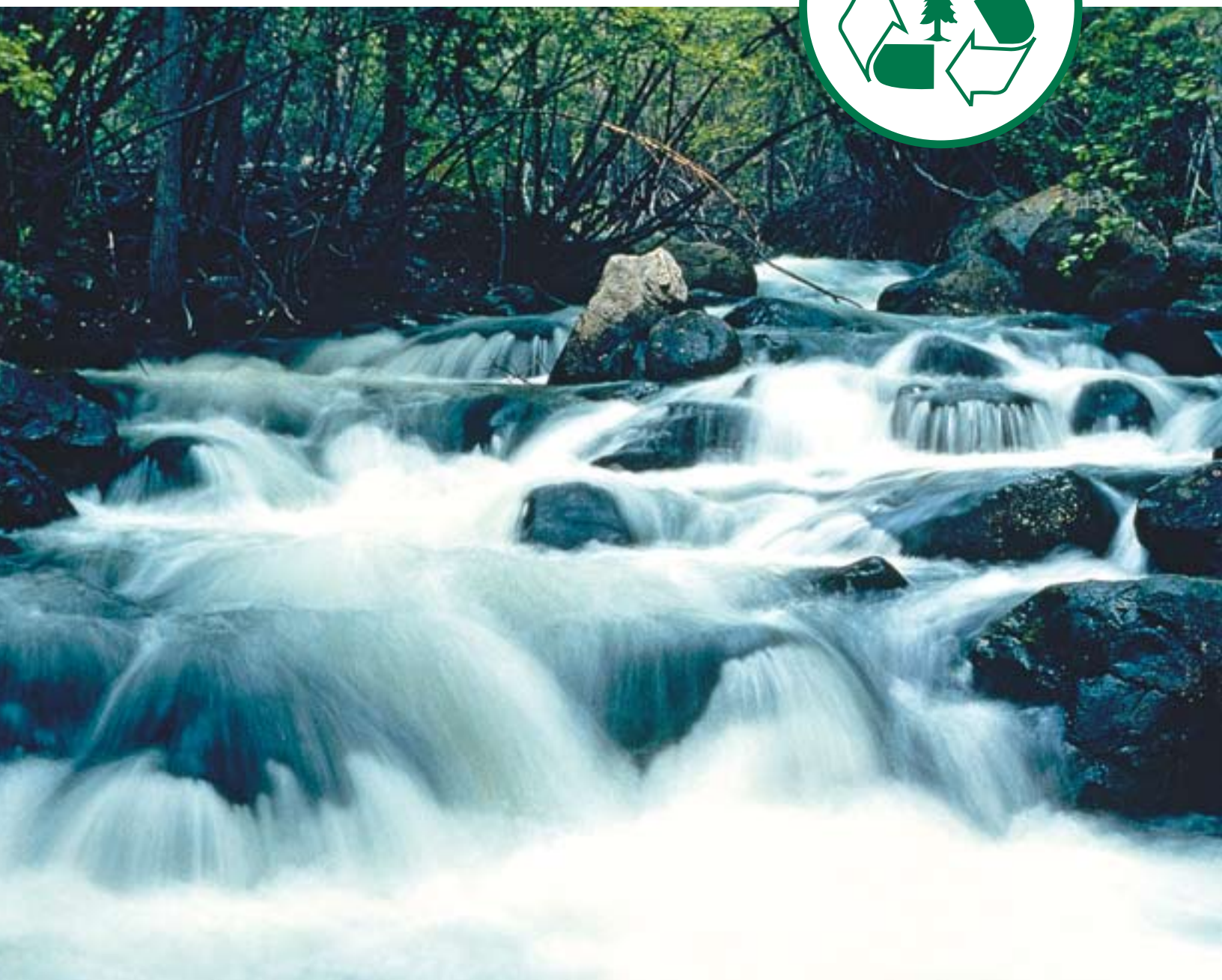
United States
Department of
Agriculture

Forest Service

May 2008

Fiscal Year 2007 National Environmental Footprint Report



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Disclaimer

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A Forest Service Conservation Leadership Vision

The Natural Resource Conservation Ethic has defined our first century. As we embark on our second century, we understand the imperative to couple this ethic with a Sustainable Consumption Ethic.

We will create within our operations those habits that inspire individual and organizational decisions leading directly to conserving natural, economic, and human resources for tomorrow through all the decisions we make.

We will realize this vision by engaging all employees in the following activities:

- Reducing our reliance on unsustainable energy sources and contributing to the market for sustainable energy.
- Creating an understanding of and implementing practices supporting sustainable water resources.
- Employing practices to elevate the sustainability performance of purchased goods and services and the performance of our suppliers, contractors, and partners and that of other governments.
- Improving our transportation and travel practices, reducing harmful emissions, increasing operational and fuel efficiency, and reducing nonrenewable fuel use.
- Minimizing waste generation and reducing landfill use.

As we make progress on these goals, we will seek continual improvement, strive to share our learning, serve as an example to others, and work to live up to the public trust.

(Vision Created by Sustainable Operations Board of Directions July 2006 [R1, R2, R3, R4, RMRS].)

Message From the Chief

This is our second National Environmental Footprint Report. It has matured greatly from the first report. My heartfelt appreciation goes to everyone who took the time to respond and participate in the data collection effort for this report. Thanks to your efforts, we have a much better understanding of our baseline consumption across all our footprint areas. We have many more success stories from the incredibly innovative efforts undertaken at our field units. We also have close to 30 Green Teams established across the agency, and one of those teams is actively working here at my office in the Nation's capital. Green Teams everywhere are connecting with other agencies, communities, and partners to continuously improve the environmental footprint of the Forest Service, U.S. Department of Agriculture. As an outgrowth of our internal and external collaborations we have identified significant opportunities to adapt our sustainable operations efforts. Being flexible and more responsive in our approach is critical in the global arena, where a changing climate is reality.

All of us have ownership in creating solutions to climate change. Some answers will come from the forest as a carbon sink and as a significant renewable energy source. Other answers will evolve from the way we, as a society, approach the use of all the resources a healthy forest provides. Our land stewardship practices must be strategically joined with practices that reduce our consumption. The direct relationship between the healthy forests and our faucets, our heating systems, our clean air, our modes of transportation, and many other goods and services has never been more apparent. Every employee, every partner, every contractor, and every community we work with have some responsibility to mindfully approach their use of the vast resources provided by the ecosystems on this planet.

Energy and water consumption, fleet use and travel, waste prevention and recycling, and purchasing greener supplies and materials are activities that we all engage in daily. The Forest Service must now include these activities in our approach of "caring for the land." We have an unparalleled responsibility to future generations to strengthen and articulate this bond between a sturdy land ethic and a mindful consumption ethic. The future work of caring for the land lies with our younger generation. We have endless opportunities to include today's youth, to seek their advice about how we will reduce our footprint, and to make them a part of our conservation ethic for the future.

History will judge us by how well we respond to the issues of climate change. I submit that we all have a responsibility to be leaders in this arena. Our traditional stewardship role is one and the same as reducing our own environmental footprint. I am honored to be part of an agency grappling with the hard work of connecting the impacts resulting from our human-built environment to the forest and grassland landscapes we are entrusted to manage.

Sincerely,

Abigail R. Kimbell
Chief

Moving Forward—Indicators of Progress and Next Steps

This is the second National Environmental Footprint Report for the Forest Service, U.S. Department of Agriculture (USDA). The purpose of this document is to share what we know about the Forest Service's environmental footprint in the areas of energy use, water use, fleet and transportation, waste prevention and recycling, green purchasing, and sustainable leadership. It builds on the fiscal year (FY) 2006 National Environmental Footprint Report document (located at an internal portal site: https://fs.usda.gov/FSI_Documents/20070912-2006-environmental-footprint.pdf) by identifying specific baseline data, successes, opportunities, and challenges for each footprint area. The footprint process has comprehensively increased our understanding about the impacts of our day-to-day operations. In addition, the footprint process provides an integrated way to collectively address existing policy and reporting requirements across all footprint areas.

Sustainability is at the heart of the Forest Service mission—"to sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations." This vision of stewardship must acknowledge the impact of changing ecological, economic, and social conditions on ecosystems. We recognize our efforts to reduce our environmental footprint are ongoing. As population and consumption pressures grow, the ability of ecosystems to provide sustained levels of goods and to continue to clean our air and water is compromised. We must define and implement best sustainability practices to sustain and enhance ecosystem health, and we must be open to making progress where we can and adapting and changing as new technology emerges. As such, this section is an attempt at summarizing where we are today in regard to our footprint progress and where we will be heading in the near future.

> To be sustainable is—"to create and maintain conditions, under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic and other requirements of future generations of Americans."
>
> *—January 2007, Executive Order 13423*

> "Environmental footprint" or "ecological footprint" is defined as "the impact on the natural landscape resulting from our consumption." A formal footprint analysis calculates the amount of land area required to both support the resource demands and absorb the wastes of an individual, group of individuals, or business.

Decisions made today, such as constructing a new facility, purchasing supplies, or driving a larger sport utility vehicle, can have far-reaching and yet unidentified impacts through the next century. We recognize that understanding and improving our environmental footprint are continuous improvement efforts. Our commitment to operating more sustainably is not merely a commitment to lower our impacts; it is a process that requires ways to better share tools and knowledge as we take specific steps to reduce energy use, water use, and waste production; reduce emissions and increase fuel efficiency; expand green purchasing and procurement practices; and support leadership in sustainability practices.

Our goal is a fully integrated conservation ethic paralleling our existing strong land ethic. One part of this goal is meeting existing environmental footprint-related requirements. Figure 1 captures our self-assessment of progress toward implementing the specific requirements of Executive Order 13423 and the Energy Policy Act of 2005. Another part of creating a fully integrated conservation ethic requires going beyond specific regulatory and policy requirements to actual integration of sustainable operations habits into the Forest Service culture. A list of indicators tracking our progress of integrating sustainable operations into our culture has not

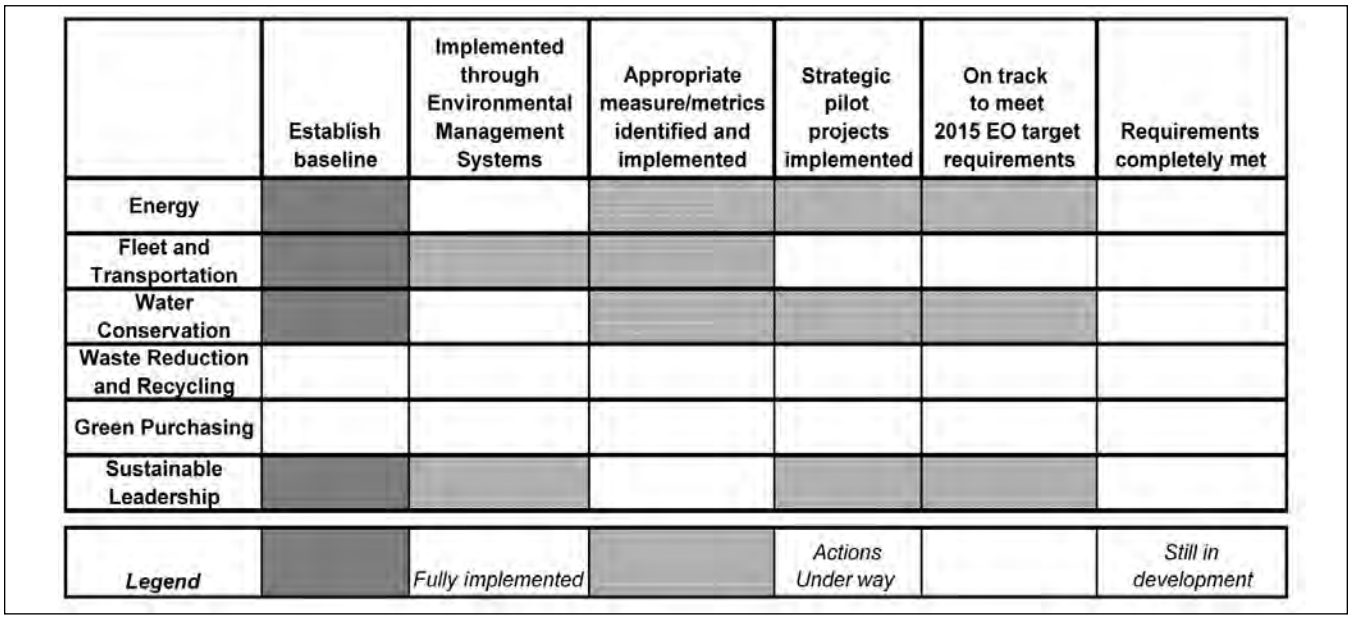
Did you know that about 4.5 acres of productive land are available per person worldwide; yet, in the United States, individuals require 24 biologically productive acres per person to support patterns of consumption and waste production?

been developed. Green Teams are one way we are changing our own habits of consumption in long-lasting ways beyond a particular policy or regulation. As we continue this journey of creating a consumption ethic paralleling our land ethic, we anticipate identifying other indicators of progress. New indicators may be added or existing ones may change. Figure 1 will become a tool for us to track and focus our efforts in future years. The columns of figure 1 are indicators of progress.

Figure 1 portrays our work focused on meeting policy and regulatory requirements this year. Our policy focus occurred for several reasons, including that we did not have other specific goals and strategies in place and it allowed us to leverage and partner easily with other Federal agencies subject to the same requirements. Our efforts toward this end also set the stage for more success in changing our long-term habits.

- Have we established a clear baseline for our consumption at a national level? Under Executive Order 13423, each footprint area has a different baseline year.
- Have we implemented footprint activities through our national-level environmental management system (EMS)?
- Have we identified measures and metrics of success and implemented those at a national level? For energy and water consumption, success is measured in intensity, such as in British thermal units (BTUs) per gross square foot (GSF) or gallons per GSF.
- Have we instituted strategic pilot projects of sufficient size in scale and scope that they will have national implications? Work in FY 2007 included moving forward on several regionwide energy- and water-saving performance contracts. Several regions, stations, and areas have chartered sustainability boards to facilitate sustainable leadership activities.
- Are we on track to meet the Executive order requirements, such as green ratings on our Office of Management and Budget scorecards?
- Have we met the targets of the policy requirements?

Figure 1.—*Progress toward meeting policy and regulation requirements of Executive Order 13423 and the Energy Policy Act of 2005.*



Many committed employees have created the foundation of the sustainable operations effort. Sustainable operations through grassroots, place-based, pragmatic implementation are becoming a real part of our culture and not just another initiative. In FY 2007, we made great strides in understanding the size and scope of our environmental footprint. We also identified many next steps to continue to reduce our environmental footprint. Despite this progress, we still have a long way to go to fundamentally shift how we view our resource consumption and its effects on the larger environment. While the National Environmental Footprint Report is a good method to highlight our progress toward meeting agency and Federal sustainability goals, it is only one important component of a true sustainable operations effort.

Although this National Environmental Footprint Report shows our progress toward meeting agency and Federal sustainability goals and highlights meaningful efforts toward reducing our environmental footprint, it does not serve as a long-term sustainable operations strategy document. It does not establish timelines and goals with a final outcome of integrating sustainable operations into the Forest Service culture. An overall Sustainable Operations Moving Forward document for the entire Forest Service will be developed in 2008. This strategy document will outline how the successful place-based, pragmatic implementation of sustainable operations practices can be supported and balanced within a national framework. In the second century, as stewards of our Nation's land, we are working through continual improvement to conserve natural, economic, and human resources for tomorrow.

> "This footprint document is vital in keeping track of our progress towards meeting and exceeding our goals to reduce our impact on the environment. It serves as a tool to highlight successes, focus on progress, and identify future direction, goals, and action items."
>
> —Jacque Myers,
> *Associate Deputy Chief of Business Operations, Washington Office*

> "If conservation is to be truly embedded into the culture of the Forest Service it must be as much a part of the facilities we use, the fleet that transports us, the waste we produce, and the billions of dollars of things we purchase as the lands that constitute our National Forests and Grasslands."
>
> —Anna Jones-Crabtree,
> *Sustainable Operations Coordinator, Regions 1 and 2*

The Moving Forward strategy will be based significantly on feedback received during the 2007 Sustainable Operations Summit and from the data call for this report. The strategy will include outyear implementation activities for each footprint area and clarified connections with our national EMS; Forest Service manual direction will be part of the strategy. The strategy will establish a plan to help us make focused progress on reducing our environmental footprint having direct implications on our more traditional land stewardship role. Our land stewardship practices must be strategically joined with practices reducing our consumption. The direct relationship between the healthy forests and our faucets, our heating systems, our clean air, our modes of transportation, and many other goods and services has never been more apparent and more in need of a unified approach.

