Section 2: Performance Review and Annual Update

I. Summary of Accomplishments

NSF's initial accomplishment was obtaining recognition from agency senior management that EO 13514 required mandatory compliance from NSF. Once we had support from senior management we also hired an energy auditor to conduct NSF's first energy audit, and to assist us in developing target recommendations, baselines, and identifying possible efficiencies that will serve as the basis for continued compliance with EO 13514.

NSF conducted aggressive educational and outreach activities, initially to only NSF employees but later also for our neighbors. Specific outreach efforts include:

- The SSO and our Facilities Management group took the lead in successfully negotiating with the property management companies to convert our trash pickup to single stream recycling which is available within Arlington country.

- Initiated the NSF Got Green Program, and created an intranet web page with information on environmental and conservations initiatives at NSF. The new Got Green program at NSF has provided several ideas for ways to re-use and recycle, and conserve resources and to educate personnel. As part of this program, all NSF employees and contractors are urged to sign a Got Green pledge where they promise to take specific actions at work and home to conserve resources. One of Got Green's products was an all-in-one poster showing all of the recycling and re-use of supplies/products that NSF supports.

  Since the inception of the Got Green program, the following items are now being recycled. Systems and metrics are being developed to track how much recycling NSF is now doing for the following items:

  - Batteries
  - Books/magazines
  - Bottles
  - Cardboard
  - Cell phones and small electronics (BigGreenBox program)
  - CDs/DVDs
  - CFL bulbs
  - Eyeglasses
  - Packing Peanuts
  - Paper
  - Plastic bags
  - Polystyrene packing materials
  - Toner/Ink

- Annual NSF Green Day promoting conservation and environmental education. In 2010 we had 838 visitors including neighborhood residents, and staff from DARPA, Fish and Wildlife, and FDIC.

- Conducted a small pilot lighting project on one floor where the standard fluorescent lights were converted to LED lighting. While the offices liked the lighting, an analysis of the actual energy savings indicated that a wide-scale conversion would be costly and not have a significant payback until we were in a new/renovated building. However, the pilot did effectively demonstrate the efficacy of the new lights, and proved that office personnel would be receptive to the change.

- Annual NSF Trash and Treasure "Sale" serves as an in-office store for everyone's unwanted or old office supplies and small furniture (untagged government property). All offices provide excess supplies and equipment, and employees come and pick out what they would like to use in their offices. This prevents a significant amount of office clean-up debris from being sent to local garbage sites, and saves NSF money since re-using supplies/equipment means that employees won't be buying something that already exists elsewhere in the Foundation. Twelve cubic yards of materials were re-used by the employees, in lieu of being recycled or being sent to solid waste disposal. Future metrics will be done by weight.

Goal Performance Review

a. Goal Description – Agency Target for each goal

See each separate part in this document.

b. Agency lead for each goal

Unless otherwise stated, the NSF lead for each goal is the SSO. Implementation is carried out by the Facilities and Management section.

c. Implementation methods

See each separate section in this document.

d. Positions – staffing to meet goals

NSF has no full time FTE dedicated to its environmental program. The SSO is a part time FTE, as is a senior staff person working in a mixed position as Contracting Officer and environmental systems manager. In coming years, as we fully implement a Environmental Management System, and develop the integrated processes necessary to reach NSF's targeted GHG reductions, we expect that we will need at least two additional, fully dedicated FTE to handle this work.

e. Planning table

See each separate section in this document. Tables may not be available for each goal at this time. This will be noted in each part as applicable.

f. Agency status per goal

All goals are in the planning stage. This is the first year in which we have determined a baseline.

Table 3, attached, is the planning table for GHG 1 & 2 target reductions.

**1 . GOAL: Scope 3 Greenhouse Gas Reduction**

NSF's primary mission is to facilitate scientific progress through awarding grants. An integral part of this process is the requirement that the proposals that are received be peer reviewed, and evaluated prior to award. While some teleconferencing is now taking place, the current technology is not effective enough as a means of collaboration and communication, to replace the need for face-to-face meetings. NSF receives approximately 60,000 visitors a year, most of whom are visiting for a week or more to evaluate and recommend the award of grants. Panelist are treated as special employees, and must, for the sake of fairness and to exploit the necessary range of scientific expertise, come from all over the country and often overseas. This means that federal employee travel is likely to remain constant at NSF, and perhaps to increase given that both staff FTE and funding is expected to increase over time. While NSF will continue to investigate teleconferencing and collaborative software, we do not see any major technological improvements on the immediate horizon that will obviate the need for continued air travel.

NSF employee commuting is unlikely to see a major reduction from its current 65% participation levels absent a significant shift within agency leadership regarding the widespread, significant use of telecommuting. Without a mandate from OPM for all agencies to mandate such a shift in work patterns, it is highly unlikely that we can rely significantly on reductions in this area either. NSF is trying to do some demonstration pilots that have as their goal maximizing the possible use of telecommuting within an office. However, this has not yet occurred and it is not reasonable to include in our reduction targets. Our federal commuting patterns already have the agency using some form of public transit or walking and biking to work. It is unlikely that we can significantly reduce our targets still further by enrolling many more people into the mass transit subsidy program.

