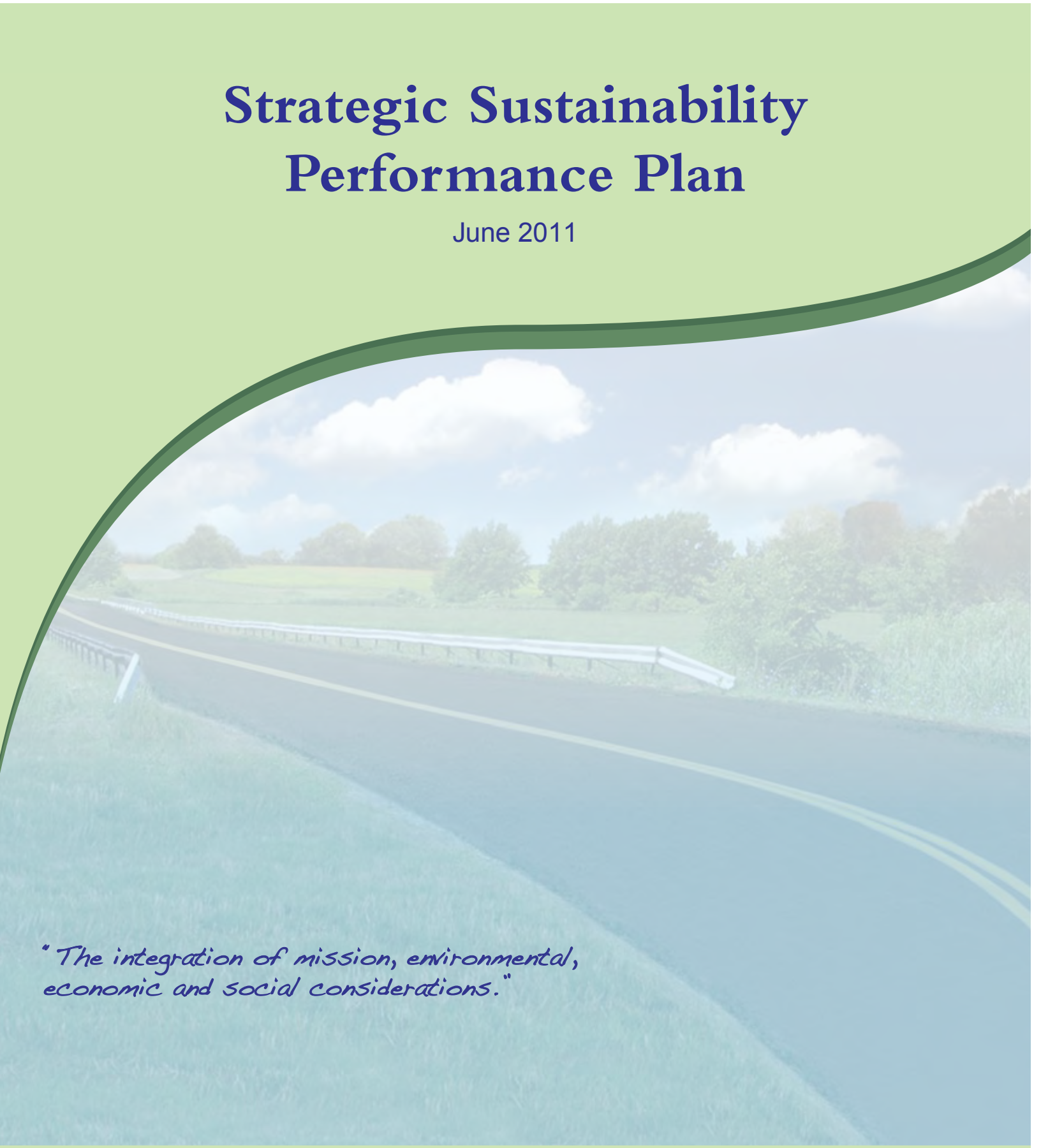
Strategic Sustainability Performance Plan

June 2011



"The integration of mission, environmental, economic and social considerations."

U.S. Department of Transportation

GREEN

DEPARTMENT OF TRANSPORTATION

STRATEGIC SUSTAINABILITY PERFORMANCE PLAN

June 2011

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Section 1: Agency Policy and Strategy

Agency Policy Statement

U.S. Department
of Transportation
Office of the Secretary
of Transportation

Agency Commitment Letter

June 2011

1200 New Jersey Ave, SE
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The Department of Transportation's (DOT) mission is to serve the United States by ensuring a fast, safe, efficient, accessible and convenient transportation system that meets vital national interests and enhances the quality of life of the American people, today and into the future. DOT is committed to integrating mission, environmental, economic and social considerations through sustainability policies and programs. To achieve this goal, the Department will ensure compliance with environmental and energy statues, regulations, and Executive Orders (EOs).

In coordination with the Chief Financial Officer, Chief Information Officer, Chief Acquisition Officer, Senior Real Property Officer, and General Counsel, DOT has identified several priorities and significant sustainability efforts for the upcoming year:

- Initiate a comprehensive plan to increase the number of buildings that meet the High Performance Sustainable Buildings criteria.
- Develop and maintain a comprehensive inventory of absolute GHG emissions across all three scopes for DOT (base year FY2008).
- Support programs for reductions in GHG emissions and energy use such as enabling power management features on computers, laptops and monitors.
- Increase awareness and usage of renewable energy
- Reduce petroleum consumption and increase alternative fuel use in DOT vehicles.
- Decrease potable water use
- Meet or exceed green purchasing requirements

We will support each of these priorities through the following management tools:

1) Identify and develop key performance metrics to track organizational progress.
2) Improve functionality of existing systems and/or develop new data management systems.
3) Create new policies, procedures and guidance documents with the goals identified in the sustainability plan and build awareness through training materials.
4) Integrate sustainability goals with the Department's Higher-tier Environmental Management System.

DOT is committed to becoming a leader in sustainability. Incorporating sustainable practices into the Department's mission helps to promote energy and natural resource conservation, decreases GHG emissions, reduces pollution and contamination releases, enhances the workplace by minimizing hazardous materials and chemicals and strengthens our national interests by encouraging energy independence.

Kathryn B. Thomson
Counselor to the Secretary &
Senior Sustainability Officer

II. Sustainability and the Agency Mission

Governing Principles

DOT is committed to sustainability leadership. DOT defines sustainability as the integration of energy, environmental, economic and social considerations into the Department's mission, programs and day-to-day operations. This means that DOT employees at all levels must be responsible and accountable for integrating sustainability stewardship into day-to-day activities to reduce the Department's direct and indirect energy and environmental impact and to protect our natural resources. Incorporating sustainable practices into the Department's mission and operations is also a sound business practice. It promotes energy and natural resource conservation, decreases emissions of greenhouse gases (GHGs) and other pollutants, enhances the workplace by minimizing hazardous materials and chemicals, and advances our national interest in increasing energy efficiency and reducing our dependence on fossil fuels. Building sustainability into our work also ensures that DOT's investments in safe, efficient and affordable transportation systems for all Americans will endure.

Sustainability is not a new concept for DOT. To the contrary, over the past several years, DOT has taken a number of measures to reduce energy consumption and enhance the environment while improving and modernizing transportation systems and spurring economic growth. These efforts include, for example, making historic investments in high speed rail and NextGen satellite technology for air traffic, implementing ambitious new fuel economy standards for cars and trucks, funding more integrated, more efficient intermodal transportation systems, providing transportation alternatives and funding for cleaner public transit bus fleets, and developing America's marine highways.