Footprint Area Accomplishments

This footprint report includes data available through our national systems and databases, as well as data gathered through the FY 2007 National Environmental Footprint Data Call conducted in November 2007. The data call was designed to increase our understanding about—and ability to quantify—our environmental footprint in the areas of energy use, water use, fleet and transportation, waste prevention and recycling, green purchasing, and sustainable leadership. The call also helped garner information not available through our national systems directly from field units. The data call also served as an educational tool to amplify awareness of the requirements and resources available for place-based activities for each footprint area. Designed to assess, acknowledge, and lead to improvements in our sustainable operations practices, the data call collected quantitative information for reporting requirements, as well as success stories and ideas for improvement. Building on the baseline National Environmental Footprint Report prepared for FY 2006, this process and these measures will be refined annually as we track our learning and success in each of the footprint areas.

The six sections that follow describe our current progress and state of knowledge for each footprint area as of FY 2007. Each footprint area includes the following three sections:

1. **Success Shorts**—brief descriptions of success stories from field units describing actual actions taken to reduce our footprint.
2. **Sizing Things Up: Our National Baseline**—a description and discussion of baseline numbers from which we will be measuring our nationwide progress on this particular footprint area.
3. **Behind the Scenes: Place-Based Activities**—a more indepth look at data from a region, station, and area perspective based on the FY 2007 National Environmental Footprint Report Data Call results that support our progress at the place-based, local level.

Many staffs and different disciplines supported this footprint data collection effort, which led to a more comprehensive and integrated approach than data collected for the FY 2006 National Environmental Footprint Report. Additional sources of information include USDA contractor report(s), programs, projects, and the results of initiatives at regional and forest levels. A total of 155 Forest Service units responded to the data call (table 1). In future years, we anticipate this process will be even more integrated across staff areas and eventually include a stronger link with our more traditional land stewardship focus.

All employees have a role in reducing the Forest Service's environmental footprint. As such, all data used for this report will be posted on the sustainable operations Web page. Individual units can view their specific data and use it to help them support their place-based efforts. Although data for individual units can be helpful, it is important that we also take time to understand the intricacies of the data collected. Understanding the underlying mechanisms of our data collection can lead us to better methods and processes for reducing our consumption. All employees are encouraged to share ideas and help keep the momentum for sustainable operations going. "Sustainable Operations Open Mic Forums" provide one way to participate and share ideas.

> Any employee who wants to participate in the continual process of sustainable operations for FY 2008 can call in for the Sustainable Operations Open Mic Forum taking place on the third Wednesday of every month. For more information, visit Sustainable Operation's site in the Washington Office Portal under Mission and Values.

Table 1.—*Units responding to fiscal year 2007 environmental footprint data call.*

Region, station, or area	Number of units reporting*	Total number of units*	Percent of total units reporting
Region 1	6	15	40
Region 2	10	12	83
Region 3	12	12	100
Region 4	12	14	86
Region 5	15	19	79
Region 6	9	18	50
Region 8	16	17	94
Region 9	15	16	94
Region 10	3	3	100
Washington Office	3	6	50
Rocky Mountain Research Station	8	13	62
Northern Research Station	17	20	85
Pacific Northwest Research Station	8	9	89
Pacific Southwest Research Station	6	7	86
Southern Research Station	9	14	64
Northeastern Area	3	3	100
Forest Products Laboratory	1	1	100
International Institute of Tropical Forestry	2	2	100
Total	**155**	**201**	**77**

** A unit is defined as a main administrative location. Numerous locations are colocated with other organizations within the Forest Service and other governmental agencies and with higher education centers and private-sector entities. Many of these shared locations reported together, but they may represent several units. For purposes of this table, shared locations reporting together were counted in each region, station, or area category as a unit reporting.*

Energy Use in Facilities—Striving Toward Net Zero Energy

Introduction

Our society's collective energy footprint has many connections to the changing climate conditions impacting Forest Service lands. Our sources of energy and the sheer quantity of energy consumption can be implicated in the changing conditions on national forest land resulting from the changing climate on the planet. Increased fires, wildlife habitat modifications, decreased air quality, and influences on the hydrological cycles supporting healthy forests all are outcomes of a fossil fuel-based energy economy. As a recognized conservation leader, the Forest Service has many opportunities to model and champion a future of energy-efficient facilities powered by renewable energy sources. By conserving and using energy efficiently, we achieve significant economic savings agency wide and better connect with the clean energy sources of nature, such as solar, wind, biomass, geothermal, and hydro.

As we assess our agency energy use and identify opportunities to reduce our energy footprint, we must balance meeting legal and regulatory requirements (Executive Order 13423, Energy Policy Act of 2005, and Energy Independence and Security Act of 2007) with the reality of making meaningful, tangible progress at the place-based level. For example, inconsistencies and data gaps in our national databases hamper the ability of a local unit to establish a comprehensive understanding of its energy consumption. Should the local unit spend time directly contacting its local utility supplier to gain consumption information or should the local unit spend time installing energy-saving conservation measures? We must balance the effort needed to obtain specific and comprehensive data with the effort to implement actual actions reducing our consumption.

In 2007, we made considerable progress in better understanding the gap that exists between our agencywide systems, in which only energy cost data is available to us, and our need for energy consumption data at a local level. Although it is not yet reality for a local unit to access consumption data other than by contacting its local utility suppliers, our work in 2007 allowed us to submit a more comprehensive national energy report to the USDA than we have done in the past. Specific 2007 activities contributing to our progress at closing the gap between national cost data and energy consumption included the following:

- Establishing our 2003 agencywide energy baseline as per Executive Order 13423 requirements. Working with USDA, we contracted to synthesize comprehensive national baseline data. We estimated for national consumption, allowing an energy intensity (BTUs/GSF) measure to be established. Data gaps as well as data availability were identified for future actions.

Executive Order 13423 and the Energy Policy Act of 2005 have many energy-related requirements, including the following:

- Reduce energy intensity (consumption per gross square foot of building) by 3 percent annually or by 30 percent by 2015 using a 2003 baseline.
- Explore renewable energy opportunities on agency property.
- Ensure at least half of the statutorily required renewable energy consumed (purchased) in a fiscal year comes from new renewable sources.
- Ensure Energy Star® features are enabled on 100 percent of computers and monitors.
- Conduct energy and water audits on at least 10 percent of facilities each year.
- Reduce greenhouse gas emissions attributed to facility energy use by 3 percent annually or 30 percent by 2015 related to 1990 emission levels.
- Ensure at least 3 percent of energy purchases are from renewable energy sources by 2007; this figure increases to 7.5 percent by 2013.
- Buildings will be designed to be 30 percent more efficient than current standards so long as they are life-cycle cost effective.
- Apply sustainable design principles to new construction and renovation.

- Comparing the 2003 baseline with our 2007 reported energy consumption highlighted additional gaps between our cost data and understanding our consumption.
- Piloting a comprehensive utility bill review at several place-based units and identifying inconsistencies, such as incorrect billing rates and differences between actual metered infrastructure and utility fee statements.
- Increasing employee awareness about energy consumption through Green Team activities, informal audits, and several "top 10 energy conservation habits" lists.
- Beginning work on a national electrical metering plan.

Future energy footprint efforts will continue to close the gap between data representing our national energy use and the tools and support mechanisms needed at the local level to support wise energy conservation and consumption. Although the impact of local energy reduction efforts may not be clearly apparent yet at the national scale, that did not hamper the tremendous number of meaningful place-based actions taken in 2007 to reduce our overall energy consumption.

Success Shorts

- The **Six Rivers National Forest** installed solar equipment to generate electricity at a remote fire station that historically used diesel and propane generators.
- The **Colville National Forest** uses passive solar to help light and heat the 2-year-old Republic District Office, resulting in energy credits from the power company.
- A new 3,600-watt solar power system on the **Wayne National Forest** operates at about 95-percent efficiency. With additional panels, the forest could eventually generate more power than is uses, "run the meter backward," and return power to the grid.
- The **White Mountain National Forest** recently began using bioheating fuel to heat three administrative buildings owned by the Forest Service.
- The engineering staff at the **Northern Research Station** has saved $15,527 by turning air handlers off at night, on weekends, and on holidays. This simple adjustment reduced monthly electrical use by 13 to 37 percent a month and steam use by 38 to 74 percent.
- The **Forest Products Lab** saved approximately $45,000 ($20,000 on heating, $10,000 on supply fan power, $10,000 on exhaust energy, and $5,000 on air conditioning) by correcting ductwork and airflow deficiencies for 46 lab exhaust hoods in 4 buildings. An additional $1,800 in energy savings resulted from disconnecting an idle transformer and decommissioning an old papermaking machine.
- The **Medicine Bow-Routt National Forests and Thunder Basin National Grassland** reviewed their electric bill in an effort to reduce power usage and found that a meter was in place to power only one electric gate. The meter was removed and the gate was added to another meter to reduce duplicate meter fees.
- The **Bridger-Teton National Forest** uses photovoltaic power to operate some campground wells.
- The **Eldorado National Forest** Placeville Nursery installed "solo" tubes to light the interior of their public display room. Solo tubes use the sun for diffused interior lighting.

Did you know we have 38,658 computers connected to the Forest Service network?

- The **Chippewa National Forest** has two solar power sites: one is a remote well and the other is a remote streetlight.
- The **Huron-Manistee National Forest** uses solar power at four of its campgrounds to charge batteries that power water pumps.
- The **Beaverhead-Deerlodge National Forest** installed a 4 kW grid-tied photovoltaic system with battery backup at the **Madison Ranger Station.**
- **The Allegheny National Forest** installed efficient T8 and T9 lighting to replace its fluorescent lights in three offices. Employees are instructed to activate the Energy Star® savers on their personal computers, and the thermostats are set at 68 degrees in the winter and 78 degrees in the summer.
- The **Riverside Forest Fire Lab** purchased kill-a-watt devices allowing monitoring at individual levels through a microgrant.
- The **G.W. Andrews Forestry Sciences Laboratory** is currently registered for Leadership in Environmental and Energy Design-Existing Buildings (LEED-EB) certification and actively pursing certification for FY 2008.

Sizing Things Up: Our National Baseline

Nationally, the Forest Service uses a variety of sources to heat and power nearly 34 million square feet of facilities. Most of our electricity comes from the power grid; thus, it is generated by a variety of sources based on geographic area, such as hydropower in the Northwest and coal-generated power in the Rocky Mountains and Northeast. Natural gas, propane, and fuel oil are major sources of heat generation for our facilities.

In FY 2007, USDA and the Forest Service contracted with McNeil Technologies to establish our 2003 baseline for energy and water use intensity (McNeil Technologies 2003). (Water consumption is discussed in the water section.) Challenges to fully understand our consumption include using cost as an indicator of actual use. This is problematic due to regional and supply-based variations, lack of information about energy use in leased buildings, limited/no tracking of credit card purchases and many other energy-related purchases that cannot be allocated to a particular location, and the lag time between energy consumption and the bill-paying cycle. Although cost is an imperfect measure of energy use, it does point out the significant agency expenditures associated with our energy use.

2003 Energy Baseline

The McNeil Technologies report estimated that, in 2003, the Forest Service spent an estimated $36.2 million for 2,398 billion site-delivered BTUs (see the tables in Appendix B). This use is equivalent to the energy use of 26,000 typical U.S. households. Across the Forest Service, the rate of 2003 energy intensity (use) was 64,027 BTUs/GSF (McNeil Technologies 2003).

McNeil estimated an energy intensity figure (measured in BTUs/GSF) for the Forest Service. Energy intensity provides a baseline for the goals of Executive Order 13423, which requires a 3-percent intensity reduction per year (starting in FY 2006), leading to a 30-percent reduction by 2015. Statistics about BTUs or kilowatt-hours (kW-hs) consumed are not yet available at a national level. McNeil estimates consumption based on several assumptions. Although cost converted to consumption is not the perfect measure of our impact, it does provide a starting point from which to propose more strategic implementation of energy conservation measures.

Information about type of energy used and costs is shown in tables 2 and 3. The chart compares FY 2007 data with baseline data of FY 2003. Although this data portrays a significant reduction in our energy intensity and expenditures in energy between 2003 and 2007, it cannot be assumed this reduction is correct. Although we implemented many energy conservation activities, it is unlikely they were of sufficient scale to result in such significant consumption reductions. Discrepancies in our energy consumption and costs between FY 2003 and FY 2007 can be attributed to the following:

- Accounting systems and methodologies for tracking energy consumption are not corporately mandated or consistently applied, requiring a complex algorithm to estimate energy intensity.
- Consumption quantities are based on regional and national estimated factors for converting energy costs into quantities.
- Some units moved from commercial leases to full-service leases, in which utilities are incorporated into lease payments.
- Employees have an increased awareness at local levels.
- The number of employees decreased by 10 percent.
- There were differences in calculations of gross square feet of facilities.

Table 2.—*Comparison of fiscal year 2007 consumption with fiscal year 2003 baseline consumption.*

	2003 estimated baseline consumption	2007 estimated consumption	Percent difference, 2003–07
Inherent problems exist with this data. The large discrepancies between FY 2003 and FY 2007 are more fully discussed in the text.			
Commodity type			
Electricity (in kilowatt hours)	350,000,000	213,000,000	– 39
Fuel oil (in gallons)	1,380,000	1,321,000	– 4
Natural gas (in cubic feet)	396,000,000	349,000,000	– 12
Liquefied petroleum gas or propane (in gallons)	6,050,000	1,620,000	– 73
Coal (in short tons)	1,080	453	– 58
Forest Service total consumption (in billion BTUs)	**2,398**	**1,434**	**– 40**
Forest Service total facilities consumption (in GSF)	**37,450,000**	**33,630,000**	**– 10**
Forest Service total energy intensity (in BTUs/GSF)	**64,030**	**42,650**	**– 33**
Forest Service total metric tons carbon dioxide equivalent emissions	**276,145**	**154,794**	
Carbon dioxide intensity (pounds/GSF)	**16.3**	**10.2**	

BTU = British thermal unit.
GSF = gross square foot.

Table 3.—*Comparison of fiscal year 2007 costs with fiscal year 2003 baseline expenditures.*

	2003 Baseline expenditures (in dollars)	2007 expenditures (in dollars)	Difference, 2003–07 (in dollars)
Inherent problems exist with this data. The large discrepancies between FY 2003 and FY 2007 are more fully discussed in the text.			
Commodity type			
Electricity	24,400,000	17,800,000	– 6,600,000
Fuel oil	1,860,000	3,270,000	1,410,000
Natural gas	2,950,000	3,370,000	420,000
Liquefied petroleum gas or propane	6,920,000	1,670,000	– 5,250,000
Coal	66,200	27,800	– 38,400
Forest Service total energy expenditures	**36,220,000**	**26,122,000**	**– 10,098,000**
Forest Service total energy expenditures/GSF	**0.97**	**0.78**	**– 0.19**

GSF = gross square foot.

In addition, we discovered a significant portion of our energy costs cannot be allocated to a specific location. More than 17 percent of the energy consumption data for 2007 was unallocated to a specific location. More than 60 percent of the energy consumption data was unallocated for 2003. It is important the data in tables 2 and 3 be viewed as indicators of potential progress helping to increase our overall understanding of our energy footprint and not necessarily as the final word on our energy use. These data have been shared here as a way to increase our knowledge about our understanding of our energy footprint.

In addition to providing overall agency energy cost and consumption numbers, the McNeil reports for 2003 and 2007 also provided an increased understanding of our overall energy intensity and our estimated carbon emissions. Figures 2, 3, and 4 represent the energy intensity, carbon intensity, and carbon emissions by region, station, and area.

Although it is important for us to reduce energy consumption and carbon emissions across all of our regions, stations, and areas, some geographic areas and facility types may offer greater opportunities to reduce our footprint impacts. The high intensity and emissions in the Northeastern Area and Northern Research Station most likely reflect the use of energy generated by coal-fired power plants. The low consumption and emissions in Region 6 most likely reflect the use of hydropower to generate electricity. In addition, it may be most effective to explore alternative energy sources and implement energy conservation measures at our laboratory facilities and offices where our energy intensity is most significant. The regional energy intensity figures are lower because regions tend to have more buildings, such as toilet facilities, that are very low in energy usage and yet are included in the total gross square foot calculation. Although laboratories have higher greenhouse gas (GHG) intensity figures, the regions have a significant role to play to help us reduce our carbon emissions.

Data and tables displaying the agency's energy expenditures, emissions, energy intensity or use, annual utility costs, from McNeil Technology's 2003 baseline energy consumption and emission report and the FY 2007 report, are all posted on the national sustainable operations Web site.