The reduction targets that are included in this category rely on airline "promises" of increasing efficiency over time that will lead to reduction in scope 3 emissions. They also include a small number for ongoing slow cultural change that may eventually lead to significant improvements in telecommuting as young people enter the agency and lead change in this area from within.

Transmission and distribution losses from purchased energy are only minimally within our control, since they are again, primarily controlled by the owner of the commercial space who decides where they will buy the energy and in what form. Our targeted reductions in this area reflect our current negotiations with GSA for a higher energy efficient building in 2013/2014 and, and an agreement that the new/renovated space will explicitly specify a mandate that the GHG reductions be accommodated as part of construction/renovation. NSF is making a good faith effort to make it possible to meet the reductions, but is dependent upon GSA and the winning contractor/builder for the new/renovated space in 2013/2014.

2010 is the first year in which we have actually tired to collect any energy data in a systematic manner. We are hampered by a lack of control over the existing systems, and until just this past year, any data upon which to develop an energy baseline. We have just developed a FY 08 baselines and these GHG reduction targets reflect the work by our energy contractor. We do intend to continue to improve the quality of the data, and develop agency implementing policy and environmental management systems incrementally as we learn more about the process. At the very least, we intend to make use of a contractor to provide data on an annual basis.

**Table 4 Required Reporting of Scope 3 GHG Emissions and Target Reductions**

| GHG Generation Source | Description | Estimated 2008 emissions (mtCO2e) | Reduction target (%) | Estimated 2020 emissions (mtCO2e) |
|---|---|---|---|---|
| | | | | |
| Scope 3 - Transmission and distribution (T&D) losses from purchased energy | Purchased electricity T&D losses | 542 | 39.7% | 327 |
| | **Sub-Totals** | **542** | **39.7%** | **327** |
| | | | | |
| Scope 3 - Contracted waste disposal | Contracted solid waste disposal | 0 | 38.3% | 0 |
| | Contracted wastewater treatment | 18 | -23.5% | 22 |
| | **Sub-Totals** | **18** | **-23.5%** | **22** |
| | | | | |
| Scope 3 - Federal employee travel | Business air travel | 14,316 | 4.4% | 13,686 |
| | Business ground travel | 168 | 6.5% | 157 |
| | Federal employee commuting | 7,681 | 19.3% | 6,198 |
| | **Sub-Totals** | **22,164** | **9.6%** | **20,041** |
| | | | | |
| **Agency total** | | **22,724** | **10.3%** | **20,390** |
| | | | | |

*Incineration of solid waste need not be evaluated for this reporting.

The methodology for determining scope 3 and Agency total GHG emissions and targets included evaluating NSF for both the required reporting of Scope 3 GHG's under EO 13514, and also for the optional entire agency GHG requirements. The required Scope 3 emissions were evaluated using verifiable methods, including the Scope 3 Target Tool and Target Tool User Manual provided for such use under EO 13514. The Scope 3 emissions required for this reporting include 1) transmission and distribution losses from Scope 2 sources, 2) contracted solid waste disposal and wastewater treatment, and 3) federal employee travel, including business air travel, business ground travel and employee commuting.

The transmission and distribution emissions were calculated based on FY2008 base year electrical usage and local utility emission factors. Solid waste disposal for NSF was excluded from the GHG's emissions in accordance with the guidance from the Target Tool User Manual, which excludes incinerated municipal waste. Wastewater treatment emissions were evaluated using the Target Tool and are based on the number of occupants at Stafford I and II. Air travel and rental car carbon dioxide emissions were obtained from reports provided to NSF by Traveltrax and by inputs into the Target Tool. Employee commuter travel mileage was determined from NSF subsidy records for commuter travel, using employee zip code information and metro station locations.

Target reduction savings calculations, described below, need take into account the expected growth of NSF from the base year 2008 until 2020. According to NSF, the total number of on-site federal employees, expert consultants and contractors is expected to grow from 2,201 to 2,719 people, translating into a 23.5% growth over this 12 year period. All GHG emissions reductions must be increased in accordance with this expected growth in on-site personnel at NSF to account for the absolute GHG emissions expected in the year 2020.

The contracted solid waste disposal target reduction did not have to be evaluated since GHG emissions are assumed to be negligible, according to the Target Tool User Manual because of waste incineration. Just the same, the results of this analysis indicate that a minimum of 50% of current solid waste can be eliminated from the waste stream by recycling. Contracted wastewater treatment target reductions were also not evaluated based on the requirements of the Target Tool User Manual, however the absolute GHG emissions were increased by 23.5% to account for future growth in personnel at NSF.

Federal employee travel reductions were estimated based reductions in business air travel emissions according to expected industry improvements and NSF enforceable practice. The International Air Transport Association (IATA) has committed to improving air travel fuel efficiency by 1.5% per year. Improvements in teleconferencing, webinars, web conferencing, video-conferencing, etc. will also reduce the need for future air travel. Although more costly, non-stop plane travel is preferred over 1 or 2 stop travel flight plans, although it there is limited availability through the through the GSA city pairs program.