In addition to DOT-specific programs, DOT is partnering with other Federal agencies to promote sustainability across the country. For instance, DOT, along with the U.S. Department of Housing and Urban Development and the U.S. Environmental Protection Agency, is a founding member of the interagency Partnership for Sustainable Communities. This partnership seeks to improve access to affordable housing, create more transportation options, and lower transportation costs, while protecting the environment in communities nationwide. The Partnership, created in 2009, is already yielding positive results in urban, suburban and rural communities across America. Through the Partnership for Sustainable Communities, DOT is allocating resources to its Livable Communities Program to support initiatives that increase transportation choice and integrate housing and local transportation into land use planning decisions. Livable Communities increase transportation choices, provide affordable connections from homes to employment centers and other key amenities, and enhance economic opportunities and environmental sustainability.

DOT has established the Center for Climate Change and Environmental Forecasting in 1999, now called the Transportation and Climate Change Clearinghouse (TCCC), to play a leadership role in meeting global climate change issues. The TCCC has become the focal point within DOT for information and technical expertise on transportation and climate change, working with its component organizations to coordinate related research, policies, and actions. The TCCC promotes comprehensive multimodal approaches to reduce GHG emissions and prepares for the effects of climate change on the transportation system, while advancing DOT's core goals of safety, mobility, environmental stewardship, and security.

Beyond greening its programs, DOT is committed to more sustainable operations, and DOT leadership is setting the bar high. For instance, DOT headquarters, which houses more than 10 percent of DOT's workforce, is located in a high performance sustainable building that uses 100 percent renewable energy. These are only a few examples of the aggressive measures DOT is taking to confront energy and environmental challenges. But they are clear and unequivocal signs of DOT's commitment to sustainability.

There are two core documents that govern DOT's sustainability efforts – the Strategic Sustainability Performance Plan (SSPP) and DOT's Strategic Plan for FY2010 – FY2015, entitled "Transportation for a New Generation," which DOT is working to finalize. In general, the SSPP establishes DOT's plan for making its operations more sustainable, while the Strategic Plan governs DOT's mission and identifies key priorities that will transform the existing transportation network into a truly multimodal system that offers the traveling public and businesses safe, convenient, affordable, and environmentally sustainable transportation choices.

DOT's 2011 SSPP lays the foundation to incorporate sustainable practices into the key priorities identified in the Department's Strategic Plan and meet the Executive Order (EO) 13514 requirements and other applicable energy and sustainability requirements. Progress and status toward achieving the Department's energy and sustainability goals will continue to be reported twice yearly in July and January to DOT's SSO and Assistant Secretary for Administration via the OMB Sustainability Scorecard. DOT also has developed its own internal reporting procedures so that senior leadership can track the progress of the Department and each of its operating administrations (OAs). Additionally, each OA within the Department is developing its own SSPP that integrates with the DOT SSPP. Like the departmental-wide SSPP, OA SSPPs will be updated annually. Moreover, each OA will be implementing a higher-tier environmental management system over the next two years that integrates the initiatives within the Department's and its own SSPPs.

As the program-oriented companion to the SSPP, the Strategic Plan centers around five priority goals. These goals are to improve public health and safety, foster livable communities, ensure that transportation assets are maintained in a state of good repair, support the Nation's long-term economic competiveness, and work to achieve environmental sustainability. Also, like the SSPP, DOT's Strategic Plan sets guidelines that direct the Department to be transparent and accountable to the American public, adopt performance-based measures, focus on achieving strategic outcomes, and maximize the value of public investments.

While DOT is committed to advancing sustainability throughout its operations and program, there are a number of practical challenges that may impact the Department's ability to proceed as quickly as it would like. DOT will manage these as aggressively and efficiently as possible to minimize any adverse impact they may have on the department's ability to meets it obligations. Below the Department identifies some of its most significant challenges.

• Budget Considerations: DOT already has implemented a number of the initiatives described in this SSPP, and it has identified a number of new initiatives to ensure further progress. As EO 13514 was only recently adopted (after the commencement of FY 2010 and the budget for FY 2011 had been developed), one challenge for the Department is integrating its sustainability initiatives into the budget planning process. Since Federal budgets are developed two years in advance, most of these new initiatives are not accounted for in the FY 2010 and FY 2011 budgets. DOT is currently assessing its expended budget for FY 2010 and approved budget for FY 2011. In the short-term, DOT must implement organizational changes to realign existing functions and staff assignments to help compensate until additional resources (both FTE and funding) are obtained through the budget process. Longer term investments for critical infrastructure initiatives such as the NextGen Facilities Program will be necessary for the Department to achieve the goals of the requirements established by EO 13514 and comply with other relevant policies and regulations.

• Raising Awareness: The drive toward sustainability will continue to require top-level attention and awareness from the Office of the Secretary (OST) and the leadership of all of the OAs. To be successful, every function and employee throughout the Department must fully understand, participate and take ownership of sustainability goals and obligations. To ensure the highest level of participation, DOT must engage all employees, including managers, through proper training and incentives. Sustainability goals must be incorporated into appropriate job descriptions and employee performance reviews. DOT already has taken steps to address this issue by providing training to senior leadership and integrating periodic sustainability performance reviews for each OA into an existing process in which the OA reports on its progress in a number of priority areas directly to the Deputy Secretary.

• Data Availability and Quality: Baseline measurements and progress measurements are cornerstones of achieving sustainability. It is necessary to capture data for establishing baselines and measuring progress related to each goal imposed by EO 13514 and other laws. At this juncture, data availability is limited and the quality of the data is variable. Some necessary initiatives in this direction have been identified and initiated. For example, DOT is currently expanding the fields and functionality of its Real Estate Management System (REMS) and financial information system so that they are capable of capturing energy and water consumption data, "sustainable building" status (already in place), and renewable energy generation at each facility. The data system will integrate the physical features and processes of the building with financial information creating a centralized repository of information. This system is anticipated to include all of the data required to measure and report facility performance under the EO and other applicable laws. DOT needs two to four years to acquire and/or build an operational system capable of performing all of these functions and implement processes to capture the data. In the interim, data must be collected manually, which is often difficult, time intensive, less consistent and lacks validation. Constructing new facilities or upgrading existing facilities to include building automation and energy management systems, along with advanced metering and sub-metering, are essential to furthering this objective.

• Lead Time Requirements: DOT has determined that establishing a facility retrofit and upgrade program that integrates the following five major EO goals must be a major new initiative: scope 1 & 2 GHG reductions, energy intensity reduction, water efficiency, high performance sustainable buildings, and on-site renewable energy generation. This program, planned for implementation over a 10-year period, will operate as a trans-Departmental infrastructure team. It will rely on the soon to be developed enhancements in the financial and REMS information systems to help identify the pool of potential candidate facilities for retrofits and upgrades. The objective of this 10-year program will be to develop data information systems (see above) that will facilitate filtering thousands of DOT facilities down to approximately 620 possible candidates for building system upgrades and retrofits. Through this program the 620 or so possible candidate facilities will then be evaluated at project level to identify approximately 95 best candidates based on greatest return on investment. These 95 "best" candidates will achieve each of the high performance sustainable building guiding principles with the greatest return on investment in one simplified, prioritized program that will be staffed with the expertise to identify projects and carry them out from candidate selection, Energy Savings Performance Contracts (ESPCs)/Utility Energy Saving Contracts (UESCs), the actual renovation and building, and verification of results. Developing and ramping up this program over the next two years followed by eight years for completion of the projects will be a significant challenge. But DOT believes that this program can become a model for the Federal community as it allows for a prioritized, efficient process for achieving sustainable facilities.

