

**National Archives and Records Administration**

**Business Support Services**

**Facility and Property Management Division**

**Climate Change Adaptation Plan**

**(An Attachment to the NARA Sustainability Plan)**

**Revised Jun 26, 2012**

**Introduction:**

The National Archives and Records Administration (NARA) is a geographically diverse agency with two Washington DC based Archives Buildings, and many other Regional Archives, Federal Records Centers and Presidential Libraries located throughout the continental United States and Alaska. NARA must continue the mission of protecting records of the Federal Government, and making that information available to American citizens, while balancing our mission with future requirements dictated by a changing climate. NARA, while promoting adaptation to climate change, must continue to address the following goals: 1) Preserve and process records to ensure access by the public as soon as legally possible; 2) Address challenges of electronic records in Government to ensure success in fulfilling NARA's mission in the digital era; and 3) Provide prompt, easy, and secure access to our holdings anywhere, anytime. These goals and potential impacts of changing climate on maintaining records integrity and human health, and operations of the Agency, must be considered in any NARA future climate adaptation planning.

**Mission:**

The National Archives and Records Administration serves American democracy by safeguarding and preserving the records of our Government, ensuring that the people can discover, use, and learn from this documentary heritage. We ensure continuing access to the essential documentation of the rights of American citizens and the actions of their government. We support democracy, promote civic education, and facilitate historical understanding of our national experience.

**Strategic goals selected and Impacts:**

- 1. Preserve and process records to ensure access by the public as soon as legally possible.**

**Potential Impacts:** Increased need for cooling and humidity control to preserve documents and other archival materials; increased risk for storm surges and long term sea level rise; and vulnerability to intense mainland wind storms and flooding; and maintaining a healthy environment for employees and visitors.

**2. Address challenges of electronic records in Government to ensure success in fulfilling NARA's mission in the digital era.**

**Potential Impacts:** Increased need for cooling and humidity control to preserve documents and other archival materials; increased risk for storm surges and long term sea level rise; and vulnerability to intense mainland wind storms and flooding.

**3. Provide prompt, easy, and secure access to our holdings anywhere, anytime.**

**Potential Impacts:** Increased need for cooling and humidity control to preserve documents and other archival materials; increased risk for storm surges and long term sea level rise; and vulnerability to intense mainland wind storms and flooding; and maintaining a healthy environment for employees and visitors.

**Past and present agency collaboration.**

- a. GSA- for Records Centers
- b. Library of Congress (LoC)
- c. NPS- Presidential Libraries on Park Service property
- d. Universities – where Presidential Libraries are co-located.

**Agencies potentially facing similar impacts and climate change management challenges.**

GSA, NPS, GPO, LoC, Smithsonian, etc.

How will NARA address climate change and preserve the goals of its mission? First, we must identify and manage critical locations susceptible to climate change using a diverse (e.g. Engineering, Finance, Design) planning team, and accessing the most up to date and reliable geographically-relevant climate change data. Second, develop risk management approaches and methodologies to best deal with climate change, including partnering with other agencies (e.g. GSA, NPS, LoC, GPO, and universities with co-located Presidential Libraries) where appropriate, on near term and long term actions and investments. Finally, create flexible design standards accounting for changing climatic conditions at unique locations, and an aggressive education and outreach program. Specifically, NARA must plan for sea level rise and storm surge protection, shifting precipitation patterns, flood events, wind and other extreme weather events, and other natural disasters at each location. NARA must continue to protect: its holdings

according to precise temperature and humidity levels as described in NARA Directive 1571, and buildings where archived materials are stored, and maintain a healthy environment for its employees and visitors. Some examples of site specific adaptive activities include: seeking enhanced/expanded data collection; improving flood and shoreline protection; building sustainable new structures; improving old structures to make them more energy and water efficient, and resistant/sustainable to climate change; and making plans to relocate at-risk infrastructure when other mitigation strategies are not feasible.