Figure 2.—*Comparison of estimated energy intensity of FY 2007 to baseline FY 2003 by region, station, and area.*

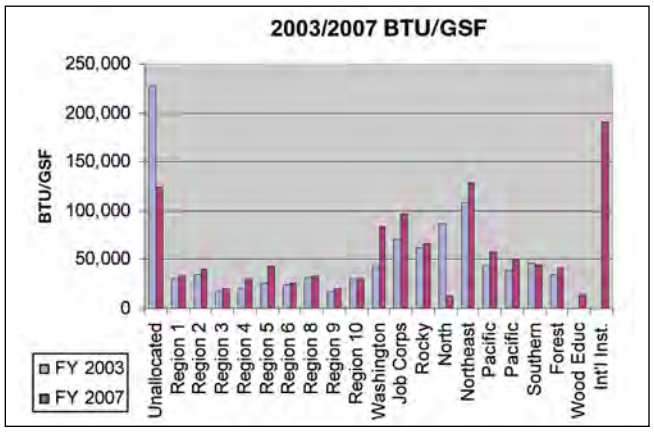


Figure 3.—*Comparison of estimated carbon dioxide intensity of FY 2007 to baseline FY 2003 by region, station, and area.*

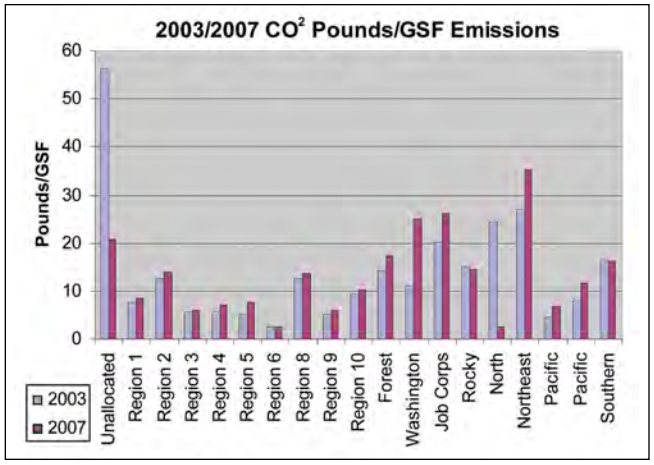
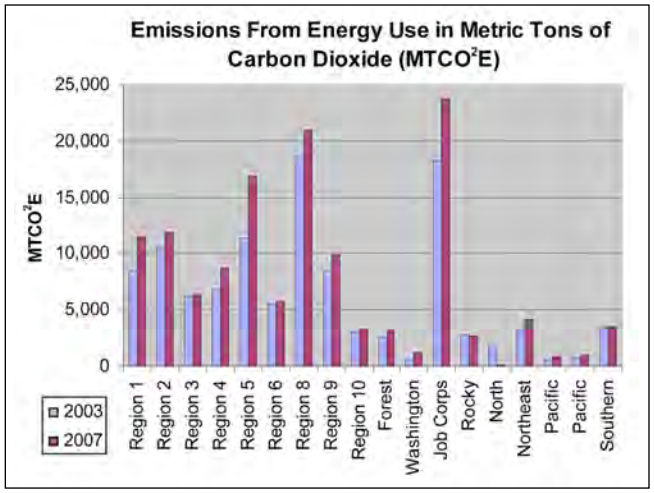


Figure 4.—*Comparison of estimated total carbon dioxide emissions of FY 2007 to baseline FY 2003 by region, station, and area.*



Behind the Scenes: Place-Based Activities Summary of 155 Unit Responses to the FY 2007 National Environmental Footprint Data Call

Although our national systems do not correlate directly to localized energy conservation and efficiency activities, we made tremendous progress related to energy awareness as an agency. Place-based activities are happening everywhere in some form at every region, station, and area. Green Teams are sharing energy-saving tips, new buildings are striving for green building certifications, and renewable energy systems, such as wind, solar, and biomass, are being planned. Energy conservation and activities have a direct correlation to climate change, and it is anticipated place-based energy activities will only continue to grow in future years. As part of the FY 2007 National Environmental Footprint Data Call, we requested information about place-based activities, including alternative energy, conservation measures and energy management, LEED, and training and communication. This information is summarized in the following sections.

Alternative Energy or Power

We have opportunities to increase our use of alternative power and to improve employee knowledge about the power we use. Almost three-quarters of the responding units were using power generated from traditional sources.

LEED Defined

Leadership in Energy and Environmental Design, an evaluation and rating system for sustainability of buildings, is administered by the U.S. Green Building Council. The rating system addresses the six following major areas: (1) energy and atmosphere, (2) water efficiency, (3) sustainable sites, (4) indoor environmental quality, (5) materials and resources, and (6) innovation in design. A "whole-building" design process is used to create these innovative structures. LEED-certified buildings are not only greener, but they also incorporate features that improve employee morale and productivity.

For those units generating a portion of their power from alternative sources, solar was the most common source by far, followed by wind and hydro or ocean, with a small amount of biomass and geothermal. The estimated total kilowatt-hours generated ranged from 1 to 8,000; however, almost half the responding units did not know the amount of renewable power they generated. Only five units reported they are purchasing green power; known sources include wind and biomass. Twelve Forest Service facilities (11 owned and 1 leased), with construction start dates between FY 2006 and FY 2008, have plans to incorporate biomass-based energy for heating and/or power. Fuels will primarily include wood chips and pellets. Although projected annual power production has not been determined for most sites, available projections range from 50,000 to 166,000 kWh per year per facility. Table 4 lists the current facilities being planned with biomass heat and/or power.

Alternative energy sources installed on public lands under Special Use Permits operate on 21 units. These energy sources included solar, wind, hydro, and geothermal; permittee use included communication sites, water systems, heat, and general electrical generation.

Table 4.—*Currently planned facilities with biomass heat and/or power.*

Unit	Facility
Black Hills National Forest	Mystic Office/Research Lab
White Mountain National Forest	White Mountain Administrative Complex
Coconino National Forest	Mogollon Rim Ranger Station
Lincoln National Forest	Sacramento Ranger District Office
Kootenai National Forest	Murphy Lake Ranger District
Flathead National Forest	Hungry Horse Office
Idaho Panhandle National Forests	Sandpoint District Office
Nez Perce National Forest	Grangeville Air Center Office
Tongass National Forest	Discovery Center Biomass
Kisatchie National Forest	Wynn Biomass Building
Washington Office-Missoula Technology and Development Center (MTDC)	MTDC Augmentation Project
Apache Sitgreaves National Forest	Leased Supervisors Office

Conservation Measures and Energy Management Actions or Plans

Conservation measures represent an area in which we can claim real progress. Almost all the responding units reported implementing one or more "easy conservation measures." For example, a little more than half of the units are using compact fluorescent light bulbs, just under half are using motion sensors on office lights, and a little more than 1 in 10 have installed vending misers. Units also reported other or additional measures, including furnace or boiler upgrades; geothermal heating, ventilating, and air conditioning; programmable or adjustable thermostats; Energy Star® appliances; computer or light shutoff policies; and window replacement, among other initiatives.

We are also making use of energy-saving options available on our equipment. Although Energy Star® options are enabled on some or all office equipment (computers, copiers, fax machines, etc.), we have options to improve in this arena by purchasing more Energy Star® equipment and educating employees about Energy Star® features. More than one-third of units responding are using Energy Star® equipment; usage of Energy Star® equipment ranges from very low to complete usage (an average of a little more than half of equipment on responding units).

Understanding Your Utility Bills

How can you get started understanding your utility bills? The National Finance Center generates a semiannual utilities status report that it mails directly to each forest. Your forest budget staff can provide you with a copy of this report. It lists all existing utility accounts and the associated vendors for the entire forest. With this information you can start contacting the individual utility companies to ask questions regarding residential versus commercial rate structures and tax-exempt status. You can also verify whether the sites are still owned by the Forest Service, whether concessionaires should be responsible for payment, or if meters should be disconnected altogether. Taking these small steps toward cleaning up utility bills has produced significant savings on many units.

We have opportunities to improve in the arena of more defined conservation strategies—energy management plans, for instance. Energy management plans were in place on 12 of the reporting units; plans for 11 of the 12 units were actively implemented in 2007. The most common strategies in the energy management plans included the implementation and use of Energy Star® appliances; facility energy audits; and highly efficient heating, cooling, and power systems.

Implementation of energy and water audits is a tool that we could better utilize. A total of 21 reporting units completed energy or water audits in 2007, and a total of 126 buildings were audited. On average, 6 buildings were audited per unit; the total unit number of audits ranged from 1 to 25, with an average cost of almost $800 per unit for audit activities.

Reviewing existing utility bills for inconsistencies, such as an incorrect rate structure or paying for meters we no longer need, is a simple opportunity to not only save energy but also achieve financial savings. More than two-thirds (68 percent) of the 155 units responding to the FY 2007 Environmental Footprint Data Call reviewed at least some utility bills for inconsistencies. Several units—such as the San Juan National Forest, Bighorn National Forest, and Payette National Forest—have identified significant savings from reviewing their utility bills.

A Utility Energy Service Contract (UESC) allows Federal agencies to implement energy-saving projects without using appropriated dollars by entering into an agreement with

local utility companies. Region 5 has had a UESC Master Agreement in place with Southern California Edison (SCE) for a number of years. SCE is the utility provider for a number of national forests in southern California. Regional leadership is encouraging national forests serviced by SCE to use this master agreement.

Regions 2 and 4 have entered into regionwide Energy Savings Performance Contracts (ESPCs) with approved Department of Energy contractors. The contractors assess energy-saving opportunities and then are paid out of the savings to implement the conservation measures. The first ESPC contract in the Nation was at the Pacific Northwest Research Station in the 1990s. It is anticipated the Region 2 ESPC will achieve approximately a 15-percent saving in energy and install a small renewable energy generation system on each forest in the region.

Leadership in Energy and Environmental Design

As an agency, we have made great progress in supporting USDA's implementation of the Federal Leadership in High Performance and Sustainable Buildings memorandum of understanding. This progress is in large part due to the adoption of direction requiring LEED Silver certification for most new Forest Service buildings larger than 2,500 square feet. Currently, 2 Forest Service buildings have been LEED certified, 2 more have nearly completed the certification process, 11 are registered and have begun the LEED process, and 22 more are in the works. The Sylamore Ranger District Office on the Ozark-St. Francis National Forests in Region 8 was the first Forest Service building to be LEED certified. The Bessey Ranger District Office on the Nebraska National Forest in Region 2 was the first Forest Service building to be certified at the LEED Silver level. Just 2 units are leasing LEED-certified buildings—the Lincoln National Forest in Region 3 and the Fremont-Winema National Forests in Region 6—but several more LEED leases are in the works.

Training and Communication

Informal information sharing about energy conservation took place on a little more than 50 percent of the units that responded to the data call, but we have plenty of room for improvement in the training and communication arena. Twenty-nine units report that the implementation of Executive Order 13423 for energy team, line officers, and facility/energy managers has been incorporated into position descriptions and performance evaluations. More than half of the units reported sharing energy conservation tips with employees. Energy-related training was not widespread, but the 6 units reporting that appropriate personnel have received training cited a range of training, from informal sessions to unit-wide reviews of plans, expectations, and criteria.

Seven units have facilities meeting Federal Energy Management Program criteria for "Showcase." Showcase categories include facility design (three responding units), energy-efficient improvements (three responding units), water efficiency improvements (two responding units), use of renewable energy (two responding units), and four other initiatives.

We could progress in data collection by encouraging more widespread use of the Operations/Energy tab in the Infra-Buildings module. Only 10 units reported that they record LEED certifications, energy audits, renewable energy, and other important place-based energy activities in the Infra database. We will continue to seek ways to use our existing data tracking systems to better understand our collective consumption.

The Way We Move: Fleet and Transportation—Striving Toward Zero Emissions

Introduction

Travel is an integral part of how we do business. Although transportation is necessary for accomplishing our land management responsibilities, our transportation needs and vehicle fleet use have significant environmental impacts and are a large part of our contribution to creating the impacts of climate change. Nationally, we have substantial data about our owned fleet. In contrast, we have little data about the travel we do beyond our fleet, such as our airline travel, or about the fuel used by project equipment, such as snowmobiles and all-terrain vehicles. It is clear we have many opportunities to rightsize our fleet and use the right vehicle for the job at hand, but we also must rightsize our other travel. We must be more diligent about asking ourselves the following questions: Do I really need to fly to this meeting or could I videoconference? How can I carpool more with my day-to-day activities? We will continue to need and use a variety of transportation modes, but, out of all the footprint areas, the fleet and transportation area is perhaps the most gluttonous and the one with the most alarming trends. Our fuel consumption and cost are on the rise, we have almost as many vehicles as we do employees, and our national miles per gallon (mpg) dropped significantly. It will take not just a focused effort at the national level to work to reduce our fleet and transportation footprint but concentrated, connected, and concerted efforts at the place-based level.

The annual number of gallons of fuel used for past and current years has been calculated from cost. This conversion method has inherent inconsistencies because of the large variability in fuel costs that can occur throughout the year. These shortcomings are recognized and are being addressed as part of the negotiations for new fuel purchase cards. In addition, our environmental management system has a fleet focus in the upcoming year. The EMS tool will help us identify, clarify, and then implement activities that will reduce our fleet and transportation footprint.

In 2007, we engaged in several activities that promoted some reductions in our fleet and transportation environmental footprint. These activities included the following:

- Establishing the Fleet and Transportation of Focus Area 1 of our national EMS.
- Exploring what data we have related to airline travel.
- Increasing employee awareness of ecofriendly driving habits.
- Implementing many place-based activities, including Green Team-sponsored transportation rallies and bike-to-work days, and installing alternative fuel pumps.
- Beginning vehicle allocation methodology studies.
- Significantly increasing our access and use of videoconferencing equipment.
- Increasing alternative-fuel vehicles in our fleet by almost double from 2006 to 2007.

Executive Order 13423 requirements related to fleet include the following:

- Reduce fleet total petroleum products by 2 percent annually through 2015 using a 2005 baseline. This total is an accumulating one; any years missed are added to the following year.
- Increase nonpetroleum-based fuel use by 10 percent annually. Miles per gallon is reported annually on the Office of Management and Budget scorecard.

Success Shorts

- Hybrid vehicles are becoming an integral part of forest fleets. The **Deschutes National Forest** maintains 5 hybrid vehicles and 13 85-percent ethanol fuel (E85)-compliant vehicles. The **San Bernardino National Forest** owns 2 bifuel trucks, two Ford Hybrid Escapes, 2 propane forklifts, and 6 Global Electric Motorcar vehicles. **Region 2** has 34 hybrid vehicles and 84 E85 vehicles in the fleet, up from 11 and 14 vehicles, respectively, just 2 years ago.
- The transit subsidy supports alternative transportation. At the **Region 9 regional office**, 124 employees (~65 percent) use mass transit. Employees at the **Rocky Mountain Research Station Boise Lab** use van pools and the local bus system and ride bikes to work. At the **Northern Research Station-Madison**, 80 percent of the staff walks to work, bicycles to work, or uses public transportation at least part of the year.

- Successes in reducing fleet size and fuel consumption include that of the **Huron-Manistee National Forests**, where fuel consumption has declined by 10.4 percent during the period of FY 2004 through FY 2007, and the **Gallatin National Forest**, where the total number of fleet vehicles was reduced by 25 percent.
- Several regions, stations, and areas (including the **Colville National Forest, Arapaho and Roosevelt National Forests, Pawnee National Grassland, Pacific Northwest Research Station-Anchorage**, and **Ashley National Forest**) have recently received or installed or plan to install videoconferencing equipment.
- The **White Mountain National Forest** has been using 50/50 biodiesel in its heavy equipment and support vehicles for several years. They also have four hybrid vehicles and are trying to improve their energy efficiency at every opportunity.
- The **Shoshone National Forest** ordered more hybrids, because use and demand of these vehicles is high, and fewer four-wheel drive vehicles. Two biodiesel fuel locations are operating in local communities, and one law enforcement officer is using biodiesel exclusively and is very satisfied. Employees are also carpooling more often.
- The **White River National Forest** champions their employees to carpool.
- **Region 2** has 34 hybrid vehicles and 84 E85 vehicles in its fleet. The region offers carpooling and mass-transit subsidy programs to employees and supports an annual rally in which employees get to compete for "alternative transportation miles" to get to and from work.
- The **Eldorado National Forest** entered into a partnership with the California Fuel Cell and leased a Nissan Fuel Cell vehicle for uses between the **Eldorado National Forest** and the **Lake Tahoe Basin Management Unit**. Portable fueling stations are to be set up in South Lake Tahoe and Placerville, CA. The new fuel cell vehicle is designed to assist in the positive movement towards a more sustainable footprint for both forests. In an effort to move the Forest Service into a position to be a leader in use of environmentally conscience

In an effort to reduce our footprint, we have set goals to reduce travel throughout the Forest Service. In FY 2007, we spent $129 million on travel expenses. If VTC could replace a mere 10 percent of our travel, we would realize cost savings of $11.5 million.

vehicles, four additional hybrid vehicles have been purchased.

