.g., Braille, large print, audiotope, etc.) please contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).