### **Challenges:**

Climate change poses serious threats to the economic well-being, public health, natural resources, and environment of the United States. Adverse impacts of climate change include: exacerbation of air quality degradation, reduced quality and supply of water, sea level rise affecting coastal businesses and residences, damage to marine and terrestrial ecosystems, and increased incidence of human health-related problems. Although climate change does occur naturally, NARA recognizes that concerted actions are necessary to fully address the rate of climate change due to human activity, and that actions taken by NARA to reduce emissions of greenhouse gases will have local and global effects on future climate. NARA also realizes that leading by example may help encourage others to act in a similar manner to reduce future anthropogenic effects on climate.

### **Leadership:**

By exercising leadership, NARA will continue efforts to reduce emissions of greenhouse gases. Investing in the development of innovative and pioneering technologies will assist NARA in achieving and surpassing Federal Agency limits on emissions of greenhouse gases established by E.O. 13514.

### **NARA History on Climate Change Adaptation:**

Previously, NARA actions have focused on mitigation; i.e. the reduction of greenhouse gases emitted to the atmosphere by NARA's facilities. Long term, reducing greenhouse gas emissions is important; however, even with significant emissions reductions climate change impacts are inevitable, and so must be considered and addressed in future planning efforts.

**Future Planning:**

The future of NARA Climate Change Planning will rely on identifying and developing appropriate strategies for adaptation and resiliency at each location. This next focused endeavor by NARA is to initiate responses to specific regional vulnerabilities through adaptation is key to success. Adaptation strategies are largely based on preparedness for and/or protection from risks that occur over time. Adaptation planning stems from a solid understanding of a region's specific risks, and taking effective and timely action to alleviate the full range of climate change consequences. Risks are addressed by reducing vulnerability or exposure, thus promoting resiliency. Reducing risk is accomplished by understanding regional changes utilizing available data, and increasing infrastructure resilience, transferring risk through appropriate future planning (e.g. building in low risk areas), partially negating risk through technological change or retreat, or via behavioral changes and revised protocols. Not all issues can, or should be, addressed at once, so it is important that risks are prioritized to maximize NARA's resources to ensure timely and effective response to climate change. Although NARA's mission goals stress protection of holdings and continued availability of those holdings to the public, another important consideration is maintaining human health and safety, while maintaining NARA's basic services. Risks presenting the most serious consequences (threats to human health/safety, and maintaining viability of holdings and buildings during serious and short term threats) are generally projected to occur first, and so are given the highest priority; however, timely response to serious long term risks is also important, especially if response requires substantial time to implement.

NARA continues to increase its understanding of the implications climate change has on its business practices, and is building a working knowledge to ensure future decisions consider climate change impacts and do not create further vulnerabilities or liabilities. This plan incorporates NARA's Directive 1571 to protect holdings against short and long term risk. Since this Plan represents formal initiation of NARA's attempts to develop its climate adaptation response, some initiatives may be initially exploratory in nature and aim to identify appropriate changes or actions to respond to the impacts of concern not addressed in 1571. To alleviate risk to human health, emergency management and safety plans are being reviewed and revised.

Reviewing current NARA protocols/practices and programs associated with risk is the first step to identify immediate adjustments to alleviate or reduce that risk. Where adjustments to current protocols/practices will not sufficiently address risk, more substantial actions will be identified and implemented in NARA programs. NARA will coordinate with other government agencies, consult with local businesses, academic institutions, environmental organizations, and other stakeholders to fully implement and refine NARA's Climate Change Adaptation Plan. This plan also addresses and strengthens NARA's attempts to meet OMB Scorecard, EO 13514, and LEED requirements (at appropriate sites). Detailed information on NARA's areas of focus for climate change adaptation are described below.