• Limited Opportunities for On-Site Renewable Energy Generation: DOT has committed to doubling on-site renewable energy generation. Nonetheless, identifying sites suitable for renewable energy installations and the funding to support such installations is a significant challenge. Success will depend heavily on the "Sustainable Buildings" program identified above to help identify the appropriate sites for renewable energy generation and creative financing through ESPC/ UESC mechanisms.

• Organizational Expansion: Several OAs within DOT are expected to increase in size as a result of expanded mission requirements. Such growth will place additional pressure on the organization's ability to achieve the goals identified within this plan. The Department, however, will seek to incorporate sustainability principles into all aspects of its operations when possible (including building sustainability considerations into our program expansion plans), while ensuring that the Department and each OA continues to fulfill its mission.

Related to the challenges described in this section, below is a table that provides a snapshot of the size and scope of DOT's operations and environmental footprint. This table is meant to help the public understand how DOT compares to other agencies and departments in terms of scale and reach.

Size and Scope of Operations	Number	Comment
Total # Employees	58011	The total number of employees is current as of January 2011 and includes both permanent and temporary employees.
Total Acres Land Managed	179559	
Total # Facilities Owned	10174	The term facilities is defined as buildings according to DOT. The facility count represents active buildings in DOT's Real Estate Management System.
Total # Facilities Leased (GSA lease)	315	
Total # Facilities Leased (Non-GSA)	1105	
Total Facility Gross Square Feet (GSF)	33399656	The value for Total Facility Gross Square Feet is an aggregation of owned, GSA leased, and non-GSA leased buildings. In some cases net square feet were used so number may be a slight underreporting of gross square feet.
Operates in # of Locations throughout U.S.	51	DOT operates facilities in all 50 states and Washington, DC.
Operates in # of Locations outside of U.S.	9	The number of locations outside the U.S. include territories such as Puerto Rico and Guam as well as other countries.
Total # Fleet Vehicles Owned	430	
Total # Fleet Vehicles Leased	5825	
Total # Exempted-Fleet Vehicles (Tactical, Emergency, etc.)	48	
Total Operating Budget FY 2010 ($MIL)	76385	
Total # Contracts Awarded FY 2010	21157	Number of contracts awarded is comprised of the following: new contract, task orders, delivery orders and modifications.
Total Amount Contracts Awarded FY 2010 ($MIL)	5634	
Total Amount Spent on Energy Consumption FY 2010 ($MIL)	130	The energy consumption dollar value includes amount spent on fuel for fleet vehicles.
Total BTU Consumed per GSF	80.9	
Total Gallons of Water Consumed per GSF	41.6	
Total Scope 1&2 GHG Emissions (Comprehensive) FY 2008 Baseline MMTCO2e	857.9	
Total Scope 1&2 GHG Emissions (Subject to Agency Scope 1&2 Reduction Target) FY 2008 Baseline MMTCO2e	822	
Total Scope 3 GHG Emissions (Comprehensive) FY 2008 Baseline MMTCO2e	309.5	
Total Scope 3 GHG Emissions (Subject to Agency Scope 3 Reduction Target) FY 2008 Baseline MMTCO2e	311.7	

III. Greenhouse Gas Reduction Goals

DOT has established a 12.3 percent reduction target for Department-wide scope 1 and 2 GHG emissions, and a 10.9 percent reduction target for Department-wide scope 3 GHG emissions in absolute terms by FY 2020, relative to the new FY 2008 baseline (described in Goals 1 and 2). DOT has submitted these targets to and received approval of the targets from CEQ and OMB in accordance with EO 13514, section 2(a) and 2(b), Goals for Agencies. Additionally, as required by EO 13514, Section 2(c), DOT established and reported to CEQ and OMB a comprehensive inventory of absolute GHG emissions, including scope 1, scope 2, and specified scope 3 emissions in January 2011.

DOT is well on its way to meeting its energy intensity reduction targets and its scope 1 & 2 GHG targets. DOT plans to renew its focus on scope 3 reductions this coming year. The Department is prioritizing 1) sustainable building improvements and 2) energy improvements (both energy efficiency and renewable energy utilization)) as the cornerstones of the DOT GHG reduction strategy.

For example, FAA's efforts to implement the NextGen transformation of the National Airspace System (NAS), a wide-ranging evolution from a ground-based system of air traffic control to a satellite based system of air traffic management, includes more efficient operations and facility optimization, which offers ability to substantially reduce FAA's energy and greenhouse gas emissions footprint. This will provide an opportunity for DOT to have more aggressive scope 1 and 2 reduction targets in the future.

In addition, the Secretary and Deputy Secretary have challenged the heads of each OA to prioritize the goal of getting 15 percent of the Department's buildings to meet the guiding principles for High-Performance Sustainable Buildings by 2015. The sustainable building program will be a foundational element of DOT's sustainability strategy and address many of the sustainability challenges including GHGs, energy, and water improvements.

IV. Plan Implementation

DOT made great strides in the last year to lay the foundation to meet energy and sustainability requirements, and those efforts are ongoing.

Highlights of Recent Accomplishments

• DOT instituted a Sustainability Scorecard into its quarterly "regulatory review" process—individual meetings held between the Deputy Secretary and the Administrator of each of DOT's OAs. Targets for reduced employee commuting, renewable energy, sustainable buildings, water conservation, petroleum reduction, and green procurement are on this scorecard and each Administrator is now regularly accountable for progress and success. DOT is the first Department to have sustainability accountability at this level. This new process is proving to be extremely powerful, mobilizing all OAs to focus on sustainability targets and is achieving strong early results.
• DOT's Senior Leadership and the Environmental Management System (EMS) Senior Advisory Board are playing a critical role in mobilizing action within all of DOT's OAs and driving the momentum throughout DOT to advance sustainability initiatives.
• DOT completed its first comprehensive greenhouse gas inventory and is on a path to reduce its scope 1 & 2 emissions by 12 percent by 2020.
• RITA's Volpe Center partnered with the White House Council on Environmental Quality (CEQ), OMB, US EPA, and GSA to refine a commuter survey that DOT employed for gathering accurate data for calculating scope 3 emissions. CEQ recommended the Volpe survey to all Federal agencies as the preferred method to inventory commuter emissions.
• DOT deployed approximately 123 new hybrid vehicles in FY2010.

• Deployed a new information system that monitors petroleum consumption and alternative fuel usage in each OA. This has allowed early intervention measures to ensure DOT meets the 12 percent reduction goal. Data from this system is used in the accountability tool for the Deputy Secretary's Sustainability Scorecard review with the OA Administrators.
• Converted the majority of the Headquarters fleet to alternative fuel vehicles and hybrids.
• Developed a decision tool for use at DOT fueling centers to identify the most practical alternative fuel to be made available at the fueling center.
• Underwent an enormous effort with all OAs to comply with the new low greenhouse gas emitting vehicle regulations. Approximately 1000 vehicles were replaced and are now in compliance.
• The Deputy Secretary required each OA to develop an action plan to meet their HPSB targets, and update this plan periodically.
• The Department conducted a comprehensive evaluation to identify approximately 90 facility targets for upgrades to meet energy, water, GHG, HPSB, and renewable energy goals.
• The Department mandated a special, intensive green procurement training for all contracting staff and senior contracting officers throughout DOT.
• DOT led an interagency team to develop the Guidelines for Sustainable Locations for Federal Facilities required by Section 10 of EO 13514. The impact of this work is significant as the Guidelines will be used by all Federal agencies in making transit-oriented siting decisions.
• The issuance of an Administrative Order on printing to enforce better printing practices and enhanced environmental benefits such as duplex printing, toner and paper reduction, as well as energy reduction by migrating to multifunctional devices (MFPs) versus desktop printers.
• Established a Department-wide Green Team.
• Using Energy Star® Portfolio Manager and US EPA eGRID to identify the best locations for renewable energy purchases and/or onsite renewable energy generation.