A calculated 22.6% reduction per person is based on a 1.5% airline fuel efficiency improvement and an additional 10% savings being achieved through less travel (improved audio visual communications) and more efficient routing. Future growth at NSF will reduce the absolute GHG emission savings to 4.4%.

Business ground travel and employee commuting were reduced based on guidance found in the Target Tool User Manual indicating that average car travel in 2011, expected to be 27.3 mpg, will improve in 2016 to 35.5 mpg (23.1% reduction). Additionally expansion of the DC metro system to the Dulles Corridor will also reduce business ground travel and employee commuting (1.5% reduction). Finally NSF may choose to allow one or more days of telecommuting per week, or a 10 hour, 4 day, 40 hour week to reduce commuter travel by 10 to 20%, depending on existing conditions.

Business ground travel reductions of 24.2% are based on a 23.1% vehicle fuel efficiency improvement and a 1.5% reduction based on future Metrorail expansions. A 34.6% reduction in personal fuel usage for employee commuting is based on expected vehicle efficiency improvements of 23.1% and a 15% reduction for Metrorail expansions, telecommuting, and a 4 day work week. Future growth at NSF may reduce the absolute GHG emissions savings to 6.5% for business ground travel and 19.3% for employee commuting.

A summary of the planned annual targets for Scope 3 GHG reductions is given in the Attachment, Table 5 - Scope 3 Greenhouse Gas Reduction Targets.

Please note that the annual targets may differ from our contractor's recommendations in the discussion above, since NSF targets will reflect known internal budgetary and political constraints, as well as the limitations commensurate with the short amount of time remaining on our current lease. The target reductions for 2020 remain the same as our contractor's recommendations, since we expect that many of the recommended changes will be incorporated into our new/renovated space in 2013/2014.

**2 . GOAL: Develop and Maintain Agency Comprehensive Greenhouse Gas Inventory**

NSF hired a contractor in FY 10 to provide the initial baseline information for the comprehensive greenhouse gas inventory. During the next fiscal year, NSF will work with a contractor to further refine and provide additional inventory data to the extent possible within the existing financial and FTE resources of the Foundation. As a small agency, NSF did not initially provide the baseline GHG information, and is still working towards developing a methodology and associated systems to manage our GHG inventory. NSF plans for continual improvement in data collection and emission estimation, particularly for Scope 3 indirect emissions, with the assistance of a contractor in this area.

NSF had no systems to track this energy data when it was requested, and has relied heavily on a contractor to provide the initial baseline data. NSF will provide an annual update, as part of our annual update to this Sustainability Plan, as to any anticipated issues related to establishing a comprehensive GHG inventory and more specific information as to how we plan to integrate GHG reduction strategies into overall planning practices.

For the entire agency GHG emissions and target reductions, Scope 2 emissions for purchased electricity at Stafford I, and Scope 3 emissions for natural gas and electricity paid for under the lease agreements at Stafford I and II, were taken from the Building Energy Conservation Assessment. Table 5 below provides the complete NSF, GHG Emissions for Base Year 2008 and 2020 Target Reductions from all sources. The overall 2020 Target Reduction for the entire agency GHG Emissions is expected to be 18.6% of the base year 2008 usage.

## Table 6: Overall GHG Emissions and Target Reductions

| GHG Generation Source | Description | Estimated 2008 emissions (mtCO2e) | Reduction target (%) | Estimated 2020 emissions (mtCO2e) |
|---|---|---|---|---|
| | | | | |
| Scope 2 - Building | Stafford I | 8,223 | 39.7% | 4,961 |
| | **Sub-Totals** | **8,223** | **39.7%** | **4,961** |
| | | | | |
| Scope 3 - Building | Stafford I | 1,558 | 16.8% | 1,297 |
| | Stafford II | 1,150 | 21.8% | 899 |
| | **Sub-Totals** | **2,708** | **18.9%** | **2,196** |

| Table 6 continued | | | | |
|---|---|---|---|---|
| Scope 3 - Transmission and distribution (T&D) losses from purchased energy | Purchased electricity T&D losses | 542 | 39.7% | 327 |
| | **Sub-Totals** | **542** | **39.7%** | **327** |
| | | | | |
| Scope 3 - Contracted waste disposal | Contracted solid waste disposal | 0 | 38.3% | 0 |
| | Contracted wastewater treatment | 18 | -23.5% | 22 |
| | **Sub-Totals** | **18** | **-23.5%** | **22** |
| | | | | |
| Scope 3 - Federal employee travel | Business air travel | 14,316 | 4.4% | 13,686 |
| | Business ground travel | 168 | 6.5% | 157 |
| | Federal employee commuting | 7,681 | 19.3% | 6,198 |
| | **Sub-Totals** | **22,164** | **9.6%** | **20,041** |
| | | | | |
| **Agency total** | | **33,655** | **18.1%** | **27,547** |
| | | | | |

*GHG's from the incineration of solid waste are not included at this time.