### **NARA Climate Change Adaptation Plan areas of focus:**

#### **Reduce Green House Gas Production**

Building systems account for approximately 70 percent of NARA's GHG emissions and are a key area for improving energy use efficiency. Since 2008, NARA has had significant success with improving agency energy efficiency. Improving building systems efficiency provides opportunities for energy savings and greenhouse gas reductions. These improvements have been, and will continue to be a major focus at the following NARA-owned buildings: Archives I, Archives II, Southeast Regional Archives and 13 Presidential Libraries and Museums.

Remaining NARA locations (Federal Record Centers and other Regional Archives) are leased via GSA or private leases, and so are not under direct control of NARA. Although those facilities are not NARA controlled, the agency will encourage leasing entities to improve energy efficiency and promote GHG reductions at these locations.

NARA recognizes that even small changes in energy use practices can add up to big emissions reductions. It is as easy as turning off the lights when not needed, adjusting thermostats at night in unoccupied areas, and reducing unnecessary water use in restrooms and break rooms. NARA will continue to concentrate on low and no cost solutions first, when planning for projects. A combination of higher cost, and longer payback period projects are also included to provide more robust savings and longer term solutions to energy and GHG reductions.

NARA uses mitigation strategies to promote energy efficient buildings. Retrofitting buildings is

an excellent strategy for improving energy efficiency in older buildings. Deep energy retrofit measures such as: installing energy efficient equipment, building envelop sealing, moisture management, controlled ventilation, insulation, and solar control can result in dramatic energy savings alongside optimal building performance. NARA has committed to a 30 percent Agency-wide reduction in energy use.

National Archives Total Agency Utilities Cost and Energy/GHG Savings								
		Executive Order 13423			Executive Order 13514			
FY	Total Utilities Costs (to include Water)	Btu/GSF	Btu/GSF Reduction vs FY2003	FY Goal Target Reduction	Site Delivery Billion Btu	Scopes 1, 2 & 3 GHG Emission (Ton)	GHG Reduction vs FY2008	GHG Saving vs FY2008 (Ton)
2003	\$7,798,163.48	<b>181,189</b>	Baseline					
2006	\$13,629,555.42	156,988	-13.4%	-3.0%	637.7	82,033.0		
2007	\$14,101,762.75	150,896	-16.7%	-6.0%	612.9	80,347.0		
2008	\$15,043,427.79	130,993	-27.7%	-9.0%	<b>575.4</b>	<b>76,295.4</b>	Baseline	Baseline
2009	\$14,496,452.58	127,765	-29.5%	-12.0%	561.6	75,468.6	-1.08%	826.8
2010	\$13,825,049.86	125,033	-31.0%	-15.0%	552.2	75,926.8	-0.48%	368.6
2011	\$12,837,795.15	126,981	-29.9%	-18.0%	560.2	70,736.3	-7.86%	5,559.1

NARA has focused on lighting as another way to reduce energy use and GHG emissions. As part of the retrofitting process, NARA is expanding incandescent light replacement. NARA uses high efficiency fluorescent or LED lights wherever appropriate. High use and fixtures that are difficult to re-lamp are identified as greatest opportunities to save energy and labor (installation) costs. In addition, timers and occupancy sensors are being installed as part of the retrofitting scheme. Night lighting is being reduced to minimize energy use and reduce night sky light pollution. The lighting systems at Archives I & II were retrofitted under two ESPC projects. NARA is currently working with contractors to award another ESPC project for covering 14 additional sites. Those sites include the Southeast Regional Archives and each Presidential Library.

NARA has also made strides to reduce water consumption, and is committed to improve water use efficiency in buildings as part of retrofits and in any new construction. Indoor water strategies include: installing flow restrictors/aerators on faucets, and replacing urinals and water

closets with low flush volume devices. Mechanical water strategies include water reuse for cooling towers, and capturing condensate water for reuse. To date, NARA water use has decreased over 19 % agency wide. Projects at specific sites have resulted in extraordinary water savings. Recovered condensate water and rainwater projects reuse water for irrigation. For example, rainwater and condensate water account for all water used to irrigate landscape and turf areas at AII.