Ongoing Implementation Efforts
In order to effectively meet the goals of EO 13514, DOT has developed a high level approach that includes short-term and medium- to long-term activities/initiatives. It builds on existing efforts to improve energy efficiency, reduce the energy intensity of its operations, increase the utilization of alternative fuels, and purchase and build renewable energy capacity.

<u>Short-Term (1-2 years)</u>
• Plan and initiate elements of a new Sustainable Building Infrastructure Team by using the Subject Matter Experts (SMEs) from the DOT OAs that have been successful implementing HPSB.
• Issue an administrative order requiring all OAs to increase their purchase and/or generation of renewable energy over the next three years.
• Promote and raise awareness of the Federal transit benefit program.
• Increase awareness and value of DOT's telework program through a communications strategy that includes e-mails, electronic newsletters, webinars (net meetings), TMS training modules, and briefings.
• Purchase low-speed electric vehicles for campus facility settings.
• Deploy approximately 150 new hybrid vehicles in FY2011.
• Acquire electric vehicles or other alternatively-fueled vehicles when available from GSA.
• Implementing Alternative Fueling Center plan of action and milestones.
• Identify the percentage and numbers of alternative fuel vehicle acquisitions in non-alternative fuel locations to assist DOT in reducing alternative fuel vehicle (AFV) waivers from 10 percent to 5 percent and utilize efficient, conventional fuel vehicles where no alternative fuel infrastructure exists.
• Improve tracking of water consumption values and increase water conservation practices.
• Complete program to meet power management requirements for all computers and computer systems.

<u>Medium-Term (3-5 years)</u>

• Stand up Sustainable Building Infrastructure Teams in pursuit of GHG, energy, water efficiency, high performance sustainable building, renewable energy and economic performance goals—retrofit up to 20 buildings.
• Establish a building re-commissioning program (e.g. initial "retro-commissioning" and ongoing "continuous commissioning") within the Sustainable Building Infrastructure Teams for buildings that were identified on the retrofit project target list.
• Implement awareness program to promote energy conservation and energy efficiency, and distribute information on best practices through awareness and outreach programs across the OAs.
• Launch a DOT-wide collaborative and sustainable workspace program pilot (including hotelling); develop metrics, and measure costs and benefits.
• Provide management training and tools for telework and hotelling principles.
• Begin installing on-site renewable energy generation projects.

Long-Term (6-10 years)
• Complete portfolio of new construction or retrofit projects that will achieve the Five Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings which are part of the DOT Sustainable Building Infrastructure Team Program.
• Achieve 20-40 facility re-commissioning projects annually.
• Develop a dashboard system for communicating energy monitoring results and status of scope 1, 2, and 3 reduction goals using lessons learned from the OAs.
• Develop a cadre of subject matter experts that can address scope 3 emissions from transportation systems for external audiences.
• Initiate a pilot project for a DOT net-zero energy facility to meet EISA 2007 requirements with the understand that all Federal building projects in design after 2020 are required to achieve this level of energy performance.

In order to accomplish these goals, the Department will continue to strengthen its internal and external communication, leadership and accountability, planning processes, integration between budget and policy, and evaluation methods as discussed below.

a. Internal and External Coordination and Communication

DOT has implemented a Higher Tier Environmental Management System (EMS) to facilitate both internal and external coordination and communication. The EMS is used to identify, implement and track initiatives and to ensure the organization can monitor progress when meeting the sustainability goals identified in this document. Furthermore, many large DOT facilities have implemented their own EMSs to improve their ability to gather data and report progress on sustainability metrics, including energy consumption, waste production, and water usage. OAs also will implement higher-tier EMSs in the near term.

The EMS serves as a framework to execute department-wide sustainability programs and track performance. The EMS aggregates data from many individual program areas such as energy, fuel consumption, water, waste management, recycling, and environmentally-preferable purchasing. It also functions as a department-wide records system to monitor, measure, and report compliance. DOT will use the EMS framework to implement, monitor, and continuously improve the goals, programs and projects identified in the SSPP.

Higher-tier EMS for DOT HQ
A central goal of the DOT HQ higher-tier EMS implementation is to create a framework that links together all DOT OAs' EMSs to address DOT sustainability goals, objectives and targets. The DOT higher-tier EMS sets environmental, energy and sustainability objectives, targets and metrics for the entire organization.

b. Employee Outreach and Training

DOT's EMS also is used to facilitate and track employee outreach and training through the elements of internal communications, awareness training, and competency training. Internal Communications establishes mechanisms for sending and receiving environmental-, energy- and sustainability-relevant messages to and from employees. This is a continuous activity as employees need to receive updates on new issues, progress towards attaining objectives and targets, and the achievements of individual groups and functions within DOT.

Awareness Training is conducted periodically to remind existing employees and educate new ones on the DOT Sustainability Policy, the existence of the EMS, the sustainability objectives and targets, and what they can do to participate and contribute to the attainment of those objectives and targets.

Competency training addresses the specific competency that certain individuals need to exhibit when they are given EMS roles and responsibilities dealing with specific activities, tasks, programs, and the application of operational controls. DOT will develop and implement the appropriate systems, methods and standards to support the management of a department-wide sustainability program and ensure optimal outreach to DOT employees.

Below are some short-, medium-, and long-term SSPP outreach and training related tasks:

Short-Term (1-2 years)

• Update DOT environmental, energy, and acquisition policies to include the goals identified in the Strategic Sustainability Performance Plan and EO 13514.
• Develop awareness materials on the goals of the Strategic Sustainability Performance Plan.
• Train Sustainability Mission Management tool (SM2) users.
• Establish presence on DOT Intranet.

Medium-Term (3-5 years)

• Create sustainability modules in TMS training website.
• Identify no cost on-line training providers (e.g., Greenhouse Gas Institute, etc.).
• Determine appropriate means to track and report training progress on the goals of the Strategic Sustainability Performance Plan.

Long-Term (6-10 years)

• Review and assess training effectiveness and revise or update existing policies, awareness materials and training modules.

Coordination and dissemination of the Plan to the field:
• DOT will post copies of the Plan on the Department's intranet website.
• Awareness materials will be developed and distributed to DOT OAs and to field locations.

c. Leadership & Accountability:

The leadership and accountability roles throughout the Department are defined below:

• Kathryn Thomson is the designated Senior Sustainability Officer (SSO) for the Department of Transportation. She has overall responsibility for the requirements of EO 13514 and reports directly to the Secretary and Deputy Secretary.

• Each OA also has designated a SSO to oversee its compliance with energy and sustainability requirements. To ensure senior leadership, the OAs, with only one exception, have designated their Deputy Administrators to serve as their SSOs.
• DOT has established a Higher Tier EMS Senior Advisory Board to guide the implementation of the Higher-tier EMS at HQ. Collaboration among these key leaders will ensure the employee "buy-in" necessary for the successful implementation of the EMS.
• The Higher Tier EMS Senior Advisory Board establishes working groups made up of representatives from a range of functional areas, including information technology (IT), finance, legal counsel, procurement, human capital, and communications to implement the Higher-tier EMS and the goals of the Strategic Sustainability Performance Plan.
• The Assistant Secretary for Administration oversees policy development and implementation in support of the SSPP. The Assistant Secretary has a designated Department role to lead the implementation of several of the goals of the SSPP.