### 3 . GOAL: High-Performance Sustainable Design/ Green Buildings

NSF resides entirely in GSA commercial leased space, and has no ability to alter the terms of its expiring lease and, since we do not have a Green lease, we cannot compel the owner of the building to make any significant capital investments to improve the energy efficiency of the building. We hope that this situation may be remedied when we receive a new lease in 2014. We are negotiating with GSA for new space that will allow us to meet or exceed our targeted Scope 2 and 3 GHG reductions, and be recognized as a Green Building.

We cannot provide any data for this table at this time. We will work with GSA and the energy contractor in the future to develop the data.

### 4 . GOAL: Regional and Local Planning

NSF resides in commercial leased space in an area that under Federal Sustainable Building Guidance, as well as LEED standards, is considered to be effectively making the best possible use of available regional mass transit (within less than half a mile of bus routes and metro rail), and it is located within densely developed mixed use population center. NSF has strongly recommended and is negotiating with GSA for

incorporation of aggressive sustainable and environmentally sensitive standards for its new or renovated leased space when the current lease expires in 2013, and we move in 2014. The procurement for new space has already been delineated in ensure that best practices will be followed consistent with current space (near mass transit, bike trails, lockers, and metro rail in a densely populated area). However, GSA as the lessor, is responsible for ensuring that all environmental impact studies and NEPA processes are correctly followed when the current lease expires. NSF has no other reportable property that would impact local ecosystems, etc. beyond this one commercial lease.

There is no table for this part of Section 2.

**5 . GOAL: Water Use Efficiency and Management**

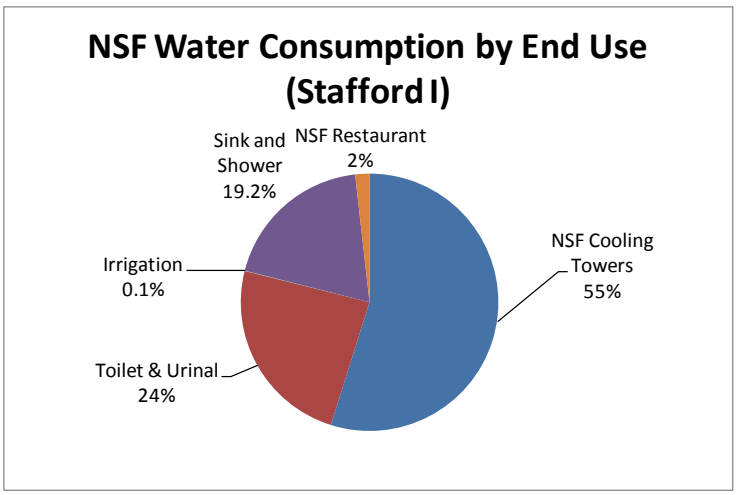
Our energy contractor performed water audits of NSF's two leased facilities in Arlington, VA to reduce the water intensity in its main buildings at 4201 Wilson Boulevard (Stafford Place I) and 4101 Wilson Boulevard (Stafford Place II). EMO's water audit included a survey of water-using systems, review with building operators, baseline usage analysis, identification of cost-effective water conservation measures, and water savings analysis.

In both Stafford I and II, water consumption is metered at the building level. Since no metered data are available for NSF spaces, reported values for NSF baseline water consumption were estimated based on NSF area and known consumption for certain end-uses (e.g. restaurant consumption and cooling tower consumption).

Stafford I consumed approximately 13,157 kgal of water in year 2007. EMO estimates that approximately 10,309 kgal is attributable to NSF activities. This presents EMO's estimate of NSF's water end-use breakdown for a typical year. NSF consumption in Stafford I equates to about 5,800 gal/yr per NSF employee.

NSF Baseline Water Consumption

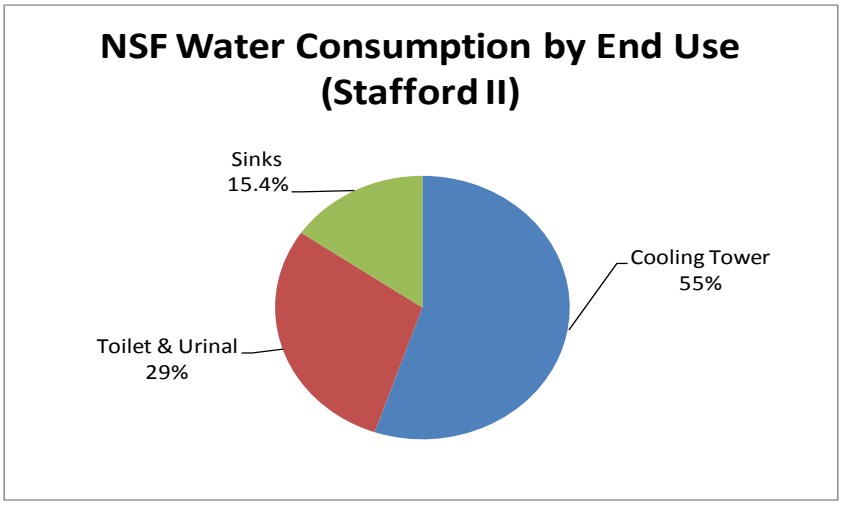
| | Whole Building | NSF Contribution | NSF Employees | Consumption per Employee |
|---|---|---|---|---|
| Baseline Water Consumption (kgal/yr) | 13,157 | 10,309 | 1,771 | 5.8 |