<b>National Archives Total Agency Water Savings</b>			
FY	Gallons/GSF	Gal/GSF Reduction vs FY2007	FY Goal Target Reduction
2007	26.6	Baseline	
2008	25.4	-4.5%	-2.0%
2009	22.7	-14.7%	-4.0%
2010	21.6	-18.8%	-6.0%
2011	21.5	-19.2%	-8.0%

**NARA and LEED:**

NARA is looking beyond just energy conservation strategies. NARA is aligning its energy conservation efforts at all NARA-owned buildings with LEED strategies, and now requires new Presidential Libraries to be designed and built to LEED Platinum Level. Because LEED strategies align closely with OMB requirements, NARA is adopting LEED not only for new construction, but also any new construction projects must be built to LEED standards for any extensive renovation of NARA-owned property. NARA has updated the Presidential Library Design Standards and the Building Condition Reporting, performed by a third party, to include LEED language.

As part of LEED and OMB requirements, NARA promotes and installs renewable energy at each site, where feasible, and uses renewable energy by purchasing renewable energy credits from energy providers. NARA is using many strategies to help address climate change and meet Federal mandates, NARA not only requires greater efficiency from existing energy sources, but is purchasing energy from green power sources. NARA receives power from regional e-grids, including nuclear and renewable-generation plants. Since traditional power sources are a

significant source of CO<sub>2</sub> emissions, especially those that use coal, NARA is purchasing at least 5% of its energy from alternative, renewable energy credits of wind power through the GSA area-wide contract.

### **Renewable Energy:**

NARA procures renewable energy through its regional energy providers, and via onsite energy generation. NARA is presently utilizing and increasing the amount of self-generated energy. The existing Photovoltaic solar panels at Clinton Library produced 60,225 KWH in FY2011. The existing 4,200 SF of solar panels at the Eisenhower Library generates an average of 15,000 Btu/day for the facility hot water system. The electricity and chilled water consumed at the Reagan Library is generated by an on-site natural gas cogeneration system and absorption chillers. Photovoltaic Solar panels at Archives II produced 125,508 KWH in FY2011. The 150 KW co-generation system at Archives I was completed November 19, 2010. Recently, a 225 KW co-generation system at Archives II was completed. The combined strategy of producing our own power and purchasing renewable energy helps NARA reduce electricity use from the grid, and simultaneously reduce GHG emissions from petroleum-based electricity generation.

### **Process Improvement:**

LEED also requires facilities to continually improve processes and procedures to promote better environmental outcomes. NARA also adheres to FAR clauses for green acquisition and includes language in its purchases (e.g. bio-based, Energy Star, EPEAT, EPP, FEMP, Water Sense, etc.). As a result, NARA anticipates continued improvement in processes associated with acquiring, use, storage, and disposal of chemicals, equipment, furniture, construction materials, office supplies, and any other products or services.

### **Landscapes and Hardscapes:**

NARA is also making strides to reduce effects on the environment by minimizing heat island effects by its roofs and hardscapes. Many energy and heat island effect improvements can be made at most sites. NARA is promoting the use of rooftop gardens, where applicable, and planting trees to shade existing hardscapes. Roof projects in warmer climates incorporate high albedo materials. New paving project specifications also incorporate high albedo materials when

feasible, thus reducing overall community heat island effects. Reducing the amount of heat absorbed and reradiated to the atmosphere helps improve outdoor conditions near a building, but also helps reducing HVAC system needs.

### **Fleet, Business Travel and Employee Commuting:**

NARA is moving forward with fleet and commuting goals. NARA is utilizing many LEED strategies to help meet fleet, business travel and employee commuting goals. NARA is reducing fleet size and right sizing current vehicles to their appropriate tasks, and using single vehicles to provide for multiple tasks, where feasible. NARA has equipped vehicles with GPS to monitor fuel use, mpg, frequency of use, and driving patterns, including idle times, average speed, etc. Utilizing this information helps NARA determine present and future needs when time for a new vehicle lease is scheduled, and user habits, so recommendations for improvement can be easily conveyed to the users.