• The Manager, Administrative Policy is responsible for:
o Drafting and updating the SSPP to include content from DOT OAs;
o Overseeing the development of and reporting progress on the higher-tier EMS and SSPP to the SSO and the Senior Advisory Board;
o Monitoring and reporting on DOT compliance with EO 13514 and other applicable energy and sustainability requirements; and
o Updating internal DOT policy and implement innovative practices to address the goals within the SSPP.

• The Real Property Council, which is chaired by the Senior Real Property Officer in OST and comprised of the Senior Real Property Officers in each OA, with FAA serving as the Executive Agent for DOT Property Management is responsible for:
o Identifying alternatives to renovation that reduce existing assets' deferred maintenance costs;
o Ensuring all new construction, major renovation, or repair and alteration complies with the Sustainable Building Guiding Principles; and
o Implementing policy and guidance to ensure 15 percent of existing facilities and building leases (above 5,000 GSF) meet the Guiding Principles by FY 2015;
o Making annual progress towards 100 percent conformance with the Guiding Principles;
o Achieving zero-net-energy in buildings entering the planning process after 2020; and
o Developing a single-source facility data system.

• The Senior Procurement Official is responsible for:
o Issuing procurement policies, contract and lease clauses and grant provisions in consonance with green procurement requirements;
o Conducting self assessments to continually improve green procurement process and better describe environmental and other green requirements in statements of work and contracts;
o Monitoring DOT contracts for requirements of certificate programs such as FAR 52.223-4, Recovered Material Certification;
o Ensuring that FAR 52.204-4, Printed or Copied Double-Sided on Recycled Paper requirement is in all DOT contracts; and
o Utilizing statements of work or specifications to eliminate virgin material requirements, promote the reuse of products, require the use of alternative fuels and alternative fueled vehicles, products containing recovered materials (e.g. EPA-designated products), products that are Energy Star® and FEMP designated or energy-efficient, water conserving WaterSense® labeled products, bio-based products, Environmentally Preferable Products, EPEAT registered products, and non-ozone depleting products.

d. Agency Policy and Planning Integration:

DOT and its OAs will issue organizational policy and guidance that establishes and promotes sustainable practices and creates a culture for achieving our sustainability goals. Tasks to be addressed include:

Short-Term
• Draft DOT policy establishing SSPP goals as requirements for all OAs.
• Require OAs to develop individual SSPPs and integrate goals into higher-tier EMS framework.
• Develop bi-annual internal scorecard report for OAs.
• Policy requiring all new construction meets the Five Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings (aiming for Leadership in Energy and Environmental Design (LEED) Silver rating or higher (or a standard equivalent), to the extent possible or where appropriate.
• Finalize and distribute updated Green Procurement and High Performance Sustainable Buildings Implementation Plans to stakeholders.
• Perform gap analysis or assessment to ensure that sustainability goals are adequately incorporated into DOT environmental, acquisition, energy, and real property policy, guidance, procedures and update the documents to reflect the EO requirements.
• Identify opportunities to incorporate sustainability into day-to-day operations and modify operation to address EO requirements.

Medium-Term
• Begin closing identified gaps.
• Execute initiatives to incorporate sustainability into day-to-day operations.
• Implement major SSPP program initiatives.

Long-Term
• All DOT National Environmental Policy Act (NEPA) documents will analyze the Climate Change impacts of the proposed action and its alternatives (in accordance with new guidance from CEQ).

e. Agency Budget and Policy Integration:

The Chief Budget Officer will issue guidance on developing and justifying budget initiatives to support EO 13514 and Strategic Sustainability Plan implementation. The guidance will emphasize life-cycle cost analysis (such as the Sustainable Return on Investment (SROI) method) over initial cost in evaluating submissions.

DOT already has implemented some of the initiatives described in this Plan and many new initiatives have been identified. Since Federal budgets are developed two years in advance these new initiatives are not accounted for in the FY 2010 and FY 2011 budget submission. DOT is currently assessing our planned and expended budget for 2010 and 2011. In the short-term, DOT will need to implement organizational changes to realign existing functions and staff assignments to help compensate until additional resources (both FTE and funding) are obtained through the budget process. Budget estimates are not yet included in this plan as the Department is still determining resource requirements for the new sustainability efforts. The FY 2012 budget will be the first year to incorporate the requirements of the new EO 13514. DOT is currently identifying comprehensive resource needs for 2012. DOT will include new sustainability programs in the Department's FY 2012 budget request to OMB. DOT will incorporate these 2012 budget numbers into the SSPP when they are available.

The Department is in the process of issuing several policies to all of its OAs to achieve the goals outlined in EO 13514.

f. Methods for Evaluation of Progress:

Short-Term
• The DOT HQ higher-tier EMS is designed to gather data and report progress on sustainability metrics, including energy and fuel consumption, waste production, and water usage. The system will assist DOT in effectively reducing

consumption in compliance with the EO. The higher-tier EMS will serve as the framework to execute a department-wide sustainability program and tracking metrics. As an overarching system, the EMS will aggregate and analyze data from many individual program areas such as energy, water, waste management, recycling, and environmentally-preferable purchasing. It also will function as a department-wide records system to monitor measure and report compliance.
• The EMS will be used to compile data from individual program areas. Department-wide records will be used to monitor, measure, and report compliance with requirements.

Medium-Term
• Dedicate resources to track the status of all facility projects, and ensure that Energy Independence and Security Act (EISA) and other sustainable building requirements are met.
• Establish a comprehensive policy for centralized energy and water data collection through an information management system across DOT to understand and track energy performance and to align operations.
• Officially institute the Sustainability Mission Management tool (SM2) and internal bi-annual scorecard report (piloted in 2009-2010) to measure progress and monitor the effectiveness and efficiency of initiatives designed to achieve the goals of the SSPP.

Long-Term
• The Chief Information Officer (CIO) and the Chief Procurement Officer (CPO) will update and track progress toward the department-wide electronic stewardship plan for continual improvement in energy efficiency and economic performance;
• The Real Property Council will set mandatory targets for energy savings from retrofits and work with performance contractors and Energy Service Companies (ESCOs) to establish DOT retrofit performance rates to determine final department-wide percentage reduction.

Table 1 below indicates whether the EO goal is relevant to and has been integrated into listed reports or plans listed. A “Yes” response indicates that the EO goal has already been integrated, a “no” indicates that the EO Goal has not yet been integrated, and "n/a" indicates that the EO Goals are not applicable. DOT is currently working to integrate the goals of the EO into its other reporting documents and DOT’s EMS. However, this is expected to take time due to the significant level of effort necessary to educate and train stakeholders and identify opportunities to integrate SSPP goals with other organizational reporting goals. Nevertheless, DOT anticipates the integration of SSPP goals and principles into other DOT reports to occur on a regular basis.