- The **Mendocino National Forest** has integrated biodiesel for two districts to use for fire and heavy equipment. The forest also has a hybrid vehicle in the supervisor's office vehicle pool. In addition, in an effort to rightsize its fleet, the forest has decreased its total fleet by 13 vehicles, keeping 15 vehicles.
- The **San Bernardino National Forest** has two bifuel compressed natural gas trucks, 2 Ford Hybrid Escapes, 2 propane forklifts, and 6 Global Electric Motorcar vehicles.
- The **Region 4 regional office** awarded prizes to forests whose employees carpooled the most to the region's Integrated Resources Workshop. The regional office partners with the City of Ogden in a "Fresh Air Friday" club that promotes alternative transportation.
- The **Gifford Pinchot National Forest** is purchasing eight hybrid vehicles and is using videoconferencing as an option to reduce travel.
- The **Mt. Hood National Forest** uses hybrid vehicles and conference call options to reduce travel.
- The **Wallowa-Whitman National Forest** participates in EMS by making an effort to downsize the amount and size class of its fleet and making the transition to hybrid vehicles when feasible.
- The **Region 9 regional office** purchased 26 hybrid vehicles in FY 2007 and an additional 36 vehicles are E85 compatible. In an effort to expand knowledge about biofuels, the region set up an educational conference call; as a result, 3 forests in **Region 9** are using biobased products.
- The **White Mountain National Forest** continues to increase the use of biodiesel by purchasing diesel-powered vehicles to replace its large, gas-driven pickup trucks.
- The **Region 10 regional office**, is using a mobile servicing company that provides services such as changing oil and tires. Because some of the region's offices are very remote, this service will help reduce consumption of fuel. In the past, employees have driven vehicles more than 80 miles roundtrip to have vehicles serviced.
- The **Northern Research Station Warren Forestry Sciences Lab** conducted one-third of its performance reviews and performance planning by videoconferencing.
- The **Pacific Northwest Station Director's Office** purchased video teleconferencing equipment for each of its lab locations to reduce the need for employees to travel.
- The **Pacific Southwest Research Station** cut its travel expenses stationwide approximately 20 percent, exceeding the agency's goal by 11 percent.
- The **Gray Towers National Historic Site** is using a Ford Think that the National Park Service loaned to them.

Sizing Things Up: Our National Baseline

Nationally, our fleet data is quite comprehensive. We consumed about 12 million gasoline-equivalent gallons during FY 2007. According to the Environmental Protection Agency's carbon calculators report, our fuel use emitted 106,000 metric tons of carbon dioxide into the atmosphere. Although the carbon dioxide emissions from our fuel consumption were less than the estimated emissions

from our facility energy use in FY 2007, they still are a significant part of our total environmental footprint.

We do not have comprehensive data for other significant fleet and transportation activities, such as the size and scope of our project equipment (snowmobiles, all-terrain vehicles, and other nonworking capital fund fleet) and personal vehicle use or rental vehicle use.

We made a total of 64,386 airline round trips in FY 2007, the first year for which this type of data has been collected. This information will serve as the baseline for monitoring our transportation footprint reductions. Figure 5 shows the break down of the total airline round trips taken by region, station, and area.

Tables 5 through 9 reflect our national fuel usage and costs. The following points reflect some disturbing trends as we review our FY 2007 national fleet data and compare it with

Figure 5.—*Total number of round trip flights made in FY 2007 by region, station, and area.*

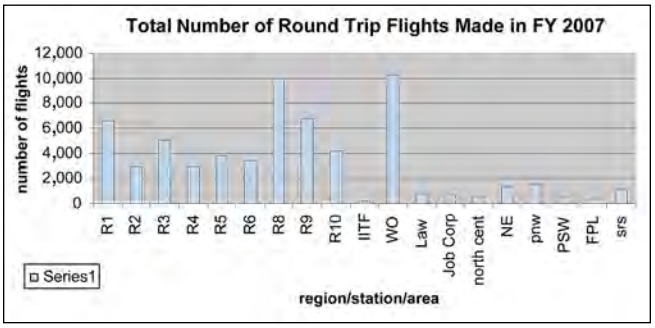


Table 5.—*Estimated fuel consumption.*

Fuel type	Number of gallons (in gasoline equivalent gallons)*				Percent difference, baseline to current year
	2004	Baseline year (2005)	2006	Current year (2007)	
Biodiesel	7,840	7,840	7,880	13,400	71
Diesel	2,040,000	2,010,000	1,860,000	2,346,000	17
E85	2,160	2,230	8,290	21,400	860
Gasoline	7,990,000	8,011,000	7,764,000	9,588,000	20
Liquefied petroleum gas	2,660	2,260	740	4,440	96
Natural gas	4,150	4,150	2,739	1,430	– 66
Forest Service total consumption	10,050,000	10,070,000	9,646,000	11,975,000	19
Forest Service total miles driven	144,900,000	145,400,000	144,000,000	138,200,000	– 5
Forest Service average miles per gallon	14.4	14.4	14.9	11.5	– 20

E85 = 85-percent ethanol fuel.

** Number of gallons is estimated from the cost. The method used from year to year has varied. This variation causes a lack of confidence in the ability to compare the gallons from year to year.*

Table 6.—*Annual cost of fuel.*

Fuel type	Cost (in dollars)				Percent difference, baseline to current year
	2004	Baseline year (2005)	2006	Current year (2007)	
Biodiesel	16,800	22,600	22,600	35,400	57
Diesel	3,800,000	5,130,000	4,300,000	6,090,000	19
E85	6,000	8,100	32,000	98,900	1,121
Gasoline	15,000,000	20,550,000	20,600,000	23,760,000	16
Liquefied petroleum gas	7,000	9,400	3,000	16,700	78
Natural gas	10,000	13,500	9,000	4,700	– 65
Forest Service total consumption	18,840,000	25,730,000	24,980,000	30,010,000	17
Forest Service total miles driven	144,900,000	145,400,000	144,000,000	138,200,000	– 5
Forest Service average fuel cost per mile	0.130	0.177	0.173	0.217	23
Forest Service average fuel cost per gallon	1.875	2.555	2.590	2.506	– 2

E85 = 85-percent ethanol fuel.

Table 7.—*Vehicles acquired and owned annually.*

Vehicle type(s)	Number of vehicles				Percent difference, baseline to current year
	2004	Baseline year (2005)	2006	Current year (2007)	
Sedans and station wagons	759	752	634	563	– 25
Bus (16 passengers or more)	70	65	65	53	– 18
4x2 truck less than 8,500 lbs.	2,618	2,496	2,368	1,967	– 21
4x4 truck less than 8,500 lbs.	9,395	9,047	9,821	9,979	10
Truck 8,500–16,000 lbs.	7,220	7,017	7,984	7,696	10
Truck 16,000 lbs. or more	1,698	1,688	1,761	1,463	– 13
Forest Service total number of motor vehicles	21,760	21,065	22,633	21,721	3
Forest Service total number of employees	31,211	30,502	29,034	28,694	– 6
Forest Service average number of vehicles per employee	0.70	0.69	0.78	0.76	10

Table 8.—*Total cost of fleet.*

	Cost (in dollars)*				Percent difference, baseline to current year
	2004	Baseline year (2005)	2006	Current year (2007)	
Total	50,893,800	59,943,900	58,460,402	65,293,816	8.92

** Includes General Services Administration leased cost, fuel, direct maintenance cost, and indirect cost.*

Table 9.—*Miles driven annually per vehicle type.*

Vehicle type(s)	Miles driven per vehicle type				Percent difference, baseline to current year
	2004	Baseline year (2005)	2006	Current year (2007)	
Sedans and station wagons	7,100,000	7,165,000	4,269,000	3,531,000	– 51
Bus (16 passengers or more)	500,000	514,000	406,000	342,000	– 33
4x2 truck less than 8,500 lbs.	19,200,000	19,300,000	15,260,000	10,316,000	– 47
4x4 truck less than 8,500 lbs.	65,900,000	66,100,000	61,511,000	67,043,000	1
Truck 8,500–16,000 lbs.	45,000,000	45,100,000	50,827,000	50,658,000	12
Truck 16,000 lbs. or more	7,200,000	7,200,000	11,726,000	6,290,000	– 13
Forest Service total motor vehicle miles driven	144,900,000	145,379,000	143,999,000	138,180,000	– 5
Estimated total carbon dioxide emissions, in metric tons*	88,541	88,717	84,981	105,502	19

** Carbon dioxide emissions are calculated using gasoline-equivalent gallon conversions from table 6 using an Environmental Protection Agency calculator found on http://www.epa.gov/solar/energy-resources/calculator.html.*

FY 2005, the baseline year established under Executive Order 13423:

- Alternative fuel usage increased significantly, but it is still only 0.2 percent of our overall fuel consumption, which is close to 12 million gallons.
- Overall FY 2007 fuel consumption increased by 19 percent even though we decreased the number of miles we drove by almost 6 million.
- Our national mpg dropped significantly, from 14.4 to 11.5 mpg.

- We spend almost as much on our fuel costs as our energy bills, and that does not include the other costs of ownership of our fleet, which rose by almost $7 million alone this past year.
- Miles attributed to sedans and station wagons decreased by 51 percent and to 4x2 trucks by 47 percent.
- We do not have a count on the number of hybrid vehicles we own.
- We travel almost an average of 5,000 miles per employee, and the trend is going up. Clearly, many field-going employees travel much more then this annual figure, but this is an overall agency indicator.

Tables 5 and 6 examine the amount of fuel we used to perform our jobs as land managers and stewards of the forests. The increase in our total fuel consumption may be related to the decrease in sedans and the increase in 4x4 trucks and sport utility vehicles that occurred from FY 2005 to FY 2007; this trend can be seen in table 7.

While the trends in our own fleet are challenging, gains in videoconferencing offered significant reductions in our transportation and fleet footprint.

In FY 2007, we started with approximately 50 locations having video teleconferencing equipment (VTC). VTC systems are composed of 50- or 42-in flat-screen monitors that are placed on a cart that allows them to be portable within the office where they are located. Easily accessible assistance and training are made to users to allow this technology to be used. During FY 2007, we procured 249 more place-based systems with some assistance from the Chief Information Officer. These efforts transcribed to an average usage during FY 2007 of 27,000 minutes per month to more than 191,000 minutes per month in January 2008.

The total annual cost for FY 2007 was more than $65 million for our 21,700 vehicles that support a full-time staff of 28,700 employees, who drove a total of 138 million mi. At the individual level, that mileage amounts to about 5,000 mi per year per full-time employee. Our efforts with EMS will help us meet the requirements of the Executive order and rightsizing our fleet with fuel-efficient vehicles. Each and every employee will have to carefully consider how to best use each trip they take as our staff shrinks and they have to cover a larger geographic area.

Our overall carbon footprint has increased from 88,717 metric tons of carbon dioxide to 105,502 metric tons of carbon dioxide as a result of the change in the dynamics of our fleet. Figure 6 presents the number of miles driven, from the baseline year to FY 2007. We have increased the number of 4x4 trucks and larger vehicles in 2007 and that increase is directly related to our overall decrease in miles per gallon and increased cost to travel. A decrease in the number of smaller, lighter trucks and sedans that get a higher miles per gallon is also a contributing factor to the decrease in mpg seen.

Executive Order 13423 requires us to move away from petroleum-based fuel products and utilize alternative fuels. Figure 7 examines the overall increase in 85-percent ethanol fuel (E85) vehicles we have in our fleet, starting in FY 2004 to FY 2007. We improved our utilization of E85 4x4 trucks dramatically in FY 2007. These efforts help us move to a renewable source of fuel that is required by Executive Order 13423. In FY 2007, we decreased the number of sedans that can run on E85 and replaced them with large 4x4 trucks that have a much lower miles per gallon. We are still challenged by access to fueling stations that offer E85.

Figure 6.—*Millions of miles driven by vehicle type comparing our 2005 baseline to 2007.*

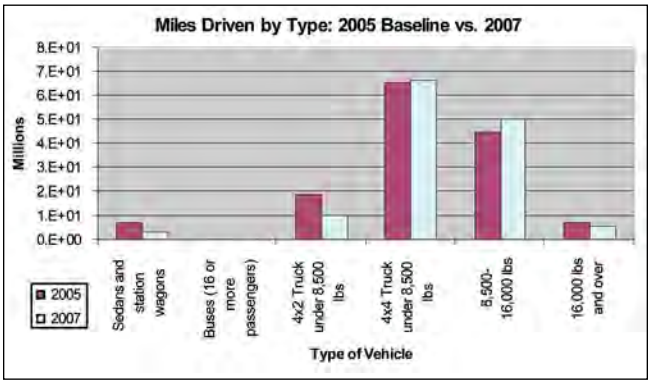
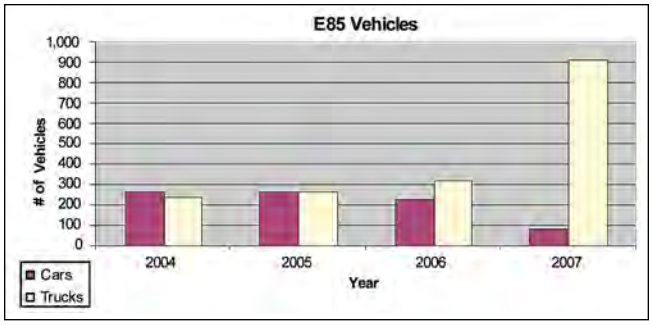


Figure 7.—*E85 vehicles.*



In addition to E85, our biodiesel use has also increased significantly. In FY 2008, we will need to examine our bulk fuel purchases closer to better understand our biodiesel use. It is anticipated that the reporting numbers in previous charts do not capture bulk biodiesel fuel purchased for road maintenance or other crews.

Telecommuting provides a way for employees to have the option of working from home. This option allows for numerous benefits for the employee, the organization, the community, and the environment. The employee is able to enjoy a reduced workday from the lack of a commute, and can capitalize on peak productivity periods better, and can more effectively use their leave. The organization benefits from this option because it keeps employee retention rates higher and can be used as a tool to recruit valuable employees. This option benefits the community by decreasing the amount of traffic on the roads and reducing the effects of rush hour. The overall benefit to the environment is decreased emissions from the commute to and from work.

This great option does require a Telecommuting Work Proposal/Agreement (FS-6100-40). General requirements include an approved workspace and a job that allows for this flexibility. More information is available through the Forest Service Human Capital Management Web site, under Work Schedules. For this footprint report, we were unable to ascertain the number of employees who have been approved for or are using telecommuting options.

Behind the Scenes: Place-Based Activities Summary of 155 Unit Responses to the FY 2007 National Footprint Data Call

Place-based successes have been at the heart of our progress in the fleet and transportation footprint area. Information obtained from the footprint report data call for bulk fuel, alternative fuel usage, and employee awareness and alternative transportation is reported in the following sections.

Bulk Fuel

Many units have bulk fuel storage. Currently we have no real method of measuring our total consumption of bulk fuel at a national level. In addition, there is no easy way of determining the percent of bulk fuel use between project equipment, working capital fund equipment, and other uses, such as emergency-related vehicles. The information we do have comes from the FY 2007 Footprint Data Call and is limited to the number of responding units. This information is one step in helping us better understand the total fuel consumption associated with our fleet.

- Seventy-four units (48 percent) reported bulk fuel use in FY 2007. A total of 48 units (31 percent) reported zero bulk fuel use, and 33 units did not respond (21 percent).
- Six units reported sharing bulk fuel with others (e.g., local, State, and other Federal agencies, fire use, and contractors). Of the fuel that was shared, these units reported using the majority of the fuel themselves (average Forest Service use was 85 percent of bulk fuel used).

Alternative Fuel Usage

Place-based efforts to use alternative fuels are reported through our FY 2007 National Environmental Footprint Data Call.

- Six units reported using biodiesel.
- Six units reported using E85.
- Additional units reported using other alternative fuels, such as bioheating oil and electric/hybrid power for vehicles.

- Forty-six units (30 percent) shared information about the Alternative Fuels Web site with employees.

Employee Awareness and Alternative Transportation

Increasing employee awareness is the first step toward making progress toward integrating sustainability into the Forest Service culture. This awareness is happening at units all across the Forest Service with success.

- One hundred units (65 percent) are promoting alternative transportation during working hours.
- Sixty-two units (40 percent) shared information with employees about the Government transit subsidy for commuting.
- Sixty units (39 percent) shared ecodriving tips with employees.
- Of the 122 units (79 percent) with access to videoconferencing (or similar) equipment, not quite half (58 units, 48 percent) reported adequate employee training on the use of this technology.
- Employees on 98 units (63 percent) frequently use NetMeeting or Sametime.