Stafford II consumed approximately 4,599 kgal of water in year 2007. EMO estimates that approximately 1,817 kgal is attributable to NSF activities. This presents EMO's estimate of NSF's water end-use breakdown for a typical year. NSF consumption in Stafford II equates to about 5,500 gallons/yr per NSF employee.

| | Whole Building | NSF Contribution | NSF Employees | Consumption per Employee |
|---|---|---|---|---|
| Baseline Water Consumption (kgal/yr) | 4,599 | 1,817 | 329 | 5.5 |

**Stafford II- NSF Annual Water End-Use Breakdown**




EMO estimates that about 40% of NSF water consumption is from occupant use in sinks, showers, toilets, and urinals. Several opportunities are available for reducing the flow rates in plumbing fixtures, as detailed below. Costs savings are summarized for each measure. It should be noted that there are

occasionally discrepancies in the payback period in Stafford I and Stafford II. This results from differences in the ratio of water fixtures to occupants in the two buildings.

The methodology used to determine baselines and evaluate possible target reductions were affected by the fact that water consumption is not separately metered for NSF spaces. EMO estimated NSF baseline usage and end-use breakdown using the methods outlined below.

Baseline water usage was estimated based on whole building water bills and adjusted for the estimated contribution of NSF systems. In Stafford I, building usage and cooling tower usage are metered separately. To estimate NSF contribution to total building usage, EMO subtracted estimated restaurant usage, which is reportedly around 117,700 gallons/month. EMO estimated cooling tower usage based on metered cooling tower water consumption (which includes NSF and retail cooling towers), and the ratio of cooling tower flow rates.

Baseline water usage was estimated based on whole building water bills and adjusted for the estimated contribution of NSF systems. In Stafford II, all building and cooling tower usage are billed on a single account. To estimate NSF contribution to total building usage, EMO subtracted estimated restaurant usage, which is reportedly around 117,700 gallons/month. The remainder was multiplied by the percentage of NSF area (47%) to estimate baseline NSF consumption.

Estimates draw from building metered consumption in 2007. It should be noted that while EO 13514 requires reporting from a FY 2007 baseline, data supplied by property management only cover calendar year 2007. Given that NSF consumption is estimated, rather than metered, given data should suffice for reporting purposes.

Flow fixture usage was estimated based on techniques used by USGBC for evaluating water savings in LEED projects. For every occupant who is in the building for 8 hours, it is assumed that he or she uses restroom sinks 3 times, for 15 seconds each. It is assumed that 20% of occupants use the kitchen sink for 60 seconds, totaling around 1/3 of restroom sink usage. It is assumed that 10% of occupants use showers for 300 seconds. It is also estimated that 50% of visitors use the restroom sinks. Total water usage is estimated based on fixture flow rates (e.g. 2.0 gpm), the number of occupants, and estimated occupant hours.

Flush fixture usage was estimated based on techniques used by USGBC for evaluating water savings in LEED projects. For every female occupant who is in the building for 8 hours, it is assumed that she uses toilets 3 times. For every male occupant, it is assumed he uses the toilet 1 time and the urinal 2 times. Additionally, it is assumed that 50% of visitors use the restroom. Total water usage is estimated based on fixture flow rates (e.g. 1.6 gpf in toilets), the number of occupants, and estimated occupant hours.

In Stafford I, a separate meter monitors total cooling tower water consumption, including NSF cooling towers and retail cooling towers. EMO estimated NSF cooling tower usage based on the ratio of the cooling towers' size. In Stafford II, cooling tower consumption is not separately metered. EMO estimated consumption based on estimated cooling tower load profiles, flow rates, temperature drop, and calculated evaporation and blowdown losses.

In Stafford I, a small section of flowers and trees is irrigated during summer months. They are irrigated 10 minutes per day, with some sections irrigated 7 days per week and other sections irrigated 3 days per week. A soil moisture sensor is used to determine whether irrigation is needed. Potted plants are

occasionally watered manually. The contribution of irrigation to building water consumption is minimal, and estimated at less than 1% of consumption.

There is no planning table for this part at the present time. The SSO intends to present the most efficient and, given a short three year payback period, the most feasible reductions to the Sustainability Council. The Sustainability Council will select at least a couple of the recommendations annually in the table below that it deems most appropriate in the currently leased space. Many of these recommendations will be incorporated into the design/major renovation of NSF leased space taking place in 2013/2014.

Tables 7 and 8 are a listing of possible water reduction targets for NSF. Please note, the effective payback period is less than three years at the writing of this report. This will influence what recommendations are considered and implemented.