Originating Report / Plan	Scope 1 & 2 GHG Reduction	Scope 3 GHG Reduction	Develop and Maintain Agency Comprehensive GHG Inventory	High-Performance Sustainable Design/Green Buildings	Regional and Local Planning	Water Use Efficiency and Management	Pollution Prevention and Waste Elimination	Sustainable Acquisition	Electronic Stewardship and Data Centers	Agency Specific Innovation
GPRA Strategic Plan	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Agency Capital Plan	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A-11 300s	Yes	No	No	Yes	No	N/A	N/A	N/A	Yes	N/A
Annual GHG Inventory and Energy Data Report	Yes	Yes	Yes	Yes	N/A	Yes	Yes	N/A	N/A	N/A

Originating Report / Plan	Scope 1 & 2 GHG Reduction	Scope 3 GHG Reduction	Develop and Maintain Agency Comprehensive GHG Inventory	High-Performance Sustainable Design/Green Buildings	Regional and Local Planning	Water Use Efficiency and Management	Pollution Prevention and Waste Elimination	Sustainable Acquisition	Electronic Stewardship and Data Centers	Agency Specific Innovation
EISA Section 432 Facility Evaluations/Project Reporting/Benchmarking	Yes	Yes	N/A	Yes	N/A	Yes	N/A	N/A	Yes	N/A
Budget	No	No	N/A	No	N/A	No	No	No	No	No
Asset Management Plan / 3 Year Timeline	N/A	Yes	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Circular A-11 Exhibit 53s	N/A	N/A	N/A	No	N/A	No	No	Yes	N/A	N/A
OMB Scorecards	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
DOE's Annual Federal Fleet Report to Congress and the President	Yes	N/A	Yes	N/A	N/A	N/A	Yes	Yes	N/A	Yes
Data Center Consolidation Plan	Yes	Yes	N/A	Yes	Yes	N/A	Yes	Yes	Yes	No
Environmental Management System	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Instructions for Implementing Climate Change Adaptation Planning	Yes	Yes	N/A	Yes	Yes	Yes	N/A	Yes	Yes	Yes
Other (reports, policies, plans, etc.)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

V. Evaluating Return on Investment

There are several factors that contribute to DOT's decision-making and priority-setting related to sustainability initiatives. These include:

a. Economic Lifecycle Cost / Return on Investment:

When evaluating sustainability initiatives, especially larger projects, DOT will conduct a lifecycle cost analysis and seek to focus funding on projects with a high return on investment (ROI). Using the Sustainable Return on Investment (SROI) method that recognizes the full service life of buildings and building systems; acquisition policies; energy star electronic equipment; and fuel efficient vehicles, SROI includes both the conventional financial costs/benefits and the internal/external environmental and social costs/benefits by assessing the long-term benefits or operational improvements. Full lifecycle cost analysis will help to ensure that Federal dollars are spent wisely and energy savings are maximized.

As a general guideline, DOT will pursue implementation of projects with a 25 year or shorter simple payback. However, as stated above, the SROI relative to the full life cycle of the project or system will be taken into account. Thus, in

some cases, the payback period for a project may be longer than 25 years, but if it is shorter than the expected asset lifespan; such projects will also be considered.

b. Social Costs & Benefits:

DOT will seek to address geographically localized challenges to pursue social benefits. For example, water conservation projects within drought-prone regions could be more highly prioritized than in water abundant regions. These types of considerations will also be incorporated into the Department's adaptation planning efforts.

Currently, DOT employs a review process pursuant to the National Environmental Policy Act (NEPA) for all proposed construction projects and major actions. The NEPA process is currently used to evaluate the social benefits and costs of new construction projects. Environmental justice issues are an integral part of these analyses. Other social costs and benefits are also considered, such as cultural, historical and socioeconomic impacts (e.g., local employment). While these analyses are typically more qualitative than quantitative, DOT will strive to enhance the NEPA review process and ensure these aspects of the NEPA review are robust.

Livable communities—DOT led an interagency effort with HUD, EPA, and GSA, in coordination with the Departments of Homeland Security, and Defense, to develop recommendations addressing sustainable location strategies for siting Federal Facilities. This fulfills the directive of Section 10 in EO 13514 to provide the Council on Environmental Quality Chair with recommendations regarding sustainable location strategies for Federal buildings in agency Sustainability Plans.

c. Environmental Costs & Benefits:

DOT will continue to integrate environmental, energy and sustainability considerations into the Department's planning and budgeting processes. As stated above, DOT employs a NEPA review process for all proposed construction projects and major actions to consider potential environmental impacts. DOT will continue to strive to ensure robust NEPA reviews and to minimize negative environmental impacts and costs.

DOT must track environmental cost and benefits for non-environmental projects. Environmental costs could be identified in terms of dollars spent on the environmental portion of projects, disposal costs, fines and penalties for non-compliance, and environmental response to incidents. Currently, only qualitative information about the benefits of environmental programs is being considered; however, DOT is working to develop methods to monetize these benefits through the use of the SROI method. The results of this effort will become available over the next few years.

DOT will continue to strive to identify the cost of sustainability initiatives and measure quantitative benefits in terms of emission reductions, gallons of water saved, reduction in vehicle miles traveled, and other social factors. Not all of the benefits can be translated into dollar figures.

d. Mission-Specific Costs & Benefits:

Mission-specific costs are usually measured against providing the required level of mission accomplishment. Benefits could be addressed based on lives saved or buildings protected, but this would be challenging to quantify. Benefits are typically qualitatively represented, but not fully quantified. Other factors that may be more fully considered are if the sustainability programs allow for missions to be achieved with enhanced efficiency, reliability and cost-effectiveness.

e. Operations & Maintenance and Deferred Investments:

DOT is considering many alternative processes that can help identify and prioritize operations and maintenance issues and also include sustainability as a factor. In addition, SROI is a significant factor in the prioritization.

f. Climate Change Risk and Vulnerability:

Climate change has the potential to impact DOT's facilities, operations, and mission, e.g., the increasing intensity and number of extreme weather events threaten the nation's transportation infrastructure. DOT must implement its own cost-effective strategies to address these concerns by planning adaptation strategies. This includes but is not limited to: incorporating adaptation measures to potential changes in the natural environment into mission plans. Such strategies can save taxpayer dollars and safeguard public health and the environment. DOT has taken the first steps in adaptation planning by issuing a Departmental Adaptation Policy Statement which can be found in Appendix 2.

Costs and benefits resulting from climate change impacts must be addressed or quantified in DOT evaluation processes. While it is challenging to predict, quantify, and weigh the costs and benefits resulting from climate change impacts, DOT will develop a proactive approach in evaluating climate change risks in the planning, design, construction, renovation of its facilities and infrastructure. Additionally, DOT will consider the following strategies for addressing and prioritizing considerations involving climate change risks and vulnerabilities:
• Develop a climate change adaptation plan for the Department; and
• As part of other facility and infrastructure security, and/or condition assessments, include evaluations related to climate change vulnerabilities, where appropriate;
• Address sea level rise and other weather/climate changes in new and existing facility and infrastructure design and renovations, where appropriate. Possible strategies include prioritize cooling performance design and operation when modeling energy usage for new construction using expected climate temperature shifts, elevating existing facilities or building with larger setbacks; and
• Begin to address the varying impacts of climate change across regions and different types of operational infrastructure.

In addition, DOT is working on a Secretarial policy memo on climate change adaptation, which is part of a larger process to get each of the OAs to begin planning for climate change. As part of this process, DOT has appointed our SSO to be the Adaptation Lead and asked each OA to also appoint a lead on adaptation. This senior level group will periodically meet to guide the Department's adaptation efforts. In addition to the policy memo, DOT will submit responses to CEQ's guiding questions designed to facilitate the Department's thinking about our vulnerability to climate change. The guiding questions will form the basis for two September CEQ milestones, which include a preliminary high level analysis of DOT's vulnerabilities (the final analysis is due in February 2012) and 3 to 5 priority actions to implement in FY 2012.