Table 10.—*Exempt and nonexempt bulk fuel use.**

Fiscal year	Number of units reporting	Number of exempt gallons	Number of nonexempt gallons	Total number of gallons
2007	74	488,494	854,544	1,343,038

** From fiscal year 2007 Environmental Footprint Survey, 155 units reporting.*

Table 11.—*Exempt and nonexempt bulk fuel use, by region, station, or area.*

Region, station, or area	Number of exempt gallons	Number of nonexempt gallons	Total number of gallons
Region 1	10,939	76,406	87,345
Region 2	15,392	24,109	39,501
Region 3	161,540	124,612	20,800
Region 4	54,676	12,144	66,820
Region 5	177,850	137,731	315,581
Region 6	24,505	76,457	100,962
Region 8	40,458	235,870	276,328
Region 9	36,068	91,319	127,387
Region 10	313	15,323	15,636
Washington Office	100	1,900	2,000
Rocky Mountain Research Station	0	1,170	11,170
Northern Research Station	120	19,983	20,103
Pacific Northwest Research Station	1,844	2,286	4,130
Pacific Southwest Research Station	0	0	0
Southern Research Station	1,216	122,919	124,135
Other	400	0	400
Total	**488,494**	**854,544**	**1,343,038**

Water Use in Facilities—Striving Toward Zero Watershed Impact

Introduction

Water has been an important part of the Forest Service since its founding as an agency. Many of the acres of national forest land we treasure today were originally set aside as protection for public drinking water supplies. In today's world of a changing climate, the actions we take in caring for our water resources must be expanded beyond our traditional land management role of watershed protection. Forests have a direct connection to our faucets. Inefficient water consumption is costly both economically and environmentally: it depletes aquifers and requires energy for pumping, chemicals for treatment, and staffing to operate treatment and wastewater treatment plants. By using water efficiently, we can protect water sources, improve water quality, and reduce the energy used.

Like other footprint areas, we must balance the need to meet our legal and regulatory requirements (as defined in Executive Order 13423, the Energy Policy Act of 2005, and the Energy Independence and Security Act of 2007) with the reality of making meaningful, tangible progress at the place-based level. Efforts to achieve this balance are complicated by the inconsistencies and data gaps in our national databases and the inability of a local unit to establish a comprehensive understanding of its purchased water consumption without directly contacting its local utility supplier. Water costs often are included with other municipal utilities, such as sewer and trash, and cannot be easily separated. We also have many of our own water sources that are not metered, such as springs and wells that supply ranger stations and campground facilities. Obtaining a comprehensive water baseline will depend on understanding all our uses of water, not just that we purchase from a utility supplier.

In FY 2007, we made considerable progress in better understanding the gap that exists between our agencywide systems, where water cost data is available to us, and our need for water consumption data at a local level. While

it is not yet reality for a local unit to access consumption data other than by contacting its local utility suppliers or installing meters on our own systems, we took some important steps toward reducing our water footprint in FY 2007. These activities included:

- Increasing employee awareness about water conservation through Green Team activities and the distribution of a top 10 water conservation habits list.
- Developing pilot and showcase projects, such as xeriscaping and the installation of low-flow fixtures, at a variety of locations.
- Achieving a better understanding of where our water data gaps exist and identifying future action to close these gaps.

Executive Order 13423 requires that we establish an official water intensity (gallons per GSF) baseline based on 2007 data. As of the writing of this report, we have numbers for this baseline and are able to compare them with water consumption data that had been collected in conjunction with the FY 2003 energy baseline.

In FY 2007, the Forest Service used more than 1 billion gal of water, which cost about $4.8 million (see tables 13 and 14). Across the Forest Service, the rate of water intensity was 29.8 gal per GSF.

Future water footprint efforts will continue to close the gap between the data that represent our national water use and the tools and mechanisms needed at the local level to support continued water conservation activities. In FY 2008, we will continue to refine our water baseline to include sources that we do not currently have metered. In addition, better articulating the links between our forests and our faucets will be the focus for future pilot and showcase projects. While the impacts of local water conservation efforts may not be clearly apparent yet at the national scale, that has not hampered the tremendous number of meaningful placed-based actions taken in 2007 to reduce our overall water footprint.

Success Shorts

- Several forests, including the **Angeles National Forest** and the **Cleveland National Forest**, and the **Forestry Sciences Lab, Rhinelander, Northern Research Station** have replaced original fixtures with low-flow and/or automatic fixtures.
- Xeriscaping on the **Inyo National Forest** and landscaping with native plants and grasses on the **Fremont-Winema National Forest** have helped conserve water.
- The **White Mountain National Forest** is planning to add composting toilets, a gray-water recirculation system, detention ponds, etc., as part of a projected LEED certification.
- Locally based efforts on the **Monongahela National Forest** include the replacement of water lines at recreation development areas, resulting in significantly reduced water loss.
- On the **Nez Perce National Forest**, the maintenance manager at the **Red River Ranger Station** repaired leaks on the system's galvanized water lines. These repairs reduced water usage by 6,400 gal per day and reduced the energy requirement because the well now runs once instead of five times per day.
- The **Forest Products Laboratory** realized more than $30,000 in cost avoidance and savings by redirecting some "clean process" water from the sanitary sewer to the storm sewer and installing waterless urinals and dual-flush toilets.
- The **Rocky Mountain Research Station at the Missoula Fire Sciences Lab** replaced all of their toilets with efficient mechanisms to conserve water usage.
- The **Northern Research Station Forestry Sciences Lab** in Rhinelander replaced urinals and toilets with 1.6-gallon water-use models and use faucet aerators.
- The **Pacific Southwest Research Station Sierra Nevada Research Center** put in water-saving toilets and urinals during a laboratory renovation.
- The **Athens Forestry Sciences Laboratory** reduced water consumption by reducing water pressure throughout building.

Forest Snow to Faucet Flow

Forests are nature's sponges, storing and filtering vast amounts of water and slowly releasing it through the summer when it is most needed….

When we turn on our faucets, we tap into our forests—so our water supply depends on the health of our forests and their streams….

Securing reliable flows of clean water was a prime purpose of the first national forests. In a sense, history is repeating itself today as we in the Forest Service return to our roots by giving priority to water as the greatest value of national forests.

The stakes are now higher than ever with projections of a warming climate, less snowpack, earlier snowmelt, and more severe droughts and wildfires that will strain our water supply and threaten our water source. We need to plan for such a future….

Advocacy for water issues and forests requires public collaboration…. The work of rural communities, grassroots groups, businesses and individual volunteers is critical to improving our forest watersheds, to helping heal wounds on the land so streams run clean, and to making forests more resilient to wildfires so the sponge keeps working. And we are grateful.

—Rick Cables,
Regional Forester for Region 2,
Denver Post guest commentary on
December 18, 2007

Sizing Things Up: Our National Baseline

There are a variety of sources of water for our facilities. Most offices and locations use water provided by a local utility. This water use is typically metered and, although consumption is not tracked through our national systems, we can determine approximate expenditures for water consumption where there is a utility bill. Often, however, the expenditure for water is coded under a single budget object code that lumps together water, sewer, and trash expenditures, so exact water expenditures are an estimate. We also have many other sites, such as ranger stations and campgrounds, where the water source is our own and not metered. These water sources have not been included in the overall water use figures presented in this report. We are determining whether this and other uses will be included in our baseline resource management use (such as fire). While cost is an imperfect measure of consumption, it does point out the significant agency expenditures associated with our water use and it does serve as a starting point from which to propose more strategic implementation of water conservation measures.

McNeil Technologies assisted in collecting energy and water data that was used to establish the FY 2003 energy baseline. McNeil Technologies also collected energy and water data for FY 2007. The water data gathered was used to establish the FY 2007 water baseline as prescribed by Executive Order 13423. McNeil also calculated a water intensity figure (measured in gallons per GSF for the Forest Service). Water intensity provides a baseline for the goals of Executive Order 13423, which requires a 2-percent intensity reduction per year (starting from a FY 2007 baseline), leading to a 16-percent reduction by 2015.

Although tables 12 and 13 portray a significant reduction between our FY 2003 water use figures and our FY 2007 baseline figures, it cannot be assumed that this reduction is completely correct. Although as an agency we did take actions to reduce our water consumption, we most likely did not truly reduce our consumption over 4 years by almost 50 percent. The discrepancy in our water costs and consumption figures between 2003 and 2007 can be attributed to the following:

- Accounting systems and methodologies for tracking water consumption are not corporately mandated or consistently applied, requiring a complex algorithm to estimate water consumption and costs.
- Consumption quantities are based on regional and national estimated factors for converting water costs into quantities.
- Some units moved from commercial leases to full-service leases in which utilities are incorporated into lease payment.

Table 12.—*Estimated consumption, 2003 compared with fiscal year 2007 baseline.*

	2003 estimated consumption*	Fiscal year 2007 estimated baseline consumption*	Percent difference, 2003–07
Forest Service total water consumption (in gallons)	1,972,234,000	1,002,103,000	– 49
Forest Service total facilities (in gross square feet)	37,450,000	33,630,000	– 10
Forest Service total water intensity (in gallons per gross square foot)	52.7	29.8	– 43

** Does not include water from nonmetered Forest Service-owned sources, such as campgrounds and ranger stations.*

Table 13.—*Estimated expenditures, 2003 compared with fiscal year 2007 baseline.*

	2003 expenditures* (in dollars)	Fiscal year 2007 baseline expenditures* (in dollars)	Difference, 2003–07 (in dollars)
Forest Service total energy expenditures	7,841,802	3,063,744	– 4,778,058
Forest Service total energy expenditures per gross square foot	0.21	0.09	– 0.12

** Does not include water from nonmetered Forest Service-owned sources, such as campgrounds and ranger stations.*

- Employees at the local levels became more aware of the issues.
- The number of employees decreased by 10 percent.
- Differences in calculations of gross square feet of facilities.

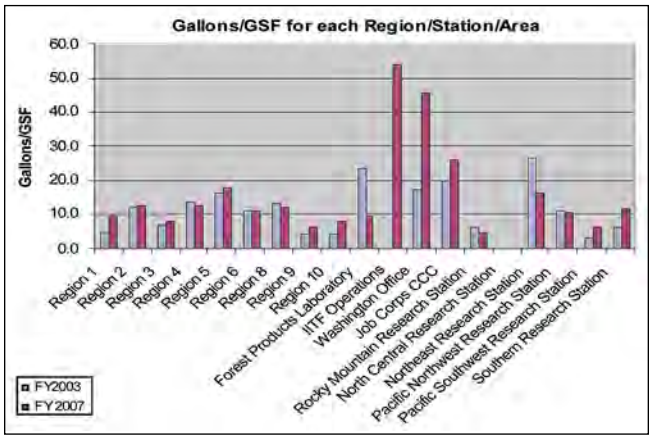
In addition, we discovered a significant portion of our water costs cannot be allocated to a specific location. Close to 82 percent of the water consumed in FY 2003 was unallocated and more than 60 percent of the water consumed in FY 2007 was unallocated. It is important that the data shown in tables 12 and 13 are viewed as indicators of potential progress that help to increase our overall understanding of our water footprint and not necessarily the final word on our water consumption. This data has been shared here as a way to increase our knowledge about our understanding of our water footprint. Because of these data analysis shortcomings for FY 2007 in that our consumption is based on the cost and the unallocated water billing is not reflected in the water intensity calculations, we are looking forward to a more well-defined method for gathering data for FY 2008 that gives us a more true view of our consumption of water as an agency.

In addition to overall agency cost and consumption data the FYs 2003 and 2007, the McNeil reports also provided water use and intensity information for each region, station, and area. Figures 8 and 9 show this information. It is important to remember that a significant portion of the water we

consumed was unallocated to a particular location. Because the unallocated numbers are so great, it is not shown in these charts for clarity.

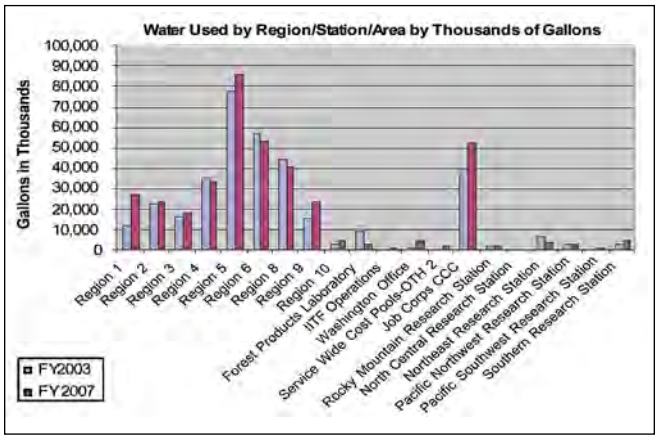
It is important to reduce our water consumption across all of our regions, stations, and areas; some facility types and geographic locations may offer greater opportunities to reduce our water footprint. In the future, as we work on closing data gaps in our water consumption knowledge, we must take time to explore the differences shown in figures 8 and 9. For example, the water intensity for Region 5 is somewhat higher than that of other regions, but Region 5's water use is significantly higher. Does this trend occur because Region 5 actually has higher water consumption or does it occur because other regions have far fewer facilities that are on public utility systems and, thus, are not included in these overall consumption numbers? Job Corp Centers are in

Figure 8.—*Water intensity for each region, station, and area as reported by McNeil Technologies.**



** Not including unallocated water used.*

Figure 9.—*Total water used by region, station, and area as reported by McNeil Technologies.**



**Does not include unallocated water used.*

a similar situation as Region 5 because their water use reflects both significant intensity and use that most likely is a reflection of the many living quarters that are part of Job Corp facilities.

Behind the Scenes: Place-Based Activities Summary of 155 Unit Responses to the FY 2007 National Environmental Footprint Data Call

Although we have far to go to comprehensively understand our water consumption at a national level, our shortcomings have not hindered the implementation of many place-based water conservation activities. Pragmatic actions that reduce our water consumption are happening across all regions, stations, and the area. Green Teams are sharing water conservation tips, ranger districts are xeriscaping their landscaping with ecosystem-appropriate plants that reduce watering needs, and new and old facilities are incorporating water-saving fixtures, such as waterless urinals and faucet aerators. Efforts such as these will only continue to grow in the future and we anticipate that many of our efforts will spur similar actions to be taken our communities. We are looking forward to better connecting these activities with our water resource management activities resulting from a changing climate. The Forest Service has been tasked since our start as stewards of our Nation's forests to ensure the continuation of a reliable and clean source of water. The forests we manage act as sponges that soak up and hold water through the winter and spring, releasing it during the summer to filter through the forest soils when it is most needed. This function allows us to impact the water supply at the source in our forests. When we reduce our consumption of water, we reduce the energy required to pump, filter, and store it.

Table 14.—*Units implementing best management practices.*

Management practice	Percentage of units responding, out of 155
Low-flow toilets and urinals	41
Aerated faucets and showerheads	34
Water-efficient landscaping	28
Distribution system audits, leak detection, and repair	19
Boiler/steam systems	10
Public information and education programs	10
Cooling tower management	4
Water reuse and recycling	3
Miscellaneous high water-using processes	3
Single-pass cooling equipment	1

Although there were only a few water-related questions in the FY 2007 National Environmental Footprint report data call, it is clear that the units responding are working to implement many of the top 10 best water management practices. See table 14. In future years, we will need to work to tie the implementation of these best practices into water conservation plans for specific locations and do a better job of actually tracking the water conservation activities. We are continuing to do good job of sharing top 10 water conservation tips with employees and anticipate this increased awareness will support the implementation of future activities.

Microgrants are one technique that has helped to foster place-based successes. Microgrants are small grants given to our ranger districts, supervisory offices, and others to implement a project that will help them conserve water and energy usage. Region 2 and the Pacific Southwest Research Station are currently two areas that are using Microgrant opportunities. The Pagosa Ranger Station xeriscaping project consisted of replacing water-consuming, nonnative turf grasses with low-maintenance native plants, rocks, and trees. The project was done for less than $2,000 with the help of volunteer time from employees. The project increased awareness of this type of landscaping, and its value in the Colorado landscape and has been a catalyst for other projects within the community.

Region 2 implemented a mass purchase of conservation items as a part of their Microgrant program. With this grant, forests in the region were able to purchase items such as faucet aerators and other water reducing technologies. The region spent a little more than $500 for water conservation items and anticipates almost $2,000 annual cost savings and more than 30,000 gal of water savings.

Executive Order 13423 has several water-related requirements, including the following:

- Reduce water consumption intensity by 2 percent annually or 16 percent by the end of FY 2015 using an FY 2007 baseline.
- Conduct energy and water audits on at least 10 percent of our buildings per year.

Many other units are taking actions to implement best management practices. Table 14 examines what the percentage of responding units are doing to manage their water use at their facilities.