Each business day, NARA employees commute to and from work, and travel for business purposes. Approximately 20 percent of NARA's contributions to greenhouse gas emissions are produced by fleet cars, trucks, and buses, and travel on commercial planes and trains. To reduce GHG emissions, NARA must incorporate and promote using public transit, bicycling, walking, car sharing, and energy-efficient vehicles in its plans. NARA business dictates that employees have many places to go, and so need a variety of convenient, energy-efficient ways to get there. An important first step is to do an employee commuting survey in an effort to measure use of single occupant vehicles vs. carpools, biking, walking and mass transit. NARA just completed an agency-wide survey of employee commuting and is planning strategies to improve its carbon footprint by promoting alternatives to single passenger vehicle commuting.

NARA encourages employees to use mass transit when feasible, to help promote mass transit improvements and to boost transit system ridership. A bus full of occupants takes about forty single occupancy vehicles off the road for a given trip. Using mass transit clearly reduces GHG emissions vs. single occupant vehicle use, and as added benefits reduces wear and tear on personal vehicles, and lessens congestion on roadways. Over 20% of NARA employees

currently use some sort of mass transit, and NARA is utilizing the DOT mass transit subsidy program to help encourage employees to use local mass transit systems where they are available. Although the mass transit benefit program has recently been reduced due to Federal budget cuts, NARA still encourages employees to use the program as it provides cost savings to employees, and still encourages mass transit ridership. Additionally, much of the cost incurred over the subsidy amount may be claimed as a pretax benefit. NARA will continue to provide incentives for mass transit use by employees in the future, provided they are available.

Since NARA has adopted LEED strategies for its sites, transit oriented development is part of site selection for any new construction. Transit-oriented development encourages new construction to focus on neighborhoods built around public transit, and basic services within walking or bicycling distances, thus encouraging residences are built in the area. This strategy reduces commute time and costs for employees that choose to locate in the area, building a more unified community. For locations that are outside the service area of mass transit, NARA promotes the use of car sharing, carpooling and vanpooling. NARA has established a carpool ride share board for some locations.

NARA continues to improve its fleet efficiency in accordance with E O 13514. NARA is improving fleet efficiency through consolidation and fleet reduction, acquisition of right-sized and appropriate vehicles for tasks performed, and purchase or lease of hybrid, flex fuel, and electric vehicles. In spite of ever increasing transportation demands, NARA plans to reduce its fleet size by 10% by FY2015. Besides reducing the size of the fleet through resizing the fleet, NARA promotes continued increased Federal fuel efficiency standards. The agency supports the standards by using cars with smaller, more fuel efficient engines and transmissions, and increased use of hybrid and electric vehicles that will continue to improve NARA's fleet fuel efficiency, and America's energy security. In addition, NARA is switching to cleaner burning and alternate fuels when feasible. All new gasoline powered vehicles acquired by the agency must be flex fuel vehicles, and policy requires vehicles fill up with E85, if available, within five miles of the location. The NARA fleet manager regularly updates vehicle users of locally available E85 filling stations. NARA diesel powered vehicles are also using cleaner burning biodiesel. NARA supports the increased supply and use of sustainable, alternative fuels, and

helps promote electric vehicles, and hybrids. Agency leaders are using electric and hybrid vehicles as their preferred choice for business transportation.

### **Solid Waste and Refrigerants:**

Although buildings, employee commuting and business travel account for almost 90% of GHGs emissions produced directly or indirectly, NARA recognizes that most of the remaining GHGs are represented by solid waste and refrigerant use. NARA has reduced solid waste sent to landfills by over 1/3, and has committed to reduce waste sent to landfills by greater than 50%.