VI. Transparency

The SSO, working through DOT's Senior Advisory Board, will establish the transparency methods that DOT will pursue which may include those goals below and others as yet unidentified.

<u>Short-Term</u>
• Assistant Secretary for Administration will identify and recommend to the SSO which information in the SSPP should be made publicly available to ensure the Department is as open and as transparent as possible.
• SSO will review Assistant Secretary for Administration's recommendations and send DOT's response to OMB.
• Assistant Secretary for Administration will determine how to address pending OMB guidance for transparency.

<u>Medium-Term</u>
• Assistant Secretary for Administration will identify how information will be shared both internally and externally.
• Assistant Secretary for Administration will identify a process for sharing internally and externally along with assigning responsibilities.
• Develop and implement pilots for internal information sharing such as SharePoint and intranet.

• Develop and implement pilots for information sharing to the public and DOT's stakeholders.

Long-Term
• Internal and external information routinely shared.

Internal Communications:
The SSPP will be posted on the DOT intranet and SharePoint along with periodic progress reports. Informational and awareness materials will be developed for the DOT intranet site and broadcast messages and other relevant DOT communications mechanisms. Progress reports will become a standing item for the EMS Senior Advisory Board.

External Communications:
A DOT Sustainability page will be developed for the DOT internet homepage to publicize the Department's efforts. Several DOT OAs will have the opportunity to capitalize on their daily interactions with the public and will be encouraged to develop strategies to benefit DOT's operations by publicizing sustainability efforts, when possible.
In addition, any construction projects involving a NEPA review at the level of an Environmental Assessment (EA) or Environmental Impact Statement (EIS) will require DOT to provide opportunities for public input. DOT will continue to perform public notifications and outreach regarding such projects, not only to comply with NEPA requirements, but to promote transparency.

Section 2: Performance Review & Annual Update

I. Summary of Accomplishments

The Department of Transportation (DOT) is committed to meeting the goals of EO 13514. Over the past year DOT has made much progress including:

Goal 1: Scope 1 and 2 GHG
• Developing policy and guidance to reduce the energy intensity of buildings and maximize the use of renewable (e.g., solar, wind) and alternative energy (e.g., combined heat & power), especially through on-site generation and partnering with other federal agencies.
• Using Energy Star Portfolio Manager to identify the best locations for renewable purchasing and/or onsite renewable generation.
• Using the FEMP Alternative Fuel Station Located to determine the appropriate acquisition and distribution of alternative fuel vehicles.
• Developed training and awareness to ensure that appropriate agency programs and technical personnel are knowledgeable about the energy and sustainable buildings requirements of EISA 2007 Section 432 and EO 13514.
• Communicate DOT's progress in meeting the energy and water reduction and renewable energy goals to senior management.
• Educate employees on the importance of using alternative fuels to help meet the requirements and increase DOT's alternative fuel usage overall.
• Reduce facility energy consumption through the use of energy conservation measures (ECMs), energy audits, ESPCs and UESCs.
• Perform comprehensive energy and water evaluations in 75 percent of the Department's total building inventory (based on annual energy consumption) every four years.
• Directed OAs to right-size their fleets using the criteria established by the DOT Fleet Manager.
• Ensure the optimal type and size of vehicles are acquired according to the mission it supports.

• Continue efforts to reduce petroleum consumption through increased alternative fuel usage beyond the minimum requirement, acquisition of AFVs, and acquisition of hybrid and fuel efficient vehicles.
• Sharing Annual Energy Report with other stakeholders to ensure transparency and create awareness.
• Deployed a new information system that monitors petroleum consumption and alternative fuel usage in each OA. This has allowed early intervention measures to ensure DOT meets the 12 percent reduction goal. Data is used for the Deputy Secretary's Sustainability Scorecard review with the OA Administrators.
• Converted the majority of the Headquarters fleet to alternative fuel vehicles and hybrids.
• Developed a decision tool for use at DOT fueling centers to identify the most practical alternative fuel to be made available at the fueling center.
• Completed comprehensive department-wide program to ensure compliance with new low GHG emitting vehicle regulations, which resulted in the replacement of approximately 1000 DOT vehicles.

GOAL 2: Scope 3 GHG Reductions and GHG Inventory
• DOT instituted a Sustainability Scorecard into its quarterly "regulatory review" process—individual meetings held between the Deputy Secretary and the Administrator of each of DOT's OAs. Targets for reduced employee commuting are on this scorecard and each Administrator is now regularly accountable for progress and success.
• Issued an administrative order to all employees asking for participation in a transportation survey developed by the Volpe Center. The survey data was used to establish an initial baseline of employees' commuting characteristics, including mode of transportation used, distance traveled, and frequency of commute.
• Completing the Department's first comprehensive GHG inventory and being on track to meet reduction targets.
• Issuing an administrative order codifying a comprehensive recycling policy and a companion quick reference guide.
• Finalizing and disseminating a printing and copying administrative order that requires all copiers and printers to be set to double-sided as a default and communicates other paper-saving guidelines.
• Beginning to leverage the 2010 Telework Enhancement Act to promote increased telework.
• Piloting hotelling practices in a few OAs.
• Beginning to monitor progress and establish metrics for employee commuting in the Department's EMS and internal scorecard that evaluates EO and other Sustainability requirements and objectives across all 12 OAs and OST, twice annually.
• Establishing a DOT-wide green team that includes all the OAs and is focused on creating a culture of sustainability across the Department and serves as a community of interest.
• Increasing the capacity to use video teleconferencing and web-meeting technologies within several OAs.
• Initiating two Department-wide "IdeaHub" Challenges asking employees how they can reduce travel and commuting emissions and be more green at work with great response rates.

GOAL 3: High Performance Sustainable Design/Green Buildings & Regional and Local Planning
• DOT instituted a Sustainability Scorecard into its quarterly "regulatory review" process—individual meetings held between the Deputy Secretary and the Administrator of each of DOT's OAs. Sustainable buildings targets are on this scorecard and each Administrator is now regularly accountable for progress and success.
• Identified three more buildings that meet the HPSB Guidelines in the past year.
• Created a process for identifying and prioritizing the best value target buildings for meeting the HPSB, renewable energy and GHG requirements.
• Based on the outcome of the above process, established a portfolio of the targeted buildings for inclusion in the HPSB program
• Implementing a number of sustainable building initiatives, which include installing several sustainable features (e.g., green roofs, solar array systems, energy efficient fluorescent and light emitting diode (LED) lighting, new boilers and HVAC systems, geothermal systems, demand management systems, and state of the art metering).
• Added the Sustainability data element to the Real Estate Management System (REMS) Database.
• Issued policy guidance from the Deputy Secretary that required each OA to develop an action plan to meet their HPSB targets, and update this plan periodically.

• FAA's initiation of the development of Green Real Property Leasing AMS Guidance and clauses, which would include a component to incorporate environmentally sustainable principles in the siting, design, and construction of FAA facilities.
• Starting programs within several OAs to incorporate the HPSB Guiding Principles in all new buildings and major renovation projects.
• Hosting a number of trainings including a tailored training on using Energy Star Portfolio Manager. As a result, several OAs have begun entering data into this system.
• MARAD undertaking a $4.8 million dollar ESPC project and two other OAs are starting an ESPC process.
• Several OAs assessing public transportation in future site locations of administrative offices.
• MARAD now working with local and regional planning officials to improve efficiency and reduce truck traffic by instituting marine highway, infrastructure, and port development projects nationwide.