Green Purchasing—Striving Toward Zero Footprint Impact

Introduction

We have tremendous opportunities to reduce not only our environmental footprint but also the footprint of our suppliers, contractors, and communities by greening our procurement activities. The Federal Government is the largest procurer of goods and services in the Nation, spending more than $200 billion annually on goods and services.

Although the connections with a changing climate are much more obvious with our energy and fleet footprint areas, the opportunities to use our procurement activities to reduce the impacts from the changing climate may have many more significant ripple effects. Procurement approaches can reduce not only our overall consumption but cause the goods and services to be manufactured, transported, and disposed of in ways that are significantly more environmentally friendly. In particular, our locations in many small communities offer us opportunities to pilot environmentally friendly materials and products that those locations may not otherwise have access to or that other agencies cannot access. Our purchasing habits can support local economies, which, in turn, can foster stronger connections with our communities in ways that we have not traditionally explored.

Green purchasing includes buying products made from recycled content, environmentally preferable products and services, biobased products, energy- and water-efficient products, products using renewable energy, and alternatives to hazardous or toxic chemicals. Executive Order 13423 requires the following:

- A reduction in the quantity of toxic and hazardous chemicals and materials used by the agency.
- All paper purchased be at least 30-percent postconsumer fiber content.
- Acquiring 95 percent of electronic products as Electronic Product Environmental Assessment Tool registered products.

"It's fitting for a natural resource agency like the Forest Service to intertwine our mission to sustain forests with a conservation ethic that guides how we operate facilities and conduct daily business."

—Joel Holtrop,
Deputy Chief,
National Forest System

Our purchasing habits often dictate our disposal habits, which have also have impacts on our communities. Although the Forest Service expenditures are only a fraction of the Federal Government's procurement actions, we spent more than $1.15 billion in FY 2007 buying everything from toilet paper to buildings and thus have some unique opportunities to use our purchasing habits to not just reduce our own footprint but to function as a catalyst to create many other footprint-reducing activities throughout our supply chain.

FY 2007 was a challenging year for green purchasing. While we had many place-based successes and green purchasing champions, we do not yet have an integrated green purchasing program at the national level. Because green purchasing practices overlap all other footprint areas, it has been difficult to track and report green purchasing activities as well as identify the right audience for sharing particular information. Green purchasing is not any one employee's responsibility; it must be a partnership between procurement personnel and the specialists who are providing the technical information for a particular good or service. Even without

a robust agencywide green purchasing program in 2007, a few important activities supporting progress occurred in the green purchasing arena. These activities included the following:

- Several units are moving to 100-percent postconsumer recycled content office paper.
- We increased information sharing about biobased or biopreferred purchasing in recognition of the USDA's lead position for implementing a biobased program governmentwide.
- Many units are using green janitorial supplies.
- We identified key General Services Administration (GSA) customer service reps to help educate employees about green products and to provide feedback on product needs and other specifics.
- We made information about green purchasing training (that was embedded in a GSA Advantage Purchasing online course) available to all purchase cardholders in January 2007.

Future green purchasing activities will focus on the continual education of employees that are involved in procurement activities and highlight efforts made by champions for green procurement. Although green purchasing information was distributed, we do not know the number of employees who took advantage of the training. We will work to also increase our understanding of current procurement systems so that appropriate tracking and reporting needs can be integrated effectively. In addition, a few key areas where green purchasing can have significant impacts to the agency should be identified to work on. These areas will include a greater understanding of the findings from our National Environmental Compliance and Protection Audit Program. Although it seems that not much progress has been made in the green purchasing footprint area for FY 2007 and we have a long way to go to create an agencywide program; we have made a significant amount of place-based efforts happen in FY 2007. The momentum of these efforts to facilitate the eventual development of a larger scale, integrated, agencywide program should not be underestimated.

Success Shorts

- Green purchases on the **Medicine Bow-Routt National Forests** and **Thunder Basin National Grassland** included an energy-efficient refrigerator and lower wattage light bulbs.
- On the **Deschutes National Forest**, janitorial service contracts specify the use of biobased cleaning products.
- On the **Chippewa National Forest**, cleaning products are purchased through GSA and are environmentally friendly. Procurement personnel are trained in green purchasing.
- The **Riverside Forest Fire Lab** has recently converted cleaning products, along with janitorial supplies and paper supplies, to green products for the lab.
- The **Huron-Manistee National Forests** purchased recycled printer cartridges on a forestwide, consolidated basis to ensure that all units are using recycled cartridges.
- Vendors for the **Mendocino National Forest** were asked to fill fleet cooling systems in fleet forest vehicles with less toxic "Sierra" (propylene glycol based) instead of ethylene glycol.
- The **Inyo National Forest** converted to green products that are available for their janitorial services.
- The **Pacific Southwest Research** at Albany is purchasing printer/copier paper that is 100-percent recycled content.

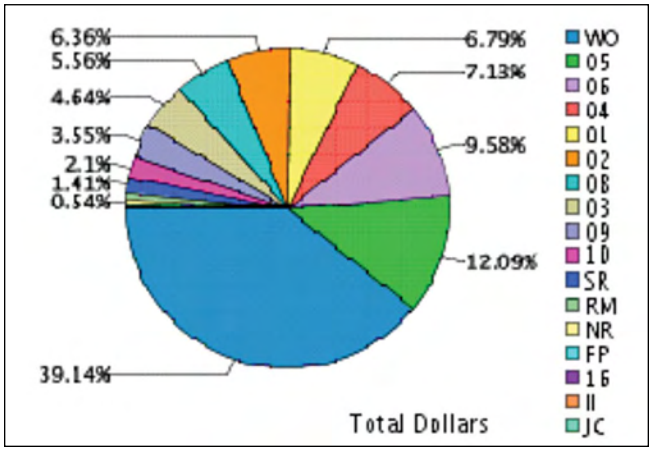
Sizing Things Up: Our National Baseline

Although we currently have very little information about our green purchasing activities, we do know that we have significant opportunities to implement green purchasing because, in FY 2007 we spent approximately $1.15 billion agencywide on supplies, services, and construction. Figure 10 and table 15 present the locations where purchasing occurs. In the future, we can work with procurement and purchase cardholders to move us toward zero toxics, Energy Star® appliances, low-emissions equipment, and contracts that reflect our efforts to reduce our footprint in all areas as an agency.

Figure 10 shows our total purchasing activities as a percentage of the total amount of monies spent in each region, station, or area, and table 15 shows the actual dollar amount of those expenditures. Understanding the sheer amount that we are spending helps us to better understand how we can change markets by purchasing green products. The demand that we create can drive economies and research to improve the products that we use that help us reach our goals of zero toxics, net zero energy use, zero emissions, and leaving no habitat unturned.

It is USDA's policy, as stated in the Affirmative Procurement Program agreement dated May 8, 2006, that a preference for designated biobased products be established in all USDA contracts when practical, including those at or below

Figure 10.—*Percentage of total spending by each region, station, and area.*



"Sustainable Operations is good business as it reduces the impact on the planet in addition to reducing operating costs."

—Hank Kashdan,
Deputy Chief of Business Operations, Washington Office

the simplified acquisition threshold ($100,000) and the micropurchase threshold ($2,500). The objectives of the biobased preference procurement program will have a three-fold effect:

1. Increase demand for biobased products. This demand would have beneficial effects, including increasing the domestic demand for many agricultural commodities that can serve as feedstocks for the production of biobased products and reducing the environmental impact by substituting biobased products for less environmentally friendly materials.

2. Spur the development of the industrial base through value-added agricultural processing and manufacturing in rural communities. Because biobased feedstocks are largely

Table 15.—*Total spending by each region, station, and area.*

Contracting office	Total amount spent (in dollars)
Washington Office	450,000,000
Region 5	139,000,000
Region 6	110,000,000
Region 4	82,000,000
Region 1	78,000,000
Region 2	73,000,000
Region 8	63,000,000
Region 3	53,000,000
Region 9	41,000,000
Region 10	24,000,000
Southern Research Station	16,000,000
Rocky Mountain Research Station	8,000,000
Northern Research Station	6,000,000
Forest Products Lab	4,000,000
16 (is undefined)	750,000
International Institute of Tropical Forestry	200,000
Job Corp	180,000
Total Forest Service spending	1,150,000,000

produced in rural settings and, in many cases, because of their bulk require preprocessing or manufacturing close to where they are grown, increased dependence on biobased products appears likely to increase the amount of preprocessing and manufacturing of biobased products in rural regions of the Nation. This trend would help create new investments, job formation, and income generation in these rural areas.

3. Enhance the Nation's energy independence by substituting biobased products for fossil energy-based products derived from imported oil and natural gas.

Reporting units also identified more then $4.5 million dollars worth of biobased products (table 16). These products include environmental control products, biodegradable containers, bath and tile cleaners, mulch, dust suppressant, concrete and asphalt, exterior and interior paints, building materials, carpeting, household cleaners, fertilizers, adhesive additives, insecticides, gasoline fuel additives, gear lubricants, hand cleaners, herbicides, fuel oil, and printing and writing materials.

Contracts for services are a large part of the purchases made by the Forest Service and have the ability to greatly impact biobased and green purchasing. Table 18 shows service-related awards made in FY 2007.

Table 16.—*Integrated Acquisition Systems list of biobased purchases for fiscal year 2007.*

Region	Number of biobased purchases	Total purchase amount (in dollars and cents)
1	1	264.00
2	1	38,536.00
4	16	1,186,254.82
5	3	74,987.75
6	3	3,057,781.89
8	1	59,223.59
9	13	93,343.28
Total	**38**	**4,510,391.33**

Table 17.—*Units using biobased products.*

Type of product	Number of units out of 155 responding units
Oils	20
Hydraulic fluids	15
Lubricants	11
Food service	7
Other*	3

** Other includes parts washing fluid, limited use of biobased food service products as procured by staff area, radiators converted to take only ethylene glycol antifreeze, biobased oil (vehicle), ecofriendly cleaning products, specimen preparation solutions, and plates and cups made from bagasse.*

Table 18.—*Contractual procurement by product service codes.*

Product service code (description)	Commercial procedure actions	Amount of contract (in dollars)
S201 (custodial janitorial services)	264	2,400,000
S208 (landscaping/groundskeeping services)	38	308,000
S205 (trash/garbage collection)	45	373,000
S202 (fire protection services)	3	27,000
S203 (food services)	2	16,000
S222 (waste treatment and storage services)	4	29,000
S204 (fueling service)	9	492,000
S299 (other housekeeping services)	8	1,300
S218 (snow removal/salt services)	15	39,000
S216 (facilities operations support services)	4	54,000
S112 (electric services)	2	29,000
S214 (carpet laying and cleaning)	3	31,000
S209 (laundry and drycleaning services)	3	12,000
S111 (gas services)	1	5,000
S113 (telephone and/or communications services)	2	9,200
Total	403	3,839,000

Micropurchases are another area where green purchasing can have a giant impact. Currently, there are 7,774 Forest Service cardholders who spent approximately $280 million in FY 2007.

Table 19 identifies the regions and how many cardholders each region has. Table 19 also shows total amount of money spent by purchase cardholders in each region.

One other area in which we spend a lot of money is our electronic equipment. We have a lot of opportunities via our computer contracts to support other footprint area efforts, such as energy and waste prevention. Our previous computer contracts starting with Dell, Lenovo, and now with HP are 3-year leases that allow us to return our equipment to the company we purchased it from at the end of the lease, allowing it to be reused or recycled.

Behind the Scenes: Place-Based Activities Summary of 155 Unit Responses to the FY 2007 National Environmental Footprint Data Call

While more of a national structure around our green purchasing efforts would be nice, many meaningful place-based activities still happened throughout the Forest Service. The FY 2007 National Environmental Footprint Data Call specifically requested information in four areas in which we have tremendous opportunities to make significant progress and that are connected to Executive Order 13423 and Energy Policy Act of 2005 requirements. These areas include paper purchases, environmentally friendly cleaning products and/or biobased products, products meeting FEMP specifications, and awareness of USDA's Green Purchasing Affirmative Procurement Program. Responses for each of these areas follow.

Table 19.—*Forest Service total number of cardholders and amount spent in fiscal year 2007 by region, station, and area.*

Forest Service total number of cardholders			
Region, station, and area	**Number of cardholders**	**Number of transactions**	**Total spent in fiscal year 2007 (in dollars)**
Region 1	534	62,000	25,000,000
Region 2	508	57,000	19,000,000
Region 3	737	63,000	23,000,000
Region 4	783	70,000	26,000,000
Region 5	2,178	147,000	57,000,000
Region 6	988	100,000	33,000,000
Region 8	657	87,000	32,000,000
Region 9	390	52,000	16,000,000
Region 10	217	16,000	6,000,000
Forest Products Lab	4	5,000	1,000,000
International Institute of Tropical Forestry	18	1,000	400,000
Washington Office	135	11,000	6,000,000
Job Corps	182	49,000	21,000,000
Rocky Mountain Research Station	121	10,000	3,000,000
23	NA	1,000	200,000
24	107	14,000	4,000,000
IRM	16	400	200,000
26	NA	10	2,000
Pacific Southwest Research Station	79	6,000	1,000,000
Southern Research Station	120	17,000	5,000,000
62 (is undefined)	NA	40	(3,000)

NA = Data are not available.

Paper Purchases

In 2007 the reporting units estimated they collectively purchased almost 32,400 boxes of printer and copier paper. It appears that we are, for the most part, meeting the 30-percent postconsumer recycled content requirement because more than half the units stated that all of the paper on their unit met this requirement. On the other end of the spectrum, of the 155 responding units only 3 units responded that none of their paper met this requirement and 21 units responded that they did not know the recycled content of the paper purchased.

Green, Environmentally Friendly Cleaning Supplies

It is clear that we are making progress in the green cleaning arena. Almost three-quarters of responding units were using green, biobased, or environmentally friendly cleaning products in FY 2007. These types of cleaning supplies were not only purchased for our direct use but were also included as requirements in many contracts.

Products Meeting FEMP Requirements for Standby Power

In general, a lot of opportunity exists to better inform units about their purchase of products that use power and what specifications to look more closely for to meet the requirements of FEMP. Only 20 units were aware of efforts on their respective units to purchase products using less than or equal to 1 watt in standby power consuming mode or meeting FEMP specifications. The majority of reporting units to the FY 2007 National Environmental Footprint Data Call did not know if they were purchasing requirements meeting these criteria. Products purchased in relation to Energy Star® can be found in the energy footprint sections.

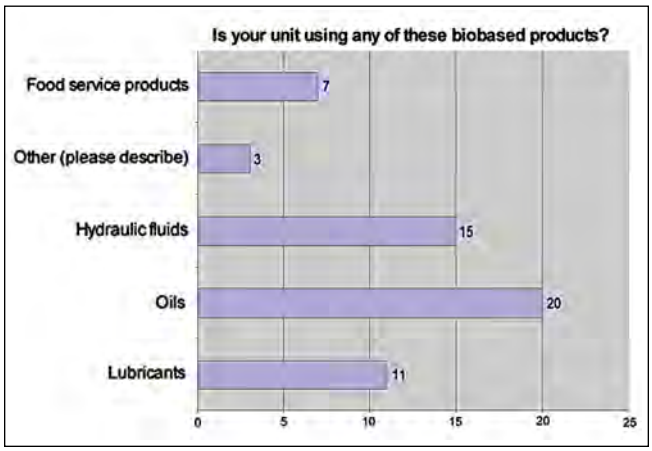
Biobased Product Purchases

In the FY 2007 National Environmental Footprint Data Call, many of the 155 responding units are using the biobased products as shown in figure 11.

USDA Green Purchasing Affirmative Procurement Program

We have significant progress to make in educating our purchase cardholders. A little more then half of the respondents reporting sharing the USDA Green Purchasing Affirmative Procurement Program requirements with credit cardholders and procurement specialists.

Figure 11.—*Number of units using biobased products responding to the environmental footprint data call in 2007.*



Waste Prevention and Recycling—Striving Toward Zero Waste

Introduction

At first review, waste prevention and recycling may not appear to have a direct connection with our traditional land management activities. All of our myriad purchases—batteries, paper, computers, etc.—come in some packaging that requires disposal or recycling; at the end of its use, we must also find a disposal location for the product itself. Every item we use also has an embedded cost of transportation, not only to get the product to our point of use but also to bring the myriad materials together to make that product in the first place. Disposal of items from our consumption requires landfill space and impacts air and water quality. The manufacturing of products also can also have significant environmental impacts. Landfills are a major emitter of methane, a greenhouse gas. As an agency with a significant number of employees and facilities, we generate a significant amount of waste; thus, we have significant opportunities to reduce our use of particular products and often serve as a catalyst to support recycling efforts in many of the small communities in which we have facilities. We have many opportunities to reduce and reuse items before recycling becomes necessary.