Although reducing, reusing and recycling helps achieve the waste reduction goal, NARA is committed to go farther. It is essential that both individuals and businesses join in the effort, and there are many opportunities to do so. One such project underway is an onsite compost system. Using this system, the payoff may yield an 80% reduction in waste trucked to landfills by the year 2014 (ultimately yield a 90 percent reduction of NARA's solid waste sent to landfills by 2020), produce a useful product to be used on site (compost for gardening), and reduce GHG emissions.

In keeping with LEED requirements, NARA is shifting to devices that can be converted to alternative refrigerants, and when possible phasing out systems that contain CFCs and HCFCs. NARA requires use of non CFC/HCFC refrigerants in all new air conditioners and appliances.

### **Storm Water Runoff:**

NARA is currently detaining at least 15% of storm water runoff at many of its sites, and installing green infrastructure to slow runoff, and reduce pollutant loading in storm water onsite before it is discharged to streams. Some storm water is captured and reused on site for irrigation at some locations. This strategy will be implemented at new locations, and when feasible, at existing locations during renovation. NARA recognizes that climate change may have changed stormwater water runoff requirements due to a change in frequency and intensity of storms, ocean rise and local storm surge capacity changes, and relative elevation change due to construction in other neighboring areas in the same watershed. Periodic review of each location is important to maintain a viable strategy for climate change and future mitigation or adaptation.

## **Advancing Climate Adaptation and Mitigation Strategies**

Climate Change data shows the earth responds slowly to changes in atmospheric gases. For that reason experts predict full effects of climate change are not yet realized. Over the next few decades, NARA expects to face the combined consequences of heat-trapping gas emissions from the present and decades past. Aggressive actions by the world community will likely reduce greenhouse gas emissions in the future. NARA must do its part to reduce potential future effects of climate change by reducing emissions. The Agency must also take action by adapting to change that is already happening, and preparing to meet the challenges in the future. The Agency's actions detailed in this plan will help NARA reduce GHG emissions, and prepare the Agency for future climate change challenges. NARA will continue to advance its GHG reduction strategies and better prepare for climate change as more data-especially local data, becomes available. NARA will continue to share its experiences with other agencies, and will continue to collaborate with other government and nongovernment groups to reduce the effects of anthropogenic related climate change.

## **Additional Adaptation Strategies and Future Challenges**

### **1. Manage Heat**

NARA will update heat response planning, focusing on Agency holdings and human health, observe and complete research into local urban heat island effects, and ways to reduce facility contributions to the local heat island effect.

### **2. Pursue Innovative Cooling**

NARA continues to seek out innovative ideas for cooling buildings, and make green landscape and energy efficiency improvements.

### **3. Protect Indoor and Outdoor Air Quality**

NARA goes to great lengths to reduce ozone-precursors, and other air pollutants to protect holdings and human health.

#### **4. Manage Storm Water**

NARA is collaborating with Water Districts on Watershed Plans factoring climate changes and to use vacant land to manage storm water.

#### **5. Preserve Plants and Trees**

NARA plans to plant species that can thrive in altered climates. Create landscapes that accommodate plants that can tolerate the altered climate, and share our lessons learned with other agencies and the public.

#### **6. Engage the Public and Other Organizations**

Besides sharing climate related information with other organizations, and the general public, NARA plans to investigate innovative ways to adapt to climate change. Furthermore, NARA will help its employees understand how to take steps to reduce flooding, improve energy and water use efficiency in their homes, and even manage heat waves, by installing energy efficient lighting and heating and cooling, rain barrels, faucet aerators and low flow fixtures, and back-up power for sump pumps and planting shade trees at key locations, etc.

#### **7. Future Plans**

NARA's future plans include: Using a combination of LEED principles and project progress, information from Building Condition Reports, and the OMB Scorecard to guide NARA implementation efforts to assess how the plan is progressing, and an avenue to recommend revisions. NARA is about to award an agency-wide contract for teleconferencing across the nation to save additional business travel and the associated GHG emissions. The efforts will be overseen by the Senior Sustainability Officer (SSO) and implemented by staff in the SSO's Office.