### Table 7: Summary of Water Conservation Measures in Stafford I

| Measure | Initial Cost | Electricity Savings (kWh) | Water Savings (kgal) | Other Savings ($/yr) | Cost Savings ($/yr) | Simple Payback |
|---|---|---|---|---|---|---|
| WCM-1: Install Low-Flow Faucet Aerators | $1,050 | 80,600 | 590 | $0 | $12,300 | 0.1 |
| WCM-2: Install Low-Flow Shower Heads | $360 | 35,600 | 260 | $0 | $5,400 | 0.1 |
| WCM-3: Install Ultra Low Consumption Urinals | $39,400 | 0 | 410 | $0 | $4,600 | 8.6 |
| WCM-4: Install High Efficiency Toilets in Womens' Restrooms | $99,000 | 0 | 220 | $0 | $2,500 | 39.6 |
| ECM-5: Upgrade Cooling Tower Water Treatment* | $70,100 | 0 | 1,000 | $13,780 | $17,200 | 4.1 |
| Subtotal | $209,900 | 116,200 | 2,480 | $13,780 | $42,000 | 5.0 |
| Additional Water Savings Through Energy Conservation (Reduce Cooling Tower Loads)* | $1,837,700 | 5,583,700 | 1,470 | -$8,100 | $387,800 | 4.7 |
| **Total**** | **$2,047,600** | **5,699,900** | **3,600** | **$5,680** | **$429,800** | **4.8** |

*In Stafford I, cooling towers are separately metered. Therefore, cost savings from reductions in cooling tower water consumption are based on water savings ($3.4/kgal) and not sewer savings.

**Total accounts for interactive effects and does not equal sum of parts

**Table 8: Summary of Water Conservation Measures in Stafford II**

| Savings | Initial Cost | Electricity Savings (kWh) | Whole Building Water Savings (kgal) | NSF Water Savings (kgal)** | Other Savings ($/yr) | Cost Savings ($/yr) | Simple Payback |
|---|---|---|---|---|---|---|---|
| WCM-1: Install Low-Flow Faucet Aerators | $130 | 23,800 | 170 | 170 | $0 | $3,600 | 0.04 |
| WCM-2: Install Low-Flow Shower Heads | | | | 0 | | | |
| WCM-3: Install Ultra Low Consumption Urinals | $9,700 | 0 | 80 | 80 | $0 | $900 | 10.8 |
| WCM-4: Install High Efficiency Toilets in Womens' Restrooms | $19,300 | 0 | 40 | 40 | $0 | $400 | 48.3 |
| WCM-5: Upgrade Cooling Tower Water Treatment* | $70,100 | 0 | 350 | 165 | $1,160 | $5,100 | 13.7 |
| Subtotal | $99,200 | 23,800 | 640 | 450 | $1,160 | $10,000 | 9.9 |
| Additional Water Savings Through Energy Conservation (Reduce Cooling Tower Loads)* | $189,800 | 510,400 | 40 | 35 | $4,500 | $40,700 | 4.7 |
| **Total*** ** | **$289,000** | **534,200** | **650** | **470** | **$5,660** | **$50,700** | **5.7** |

*In Stafford II, cooling towers are not separately metered. Cost savings from reductions in cooling tower water consumption are based on $11.2/kgal.
**In Stafford II, NSF is responsible for a fraction of total cooling tower usage.
***Total accounts for interactive effects and does not equal sum of parts

## 6 . GOAL: Pollution Prevention and Waste Elimination

NSF agrees to aggressively pursue the 50% reduction of solid waste and hazardous materials rising from construction and renovation. Our adherence to this goal is demonstrated by NSF's negotiations with GSA to attain a number of LEED credentials for our new/renovated space which will help to ensure that we will meet the 50% reduction goal when new constructions/renovation commences prior to the expiration of our lease in 2013. In addition, NSF has defaulted all of printing via central and print copiers to duplex to reduce printing paper use. NSF has increased use of uncoated printing and writing paper containing at least 30% postconsumer fiber wherever possible.

NSF has done an aggressive outreach to make sure that those hazardous items that it must acquire, such as CFC bulbs and toner cartridges, are also collected, and commercially recycled. As a rule NSF does otherwise not acquire, use or dispose of hazardous chemicals and materials.

NSF has attempted a small scale pilot to increase diversion of compostable and organic materials from the waste stream. Unfortunately, it was not successful due to sanitary and odor problems, and there are no vendors in the Washington, DC metropolitan area at this time who would provide the service at a reasonable cost and at the frequency required. We are working with OFEE to discover viable alternative sources.

Please refer to the backup provided under Part 7 below for a line by line status update as of FY 2009 for all other actions under this category. No other tables are provided as part at this time.

## 7 . GOAL: Sustainable Acquisition

The Division of Acquisition and Cooperative Support (DACS) and the Division of Administrative Services (DAS) share responsibility for leadership in this category, with DACs taking the subject matter expert lead. NSF has pledged to attain as soon as is feasible and auditable, the goal of ensuring that 95% of new contract actions, including task and delivery orders under new contracts and existing contracts, require the supply or use of products and services that are energy efficient (Energy Star or FEMP-designated), water efficient, biobased, environmentally preferable (excluding EPEAT-registered products), non-ozone depleting, contain recycled content, or are non-toxic or less toxic alternatives.