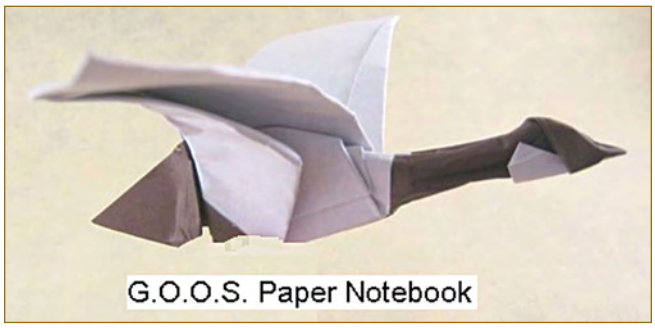
Waste diversion is an important part of our stewardship role. Because of the numerous locations we have across the Nation, local placed-based efforts are how we make a difference. At every forest, we have to take advantage of the opportunity to purchase products that can be reused as opposed to recycled or thrown out. We can improve recycling opportunities at remote locations that do not have a local effort. We can set an example as an agency to reuse what we can, recycle the remainder, and reduce the amount of products that we send to our landfills.

FY 2007 was a year of increasing our understanding about where we really are as an agency with our waste prevention and recycling efforts. Unlike other footprint areas where a specific baseline year and measure has been set by Executive Order 13423, waste prevention and recycling activities are addressed in more general terms. Areas of focus, however, under Executive Order 13423, include increased recycling program implementation, appropriate disposal of electronic products and decreased use of toxic and hazardous chemicals and materials. Therefore, our efforts throughout FY 2007 were used to uncover and identify where our needs are to foster more waste prevention and recycling efforts. Specifically we realized the following:

- We have little quantitative data about our waste prevention and recycling efforts on a national scale.
- An individual code for waste expenses does not exist. Expenses that are captured at our NFC are coded to a collective water, sewer, and trash budget object code.
- Recycling and waste prevention efforts vary among forests and districts, depending on access to recyclers and the presence of an employee who acts as a waste prevention or recycling champion.

Reduce, Reuse, Recycle, and Rot!

For many years, Woodsy Owl has promoted the four R's: reduce, reuse, recycle, and rot. He wants us to "Give a hoot! Don't Pollute!" and also to "Lend a Hand, Care for the Land." Waste prevention and recycling efforts have an even more important connection with our conservation mission in today's world of a changing climate. Perhaps the waste prevention and recycling effort is the footprint area where we can most visibly see our consumption reduction efforts.


G.O.O.S. Paper Notebook

"GOOS Paper—the new buzz word. If you aren't using it, you're wasting it."

—Glenda Wilson,
Director of Engineering for Region 2

- We do not at this time have a national recycling coordinator identified. This issue inhibits a more comprehensive waste prevention and recycling program and limits our opportunities to link more closely with related green purchasing work.
- We have opportunities to connect the footprint reporting process with our National Resource Conservation and Recovery Act Report.
- We have opportunities integrate waste prevention efforts with our National Environmental Compliance and Protection Audit program.
- We need guidance for allowing units to retain proceeds collected from recycling efforts so they can be reinvested to support additional footprint reduction activities. At the end of 2007, the fiscal procedures for this need were established through an interim directive for Accounting for Revenue Received from Waste Reduction, Prevention, and Recycling (FSH 6509.19). The direction specifies that units "shall strive to recycle materials to the maximum extent practicable, considering costs." Revenues may be used for recycling and waste prevention, hazardous waste management, pollution prevention, or environmental management programs. A unit must have an established recycling program to retain funds on the unit. Further clarification is needed about what exactly defines an established recycling program.
- We have opportunities to work jointly with USDA to pilot waste prevention and recycling activities and help with realistic policy direction.
- We have little understanding of our efforts related to electronics acquisition, operations and maintenance, and end-of-life management.
- We have not scratched the surface of the many tremendous opportunities to link our waste prevention efforts with our green purchasing efforts.

Although collectively this list highlights our lack of a clear, comprehensive national approach, it does show that we used FY 2007 in an important way by identifying where future actions should be taken. Regardless of a fully integrated national approach, the many success stories reported through the data call process were not limited in number or enthusiasm. These successes are a true reflection of the significant differences that place-based efforts and champions are taking to appropriately reuse, recycle, and dispose of our agency's waste.

The 2007 National Environmental Footprint Data Call was used to increase understanding about how widespread and comprehensive our waste prevention and recycling efforts really are. Collection of this data will support development of a more comprehensive, easily implementable, and pragmatic national approach to our waste prevention and recycling activities. Specifically, questions targeted information about the following:

- Assessing the breadth of our recycling waste prevention and recycling activities.

Executive Order 13423 requires the following:

- Have recycling programs in place and encourage their use.
- Ensure that 100 percent of nonusable electronic products are reused, donated, sold, or recycled.
- Reduce the quantity of toxic and hazardous chemicals and materials used by the agency.

- Understanding our ability to reduce our use of a variety of products, such as paper.
- Understanding our use of toxic or hazardous materials.
- Identifying actions we can take in future years.

Data collected are provided in the following summary. Future footprint efforts will help us springboard from the actions of the place-based champions identified this year by identifying specific actions needed at a national level.

Success Shorts

- A number of units have longstanding recycling programs, including the **Rocky Mountain Research Station—Flagstaff** (12 years) and the **Midewin National Tallgrass Prairie** (7 years).
- In FY 2007, the **Pacific Southwest Research Station** headquarters began ordering recycling mailers from the Rechargeable Battery Recycling Corporation (RBRC) program. RBRC provides free recycling of old rechargeable batteries from cell phones, power tools, video equipment, computers, etc. When mailers are full, they are sealed and sent back to RBRC at no cost to the station.
- The **Region 9 Regional Office Green Team** sponsored a "Recyclemania" event, in which it coordinated with the custodial staff to save 1 day's trash and recycling. The Green Team put the waste and recycling on display at an all-employee meeting and used the opportunity to educate employees about waste reduction and recycling opportunities in the office and at home. The regional office also started collection boxes for cell phones and tennis shoes (Nike Reuse-a-Shoe) that day.
- On the **Tongass National Forest**, the Forest Service has a recycling partnership with a local nonprofit group in Ketchikan. Part of the State of Alaska Department of Health and Social Services, Community Connection's mission is "Providing individualized customer guided supports that encourage independence, community belonging, and quality of life." The Forest Service has been fortunate to have Ian Clark pick up and recycle paper, cans, glass, and cardboard for the past several years. In 2006, the Forest Service Chief presented Ian with the Forest Service Volunteer of the Year award for his service.
- The **Region 4 Regional Office Green Team** expanded its recycling program from aluminum and white paper to include colored paper, magazines, cardboard, and plastic. Until recently, employees volunteered to take the recyclables to the municipal transfer station. Now, with city provided curbside recycling bins, employees have collected 900 pounds of material for recycling—material that used to be sent to the landfill as trash.

USDA finalized an electronics stewardship plan in July 2007, which outlines current and proposed policies to help USDA meet Executive Order 13423 targets for electronics acquisition, operations and maintenance, and end-of-life management. Some end-of-life management policies include the following:

- Donate, recycle, or sell excess electronics through GSA, Computers for Learning, or the UNICOR contract.
- Request GSA has purchasers and contractors verify responsible electronics management through means such as chain-of-custody forms, take-back programs, and written agreements.
- Study the feasibility of leasing computers, with language in the contract requiring the vendor to recycle unusable equipment in an environmentally sound manner and have a take-back program for used, refurbished equipment.

- Representing **Gallatin National Forest**, Jane Ruchman, through the Sustainable Operations Subcommittee of the Greater Yellowstone Coordinating Committee, fostered the expansion of a unique program to safely gather and recycle used propane gas canisters commonly used in camping cookstoves and lanterns. Such canisters have been cluttering campgrounds in Yellowstone National Park and the surrounding national forests for years, but safety issues related to residual propane in the canisters made recycling them unsafe. This program expanded the collection efforts of these cylinders throughout all the Federal agencies in the Greater Yellowstone Ecosystem. Cylinders will be recycled using a machine (developed by a Yellowstone National Park partnership) that extracts the residual propane and then punctures and crushes the canister for recycling. The machine is powered by the recovered propane.
- The **Region 2 Regional Office Green Team** makes bound books of good on one side (GOOS) paper the office's employees can use for taking notes. The books have been a hit in the office and are high in demand; they are the current must-have item in the regional office.
- The **Medicine Bow-Routt National Forest** and **Thunder Basin National Grasslands** got a solar "Big Belly" trash compactor and are using it at a high-use campground in the summer and ski area in the winter.
- The **Payette National Forest** started battery recycling at fire incidents across the forest. They also are able to supply a local school with biomass for heat.
- The **Inyo National Forest** has put recycling bins for materials at each work station, battery buckets at all offices and fire stations, and cardboard and drink container recycling at all offices.
- The **Gifford Pinchot National Forest** is using GOOS at some of their units and is recycling light bulbs and batteries.
- The **Mt. Hood National Forest** is recycling hard hats.
- The **Daniel Boone National Forest** is using property management to recycle furniture and participating in computers for learning programs.
- The **Midwin National Tallgrass Prairie** has had a former Army infrastructure to demolish and made it a policy to re-use or recycle material first and as a last resort dispose of the materials at a landfill. Hundreds of tons of broken concrete were re-used for road construction by a neighbor, and hundreds of old power poles were reused by a local town for a park landscaping project.
- The **International Institute of Tropical Forestry** has conducted promotional recycling activities and has started special recycling for cell phones and phone directories.

Sizing Things Up: Our National Baseline

Our understanding of the agency's waste production is limited by the fact waste disposal and recycling may be handled through contracts, leases, GSA, credit card purchases, municipalities, and other means. Although at least part of the agency's waste disposal costs are captured through NFC payments, the coding of these payments is lumped together under a combined water, sewer, and trash code. Currently, no methodology exists to separate out or estimate costs, let alone quantities of waste generated.

Table 20 provides available data on waste disposal costs, which are combined with water and other nonenergy utilities in a single budget object code. If water costs were consistent or declining over this period, waste disposal costs may have increased from FY 2003 to FY 2007.[1] It is unclear if these costs are only utility bills, in which trash is included as municipal service, or if the variety of other waste disposal costs such as contracted trash removal services at campgrounds and/or ranger stations are included.

Like energy and water, cost is not the ultimate descriptor of environmental footprint impacts. A 2008 goal will be to gain greater understanding of what costs are actually captured under this particular budget object code. In addition, we may pilot at a few "Dumpster dives" at particular locations and types of facilities so we can better understand the makeup and actual quantity of waste we generate. This data can help us develop some estimates about our overall waste footprint without requiring each office to keep specific waste weight

[1] Delayed payments due to Hurricane Katrina likely affected the 2005 and 2006 utility payments.

Table 20.—*National annual waste-related utility costs from budget object codes.*

Utility	Cost (in dollars)				
	2003	2004	2005	2006	2007
Water, trash, and all others	8,100,387	8,371,698	1,272,859	15,393,545	10,758,199

and contents records. A trade-off exists between the effort and resources needed to get specific data and the resources and effort available to implement activities we know will reduce our waste footprint. We will continue to partner with USDA in these efforts to support the departmentwide goal of 40-percent waste diversion by 2010.

As a way to balance the need to collect data with the need to implement actions, the FY 2007 National Environmental Footprint Data Call focused on collecting initial information about waste diversion rates and activities for various materials will help us more strategically support place-based waste prevention and recycling efforts. This information will help the agency better understand how it is progressing toward its waste reduction goals and what actions will spur further progress because we do not have an established clear baseline for waste through existing accounting mechanisms. The data call also sought baseline information on toxic and hazardous materials management and electronics.

Behind the Scenes: Place-Based Activities Summary of the 155 Unit Responses to the FY 2007 National Footprint Data Calls

Although we have far to go in terms of establishing a more comprehensive national waste prevention and recycling effort, the number of existing recycling programs indicates place-based recycling and waste prevention efforts are under way. About half of all responding units have a recycling coordinator. Recycling programs exist on an estimated 999 sites (defined as supervisor's offices, ranger districts, bunkhouses, research stations, labs, or campgrounds), approximately 30 percent of all sites on responding units. Table 21 shows the percentage of sites with recycling, broken down by region, station, or area. The regions with the lowest percentage generally had the highest number of sites (hundreds), indicating establishing of consistent recycling at a number of scattered sites has posed and may continue to pose a challenge for the Forest Service.

The Forest Service is successfully providing recycling opportunities for some materials; office paper, toner cartridges, and aluminum are being recycled on more than 80 percent of responding units. Other paper products, batteries, and plastics are recycled on more than half of all units. Glass and furniture, however, are being recycled on less than half of responding units.

The fact that the majority of reporting units stated they appropriately recycle their electronics indicates a high level of awareness of electronics recycling. While the percentage of electronic equipment recycled on those units varied widely, the fairly high average of 88 percent is encouraging.

Many units have adopted paper reduction and reuse practices, but these behaviors are not yet consistent across the Forest Service. Although almost 80 percent of responding units have at least some printers and copiers set to print double sided, only one-third reported using GOOS paper on their respective units.

USDA has set a departmentwide goal to achieve a 40-percent recycling rate by December 31, 2010. The estimated baseline recycling rate for the Department was 21 percent in FY 2005. The USDA headquarters complex will serve as a flagship facility for this effort. USDA outlined the following strategies to achieve this goal: retraining janitorial staff, increasing cardboard recycling, procuring additional recycling containers, increasing awareness of recycling, and recycling toner and ink-jet cartridges through a GSA contract.

Table 21.—*Percentage of sites with recycling programs, according to reporting units.*

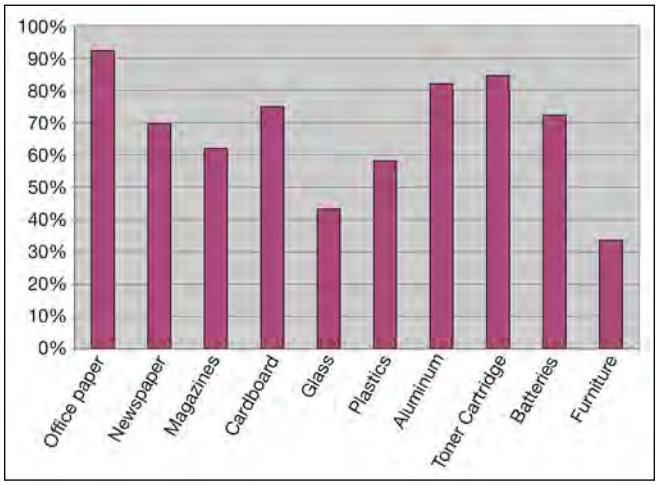
Region, station, and area	Number of sites with recycling	Number of sites on all units	Percent of sites with recycling programs
Region 1	38	79	48
Region 2	60	183	33
Region 3	129	1,166	11
Region 4	76	227	33
Region 5	278	589	47
Region 6	46	388	12
Region 8	153	363	42
Region 9	116	263	44
Region 10	17	17	100
Washington Office	6	6	100
Rocky Mountain Research Station	11	11	100
Northern Research Station	28	29	97
Pacific Northwest Research Station	12	15	80
Pacific Southwest Research Station	11	11	100
Southern Research Station	12	12	100
Northeastern Area	3	3	100
Forest Products Laboratory	1	3	100
International Institute of Tropical Forestry	1	3	100
Total	999	3,365	30

In addition to waste diversion, reducing the use of toxic and hazardous materials is an important sustainability goal. Approximately two-thirds of responding units have a current toxic and hazardous materials inventory. To successfully reduce the amount of toxic and hazardous chemicals used, all units will need to have an inventory. As a next step, units will need to seek opportunities to reduce or replace these materials in future purchases. Green purchasing practices are closely linked with waste management goals and can make meeting these goals much easier.

Into the Recycling Bin, Out of the Fire

Making sustainability part of Forest Service culture means keeping environmental concerns in mind, even in unusual circumstances. Thirty-five reporting units have addressed environmental concerns by implementing recycling activities at fire incidents. Region 5 made it a regional policy to provide recycling at fire incidents. In addition to expecting its forests to provide recycling bins, the regional office's detached North and South Operations units have specific processes for recycling items returned to the cache after the incident.

Figure 12.—*Percentage of units collecting various materials for recycling, proper disposal, or reuse on a majority of sites.*



** Other materials include brass; metal; cell phones; florescent lights, lightbulbs, and ballasts; tennis shoes; electronics or computer equipment; food scraps; furniture; compact florescent lightbulbs; wood; motor oil; and mulched organic matter. Only campgrounds collect glass bottles, packing peanuts or pellets, pallets, steel (scrap and paint cans), used propane canisters, and yard debris.*

Sustainable Leadership—Striving To Leave No Habitat Unturned

Introduction

The Forest Service is making great efforts to meet or exceed the requirements of Executive orders and policies related to sustainable operations. Meeting or exceeding the requirements will require every employee to play a role in implementing deliberate acts reducing resource consumption. Every employee has the ability to create and implement place-based efforts. Leadership and management have an additional responsibility to communicate the agency's vision for sustainable operations and to create the organizational capacity and incentives necessary to support sustainable acts in a broad and consistent manner. This corporate approach from leadership will enable larger scale agency changes to take place, changes that necessarily involve multiple units or are too expensive to be undertaken by a single unit.