However, it is not currently possible for any civilian agency, including NSF, to truthfully say that they are accurately tracking progress towards this goal since the Federal Procurement Data System (FPDS) has no way to capture automatically any of these elements in the course of awarding or modifying contracts. An attempt to manually capture these data elements would, at this time, require several FTE to read every single contract action, including those at the micropurchase, and non-reportable thresholds, and extract all of these elements. That would not only prove impossible with current 1102 staffing levels, but quite inaccurate since many of the environmental components are not specifically broken out into separate line items in the contracts/purchase orders, etc., and might only be obtainable from the requiring program upon delivery.

In addition, the NSF contracting office has actively promoted and is working on updating NSF's green purchasing and environmentally preferred purchasing plans, policies and programs to ensure that all Federally-mandated designated products and services are included in all relevant acquisitions.

At this time, NSF is taking incremental steps to improve the collection of acquisition data in this area, and will report on this effort in next year's report as we have more time to discuss possible solutions with all of the stakeholders involved.

A copy of our FY 2009 Green/Sustainable Purchasing and Management Practices report , with supporting policy documentation is attached to this report. It is not possible to provide a planning or target goal table for this part since we do not presently possess the ability to develop accurate baseline data or track data going forward.

## 8 . GOAL: Electronic Stewardship and Data Centers

NSF has updated agency policy and procedures to reflect environmentally sound practices for disposition of all agency excess or surplus electronic products. In many cases a private recycler certified under the Responsible Recyclers (R2) guidance or equivalent is not available, but where such are available, we do prefer to use them.

At the present time NSF provides collection and recycling points for the following electronics:

*Batteries, PDAs, and other small electronics* are collected for pickup throughout both Stafford I and Stafford II and in the NSF library. Each box weighs approximately and we have collected approximately 280 pounds in one year (7 boxes at 40lbs each). NSF does not yet have a targeted reduction for this element, because the data is so recent. The vendor is BigGreenBox at the following URL: http://www.biggreenbox.com/works.php

*CD's/DVD's:* These items are wiped of data prior to recycling with collection points at P1 – near supply, DIS-357 IT Help Central, HRM-315 Supply and copy area, Stafford I – 613 copy room, Stafford II – 705.01, and 597 copy room. CD's and DVD's with secure information are shredded prior to being recycled in the same manner. This equipment is an aging technology, and it may not be worthwhile to develop a targeted reduction for this element.

The vendor is GreenDisk with a web address of : http://www.greendisk.com/gdsite/about.aspx
In FY 09 we collected ninety pounds of CD's/DVD's that have been recycled through GreenDisk.

All other IT equipment with property tags are reused wherever possible, and disposed of in accordance with GSA excess or surplus electronic products including giving the equipment to schools and other qualified entities. NSF makes use of GSA's Computer for Learning (CFL) program and disposal through GSA Xcess, and makes use of the Stevenson Wilder Act that permits donations to colleges and universities. Unfortunately, disposals through these GSA programs have not provided poundage metrics as preferred by OFFEE. NSF is working on developing a systematic methodology for collecting these metrics at this time, and will provide annual updates on progress in this area.

Untagged IT equipment, such as keyboards, mice, and associated peripherals are, by preference and priority, re-used, prior to being considered for recycling. Offices participate in a now annual event where all of the Foundation's offices clean their suites and also collect untagged IT equipment for re-use by the rest of the Foundation. Metrics for this category are included as part of the 12 cubic yards of potential waste that was diverted by NSF as part of its Trash and Treasure "Sale" Day in 2009. In FY 10 we will begin tracking metrics by poundage and attempt to estimate the amount presented for the event, and the amount left over after the event that is actually sent to recycling.

The Foundation is in the process of updating agency policy to ensure implementation of best management practices for energy efficient management of servers and Federal data centers as part of the move to new leased space in 2013/2014. Research is underway at NSF to determine the extent to which cloud computing can be used to replace our already consolidated servers within the Foundation. The intent is to consolidate our data center off site to the greatest extent possible, but at this date, there is not sufficient technical data to provide the requested relevant information.

There is no table for this part. A planning table will be provided, after we collect a year's worth of data that will allow us to develop a methodology with our DAS property officer to track the number of pounds equipment that are excessed through the various GSA programs. This will become part of the Foundation's new Environmental Management System.

**GOAL: Agency Innovation**

This is an area for agencies to describe any innovative methods that agencies are using to expand their sustainability mission beyond what is required in EO 13514 and beyond what is described elsewhere in the document. Agencies should highlight innovative practices, technologies, or techniques used to achieve goals. Agencies should also identify anything that stands out as a practice, technology, or technique that may help other agencies to achieve goals.

- NSF has found that it is valuable to have an employee level Foundation committee that aggressively promotes environmental best practices, sustainability, and cultural change and the institutionalization of such change through our Got Green program. The mission of the Got Green committee is to "Take simple yet comprehensive action to further the NSF culture of environmental responsibility based upon the fundamental belief that the NSF workforce believes in protecting our world through environmental stewardship."

  What we have discovered is that a relatively small number of employees stay involved in these efforts over the long term. They provide a small, but absolutely critical well of innovative, creative ideas and a means of ensuring that communications throughout the Foundation flows upwards. Got Green's latest idea includes promoting a "Recycle" day, where for one day all of our diverse collection points throughout the Foundation will be centralized, and employees will be encouraged to bring in everything they have that can be recycled. When they donate items, they will also receive information about sustainability and conservation at NSF. The members of Got Green will staff the various stations and act as subject matter experts during this event.

- At this point in time NSF is perfectly situated to conduct small demonstration pilots to test new ways of working and new ways to reduce GHG technologies, since we will soon be able to implement some of these techniques in new leased space. We are currently conducting two studies/demonstration pilots. The first is a telecommunications demonstration Pilot which is in the discussion stages: NSF is discussing a pilot program with one part of the IT group that would provide formal documentation of success, failure and lessons learned regarding the greatest extent to which telecommuting can be used in an office. The second is a small internal study using NSF scientific resources, identifying the type and number of plants needed to reduce specific volatile organic compounds commonly associated with office operations.

**Section 3: Agency Self Evaluation**

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Note: OMB and CEQ will update these questions annually to reflect Administration priorities. For 2010, please respond to the following items. Each agency's total response for this section should be limited to one or two pages.

**I.** Please answer 'yes' or 'no' to the following questions. If the answer is 'no', provide an explanation below.

| | |
|---|---|
| Does your plan provide/consider overarching strategies and approaches for achieving long-term sustainability goals? | Yes |
| Does your plan identify milestones and resources needed for implementation? | Yes |
| Does your plan align with your agency's 2011 budget submission? | Yes |
| Is your plan consistent with your agency's FY 2011 budget and appropriately aligned to reflect your agency's planned FY 2012 budget submission? | Yes |
| Does your plan integrate existing EO and statutory requirements into a single framework and align with other existing mission and management related goals to make the best use of available resources? | No |
| Does your plan provide methods for obtaining data needed to measure progress, evaluate results, and improve performance? | Yes |

This plan does not yet integrate all elements into a single framework, and it does not yet align with budgetary goals because NSF has just started to collect the data and set targets. We will be working on developing an environmental management system to enable us to collect metrics and systematically report on them as part of the Foundation's standard operating and management practices. We are beginning to converse with the various stakeholders as to how to do this, and to ensure that everyone's needs are met as we go forward. NSF will provide an update on our progress in this area by the fourth quarter of FY 11.

2. What are your agency's planned actions for the following year (in 6 month increments, July-Dec 2010 & Jan-June 2011) to achieve the sustainability and energy standards for success on the OMB Scorecard?

Specific actions NSF will take during the next year:

a. Agency Budget Integration: The Office of Information Resource Management will take the lead in such activities, when communicating to senior management and our budget office.

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|---|---|
| Discussion with stakeholders as to how to integrate the budget into NSF's Sustainability Plan/program: | 3rd Qtr FY 10 |
| Initial decisions on whether funding will be needed, and what policy will need to be revised/written. | 1st Qtr FY 11 |

b. Establishment of an Environmental Management System

| | |
|---|---|
| Research best practices from other smaller agencies | 1st Qtr FY 11 |
| Complete survey/documentation of all recycling, conservation systems | 2nd Qtr FY 11 |
| Provide SSO with proposed plan for an EMS at NSF | 3rd Qtr FY 11 |
| SSO presents EMS to the Sustainability Council and Senior Management | 4th Qtr FY 11 |

c. Implement recommended water savings technologies.

| | |
|---|---|
| Present proposed technologies (water saving faucets and shower heads) to the Sustainability Council for approval. | 4th Qtr FY 10 |
| Install water saving faucets | 2nd Qtr FY 11 |
| Install water saving shower heads | 2nd Qtr FY 11 |

d. Conduct various demonstration pilots and studies to evaluate employee acceptance and demonstrated technical and cost feasibility of new practices and technologies.

(1) Telecommunications demonstration Pilot in the discussion stages: NSF is discussing a pilot program with one part of the IT group that would provide formal documentation of

success, failure and lessons learned regarding the greatest extent to which telecommuting can be used in an office.

| | |
|---|---|
| Decision on telecommunication IT pilot: | 4th Qtr FY 10 |
| Pilot study written and approved by Union for implementation: | 2nd Qtr FY 11 |
| Result of study released: | 3rd Qtr FY 11 |

(2) Conduct a small internal study using NSF scientific resources, identifying the type and number of plants needed to reduce specific volatile organic compounds commonly associated with office operations.

| | |
|---|---|
| Develop study design and submit it to sponsor in BIO | 3rd Qtr FY 10 |
| Begin experiment in one office area | 1st Qtr FY 11 |