FY 2007 marked an important year for Forest Service sustainable operations efforts. During that fiscal year, it became clear individuals at all levels of the agency, in every region, station, and area, were implementing exciting place-based activities. It also became clear national level leadership and consistency would be necessary to ensure the long-term longevity of activities, communicate successes and challenges across the agency, and formulate a broad vision for our operations striving for greatly reduced consumption in the coming decades.

Because 2008 is the last year of a partnership between the Rocky Mountain Region and Washington Office to provide national level guidance on sustainable operations, FY 2007 also functioned as a year of transition. In FY 2007, the Rocky Mountain Region and Washington Office, State and Private Forestry continued to serve as an integrator across the agency. Discussions began by those attending events, including the second annual Sustainable Operations Summit, to decide how corporate activities will be developed and implemented following the culmination of the partnership. Discussion about how to best achieve a successful balance between place-based and corporate activities are ongoing in FY 2008, as momentum and excitement continue to develop.

"The field of sustainable operations can seem daunting, but overall it presents an opportunity for huge adventure. Creativity, innovation, new relationships, and different ways of looking at the world we live in are fundamental skills for success. What could be more fun or inspirational?"

—Becky Aus,
Forest Supervisor,
Shoshone National Forest

This section is meant to highlight those leadership activities and principles that contributed to developing and implementing a long-term, broad-based sustainable operations vision

during FY 2007. Information from this section will be used to continue the development of support mechanisms for sustainable leadership activities, meet Executive Order 13423 requirements, and report successes to the USDA Sustainable Operations Council.

From the Sustainable Operations Summit in November 2007, Forest Service direction—*to minimize environmental impacts from agency management actions that maximize benefits from the landscapes we manage*—is clear. The benefits start with the basics—clean air, clean water, and healthy habitat. The broad-based direction for this is found in the soon-to-be-implemented Forest Service Manual (FSM) section 1360. FSM 1360, "Managing the Forest Service Environmental Footprint," identifies the requirements for sustainable operations, roles, and responsibilities for employees from headquarters to project managers, and links to other agency actions. FSM 1360 will help frame discussions on the balance of corporate and place-based direction for and implementation of sustainable operations in the Forest Service.

Success Shorts

- In November 2006, the second annual Sustainable Operations Summit, "Changing Light Bulbs in the Service of Ecosystems," was held in Laramie, WY, with more than 100 attendees. The summit was hosted by **Region 2** and the Environmental Studies Program at the University of Wyoming. More than 100 attendees played an ecosystem services cap and trade game, learned about the concepts of biomimicry, and created action plans to move the concepts of sustainable operations into other cross-functional activities, such as fire and recreation operations.
- Sustainable operations activities were included as part of a larger presentation topic on Climate Change at the April National Leadership Team (NLT). All NLT members received light-emitting diode lightbulbs as a way to empower them to take action on their units.
- *USDA News* included articles about Forest Service sustainable operations activities in two editions.

Each employee has several ways to influence the adoption of sustainable operation practices. They can influence their local unit's work environment, such as supporting recycling and double-sided printing. Employees also can have different influences based on their particular discipline and position in the organization. For example, a facilities engineer, a hydrologist, a purchasing agent, and recreation staff can all foster different activities related directly to their discipline and staff area.

- The sustainable operations coordinator for **Regions 1 and 2** provided more than 30 presentations to regional leadership teams, a variety of director groups, and employees seeking to start Green Teams.
- Deputy Chief for Business Operations Hank Kashdan visited **Region 2** with USDA Assistant Secretary of Administration Boyd Rutherford for a tour of sustainable operation practices in action. This visit was one of the many activities the Forest Service offered as support to Assistant Secretary Rutherford's continued championing of sustainable operations activities at a Department level. These activities include a departmentwide greening Web site, increased implementation of biobased purchasing activities, and the Assistant Secretary's personal actions to switch out the lightbulbs in the Secretary of Agriculture's office.

- The **Gallatin National Forest** has incorporated the implementation of Executive Order 13423 requirements into all supervisory position descriptions on the forest.
- On the **Medicine Bow-Routt National Forests** and the **Thunder Basin National Grassland**, the Sustainability Team garnered regional recognition for its efforts in developing the sustainability program on the forest and presenting the Leadership Team with an operations plan for FY 2008.
- The **Pacific Southwest Research Station's** coordinator of research planning and reporting devotes 20 percent of his time to sustainable operations. In addition, all supervisors now have sustainable operations as a performance standard in Element I of their FY 2008 Performance Plan. For the past 2 years, the unit at Albany has funded seven green microgrants across the station each year. These modest funds are awarded to stimulate grassroots sustainable efforts on the ground; Forest Service employees decide which sustainable activities are most needed at their unit and apply for funding for those activities.
- The **Forest Products Laboratory** has given time-off awards to staff for energy conservation measures that were suggested and implemented. These measures include the elimination of transformers no longer needed and reconfiguring how electric power and water are consumed by weatherometers (research equipment).

> Gifford Pinchot "insisted that conservation must be reinvigorated, revived, renamed, revitalized by each successive generation, its implications, its urgencies, its logistics translated in terms of the present of each of them."
>
> —Cornelia Pinchot

- The **Green Team of the Ozark-St. Francis National Forests** consists of all **Boston Mountain Ranger District** employees who deal with implementing renewable and sustainable resource management practices on a daily basis. The team met all "green" targets for 2007. The team is regularly evaluated and awarded for their efforts in managing the district resources.
- The Ad-Hoc National Environmental Footprint Team hosted by **Region 2** supported the initial stages of a sustainable operations strategy as well as the data collection required for this report.
- The Forest Service formally joined the EPA's Climate Leaders Program with the intent of completing greenhouse gas emission inventories at seven pilot locations across the country.
- The **Shoshone National Forest** and the **Mark Twain National Forest** added sustainability to the performance measures to line and staff officers.

Green Team Champions at Sustainable Operation's Summit in Denver, Colorado.

- The **Rocky Mountain Research Station and Laboratory** established a Green Team.
- The **Pacific Northwest Research Station** started a Green Team and added sustainability to their performance measures.

Sizing Things Up: Our Baseline

While there is not a standardized method to display a baseline for sustainable leadership (as there is for other footprint areas such as energy), it is anticipated that our ability to measure our success in implementing sustainable leadership principles will become more quantifiable over time. Doing the right thing for the environment also supports increased financial savings for the agency and can also support highly productive work atmospheres for employees as they feel more connected with the mission of the agency in pragmatic, meaningful ways. As sustainable operations practices require a continuous improvement approach, our efforts can become a reinforcing feedback loop that sponsors additional efforts.

The Top 10 List for Creating Change for Sustainable Operations

10. Be a pest.
9. Get in on the ground floor.
8. Release the champions.
7. Read—readers are leaders.
6. Network. Create alliances that cannot be ignored.
5. Issue friendly challenges.
4. Get on the agenda.
3. Partner with everyone and share the credit.
2. Show the love—reward, support, encourage.
1. Just do it.

—Rick Cables,
Region 2 Regional Forester,
at the 2007 Sustainable Operations Summit

For FY 2007 the growth of Green Teams was the single most important indicator of progress towards institutionalizing a culture of sustainability across all agency programs. At the end of FY 2007, there were approximately 50 Green Teams established at all levels of the agency. Other indicators of progress included the following:

- Hank Kashden, Deputy Chief of Business Operations, was identified as the Forest Service's Lead Agency Official for implementing Executive Order 13423 requirements. Responsibility for implementation of successful sustainable operation practices lies at the top level of the agency.
- The number of and activities of geographically located board of directions and/or councils working toward integrating sustainable operations and climate change greatly increased. Some sort of board structure now exists in Regions 6 and 9; the Northeastern Area; a combined Regions 1, 2, 3, and 4; and the Rocky Mountain Research Station. Creation of upper management boards/councils is important because it supports integration of our traditional resource management role and the resources we use.
- The Forest Service fostered and supported USDA's efforts to increase sustainable operations practices departmentwide. USDA created several sustainable operations work groups (facilities, green purchasing, environmental management systems (EMSs), and transportation) under an overarching sustainable operations council. Key Forest Service employees are active members on all of these groups.
- Key linkages between our EMS requirements and sustainable operation activities continued to be strengthened to avoid duplication and leverage efforts.
- The Forest Service officially joined the EPA's Climate Leaders Program and Pacific Southwest Research Station/ Region 5 joined the California Climate Action Registry. Actions such as these demonstrate our ability to strive for understanding our impacts and seek opportunities for solutions in a proactive manner instead of waiting for a reactive policy or direction. Pilot locations for these programs will be continuing our greenhouse gas reduction efforts into the future to determine how the entire agency can and should participate.

- For FY 2008, the following mandatory standard under Element 1—Mission Results has been added for supervisors: "Ensure sustainable operations and consumption to utilize energy efficiently in daily operations. Create initiatives and activities that demonstrate resources are managed to reduce the Agency's overall environmental footprint."
- Region 2's sustainable operations effort won a White House Closing the Circle Honorable Mention award from the Office of the Federal Environmental Executive. This is the first time that a Forest Service unit has been recognized as part of the Closing the Circle award program.
- Todd Michael, Rocky Mountain Region mechanical and electrical engineer, won a USDA Energy award for his work in supporting a Regional Energy Management Team, and championing the first Silver Leadership in Energy and Environmental Design-certified building in the agency.

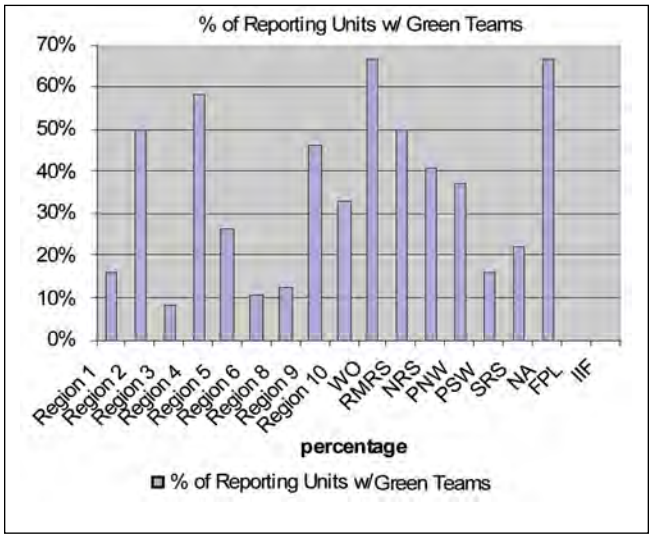
Behind the Scenes: Place-Based Activities

While having a national vision and overall organizational approach to sustainable operations is important, the success of place-based efforts is imperative. The rapid self-deployment of Green Teams across all levels of the organization, bringing together employees to implement sustainable operations on their unit, has been a true driver of success. Approximately 50 documented Green Teams were in existence at the time of the data call for this report. Continued place-based organizational support for Green Teams cannot be understated in maintaining the momentum and local solutions to incorporating sustainable practices into our culture. Employees, regardless of discipline, are seeking opportunities to make a difference in their unit's day-to-day operations. Perhaps this trend is occurring because, in today's era of continued change, declining budgets, and other typical government agency requirements, sustainable operations resonates with many employees on a personal basis. For many, sustainable operations are a connection with their reasons for being a Forest Service employee. Figure 13 displays the number of reporting units within each region, station, and area that have Green Teams. Many of these Green Teams have created internal Web and Wikipedia sites for sharing information.

Green Teams are dedicated groups of employees, regardless of discipline or organizational level, that facilitate the pragmatic implementation of sustainable operations principles on their unit. Green Teams range from the informal—a few employees working together to increase recycling opportunities for themselves and their community—to the formal—a group specifically chartered by leadership to promote and foster sustainable operations that reduce a unit's environmental footprint. Successful Green Teams are very place based; that is, the issues they choose to work on are meaningful to their specific community and geographic location. Because the natural resources, culture, and economic situations are all different in different locations, what is considered sustainable in one place may not be in another. The sustainable operations solution set will be different on each unit. While many Green Teams begin as an internal effort, they often grow to include members of the local community or other State, Federal, or local agencies so that sustainable operations efforts can become successful on a larger, more community- or ecosystem-connected basis. Most place-based Green Teams choose to work across many environmental footprint areas (water conservation, energy conservation or renewable energy, waste prevention and recycling, green purchasing, fleet and transportation, sustainable leadership). Some Green Teams, however, have been created with membership across geographic units specifically to foster dialog about the sustainable operations opportunities within a particular topic area, such as recreation or energy management.

In addition to continued support of Green Teams, many units have initially implemented sustainable operations practices as performance criteria. Although national supervisory performance criteria were developed in FY 2007, some units have implemented additional specific performance criteria for specific positions and activities. Figure 14 displays the number of reporting units using performance and awards to support the implementation of sustainable operations practices.

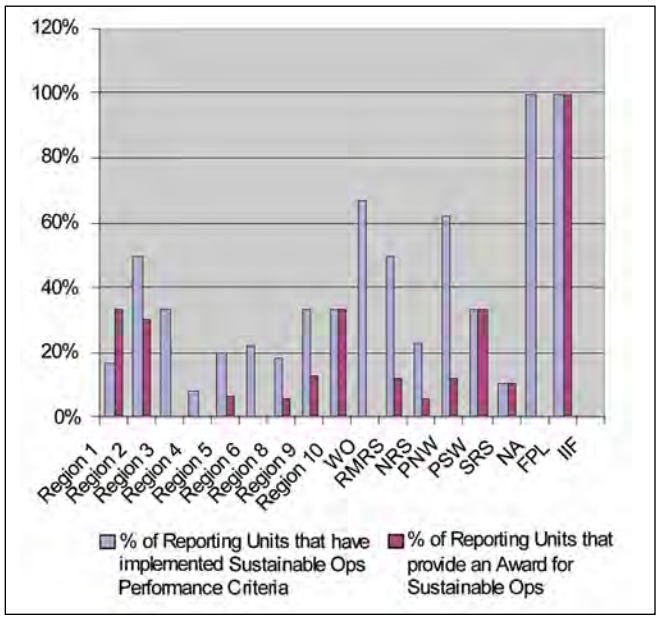
Figure 13.—*Units reporting the existence of Green Teams.*



A few units implemented specific awards for the implementation of sustainable operations practices. It is expected that awards will be an area of increasing activity throughout the coming year. A few units reported that they have used time off and spot awards.

In summary, sustainable leadership is about creating the habit for each employee to support the implementation of sustainable operation practices both in their own work environment and within their particular staff or discipline area. We need to find ways to support the identification of barriers (and their subsequent removal) to implementing sustainable operations. We also need to continue fostering and supporting the efforts of our Green Teams and other place-based champions. Maintaining a network between our place-based efforts and champions will be a key component

Figure 14.—*Units reporting the use of performance criteria and sustainable operations awards.*



of the transition from the Region 2 and Washington Office, State and Private Forestry partnership. Under this partnership Region 2 served as an integrator across the agency to provide national leadership balanced with bottom-up, place-based efforts.

We all have a responsibility to be leaders in the pragmatic implementation of sustainable operations. All of us also have ownership in creating solutions to climate change. Our land stewardship practices must be strategically joined with practices that reduce our consumption. The direct relationship between the healthy forests and our faucets, heating systems, clean air, modes of transportation, and many other goods and services has never been more apparent. Every employee, partner, contractor, and community we work with has some responsibility to mindfully approach their use of the vast resources provided by the ecosystems on this planet.

Since 2005, Region 2 has offered a Regional Forester Award for Sustainable Operations to support and recognize the important work of its sustainable operations champions.

Acknowledgments

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Links to Data for This Document

This report is a compilation of many sources of data. The data sources listed below have been posted on the National Sustainable Operations Web site so individual units may review their own data. The link to the Web site is: http://www.fs.fed.us/sustainableoperations/communications.shtml.

McNeil Technologies FY 2003 Energy and Environmental Footprint for U.S. Forest Service Facilities—spreadsheets.

McNeil Technologies FY 2007 Energy and Water information—spreadsheet.

FY 2007 Footprint data call letter with pdf attachment.

FY 2007 Footprint data call response spreadsheet with all responses.

Fleet FAST Reports (2005, 2006, and 2007).

Quantity of roundtrip airline tickets purchased, Fed Traveler report FY 2007.


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