Goal 4: Water Use Efficiency and Management
• DOT instituted a Sustainability Scorecard into its quarterly 'regulatory review' process—individual meetings held between the Deputy Secretary and the Administrator of each of DOT's OAs. Water reduction targets are on this scorecard and each Administrator is now regularly accountable for progress and success.
• Begin entering water consumption data into Energy Star® Portfolio Manager.
• Identify data limitations and methods to improve water consumption data.
• Complete comprehensive water evaluations at DOT facilities which constitute 75 percent of total energy consumption as per EISA 2007 Section 432.
• Develop a consistent set of metrics to measure water consumption across the organization.
• Communicate goals to senior management on water use efficiency.

Goal 5: Pollution Prevention and Waste Reduction:
• Published DOT Recycling Order for all OAs in DOT HQ.
• FAA two centers have continued to work closely in increasing their recycling at their recycling center.
• RITA achieved better than 64 percent waste diversion rate at the Volpe Center which won local and state-wide awards for recycling.

Goal 6: Sustainable Acquisition
• DOT instituted a Sustainability Scorecard into its quarterly 'regulatory review' process—individual meetings held between the Deputy Secretary and the Administrator of each of DOT's OAs. The 95 percent green procurement target is on this scorecard and each Administrator is now regularly accountable for progress and success.
• Continued to implement the GPP policy to ensure EPEAT-registered electronic product procurement preference is almost 100 percent.
• Conducted a DOT wide training on Green Procurement with speakers from Department of Veterans Affairs, Department of Agriculture and MARAD with over 200 attendees (live and webinar).
• DOT implemented a Green Procurement Compliance System to ensure the GPP is being implemented.
• DOT COTR's are required to complete a Green Procurement training course to obtain FAC-COTR Certification.
• FAA has updated their GPP and distributed it to all the Contracting Officers.
• All FHWA's purchase card holders and contracting officers take training that includes Going Green guidance. This policy has been in place for several years and now encompasses areas such as construction contracts.

Goal 7: Electronic Stewardship and Data Centers
• DOT instituted a Sustainability Scorecard into its quarterly 'regulatory review' process—individual meetings held between the Deputy Secretary and the Administrator of each of DOT's OAs. Power Management targets are on the scorecard for OST and FAA, the managers of DOT's two computer networks system. The FAA Administrator and the OST CIO is now regularly accountable for progress and success.
• Ensured new IT related contracts contain an exchange clause referencing FMR 102-39 to avoid disposal costs for the Agency and to ensure recycling.

• Continued to implement the GPP to ensure EPEAT-registered electronic product procurement is the preference 100 percent.
• Currently DOT has consolidated 1 Tier I-IV and 2 Tier V data centers and continues to strive toward meeting targets defined in the attached DOT FDCCI Plan.
• DOT OAs began implementing duplex printing on its multi-function copier/printers and other energy-efficient or environmentally preferable features on its office equipment starting in January 2010, in accordance with DOT Printing Order 1360.5C.
• FHWA has purchased software products (e.g., productivity management software) to support telework and reduce business travel with webinar and video conferencing technology.
• RITA created and shared Federal Commuter Choice Survey for inventorying commuter greenhouse gases – survey tool was distributed to all Federal agencies as the best method available for accounting for Federal employee trips to and from work.

GOAL 8: Agency Innovation & Government-Wide Support

DOT is taking a leadership role in promoting more transportation choices, promoting affordable housing and valuing communities through its interagency collaboration and leadership. By chairing the interagency team and working with the General Services Administration, EPA, Department of Housing and Urban Development and in coordination with the Department of Homeland Security and DOD, DOT developed the Guidelines for Sustainable Locations for Federal Facilities required by the EO. The impact of this work is significant as the Guidelines are to be used by all Federal agencies in determining future site locations.

Additionally, the U.S. DOT Volpe Center has contributed to the greater Federal GHG inventory effort by creating and providing the advanced methodology for scope 3 Federal commuter emissions through designing the "Commuter Choice Survey." The White House Council on Environmental Quality (CEQ) recognized the Volpe survey as the "best available method" for estimating GHG associated with Federal commutes and recommended its use to all Federal agencies for calculating their scope 3 emissions for the GHG inventory. DOT used this Volpe survey tool to survey all employees across the Department to measure their FY10 commuting emissions and achieved a reasonable response rate.

Finally, DOT will participate in regional and local transportation planning by integrating comprehensive stakeholder participation into current operating policy. DOT will continue to provide comprehensive information on Greenhouse Gases, Climate Change, Adaptation and Transportation through its Transportation and Climate Change Clearinghouse (TCCC). Through the TCCC website, DOT provides regional and local transportation planning leaders around the world access to state-of-the-art research and technical guidance surrounding this global issue. Internally, DOT will work to establish a "green travel"' policy which outlines carbon reduction strategies for employees on official travel, including recommendations for fuel-efficient vehicles and "green" lodging services. These strategies will be refined and enhanced in future annual updates of this Plan.

II. Goal Performance Review

GOAL 1: Scope 1 & 2 Greenhouse Gas Reduction

As part of its commitment to meeting EO 13514, DOT has made much progress in the last year on Goal #1 including:

• Developing policy and guidance to reduce the energy intensity of buildings and maximize the use of renewable (e.g., solar, wind) and alternative energy (e.g., combined heat & power), especially through on-site generation and partnering with other federal agencies.
• Using Energy Star® Portfolio Manager to identify the best locations for renewable purchasing and/or onsite renewable generation.

• Using the FEMP Alternative Fuel Station Located to determine the appropriate acquisition and distribution of alternative fuel vehicles.
• Developed training and awareness to ensure that appropriate agency programs and technical personnel are knowledgeable about the energy and sustainable buildings requirements of EISA 2007 Section 432 and EO 13514.
• Communicate DOTs progress in meeting the energy and water reduction and renewable energy goals to senior management.
• Educate employees on the importance of using alternative fuels to help meet the requirements and increase DOT's alternative fuel usage overall.
• Reduce facility energy consumption through the use of energy conservation measures (ECMs), energy audits, ESPCs and UESCs.
• Perform comprehensive energy and water evaluations in 75 percent of the Department's total building inventory (based on annual energy consumption) every four years.
• Directed OAs to right-size their fleets using the criteria established by the DOT Fleet Manager.
• Ensure the optimal type and size of vehicles are acquired according to the mission it supports.
• Continue efforts to reduce petroleum consumption through increased alternative fuel usage beyond the minimum requirement, acquisition of AFVs, and acquisition of hybrid and fuel efficient vehicles.
• Sharing Annual Energy Report with other stakeholders to ensure transparency and create awareness.
• Deployed a new information system that monitors petroleum consumption and alternative fuel usage in each OA. This has allowed early intervention measures to ensure DOT meets the 12 percent reduction goal. Data is used for the Deputy Secretary's Sustainability Scorecard review with the OA Administrators.
• Converted the majority of the Headquarters fleet to alternative fuel vehicles and hybrids.
• Developed a decision tool for use at DOT fueling centers to identify the most practical alternative fuel to be made available at the fueling center.
• Completed comprehensive department-wide program to ensure compliance with new low greenhouse gas emitting vehicle regulations, which resulted in the replacement of approximately 1000 DOT vehicles.

The Department is committed to reduce emissions beyond its own organizational boundaries and to influence employee and supplier behavior to reduce greenhouse gas emissions and protect the climate. As required by EO 13514, DOT submitted its scope 1 and 2 greenhouse gas percentage reduction target for Fiscal Year (FY) 2020 relative to a FY 2008 baseline. The Department used the Development of Agency Reduction Targets (DART) tool created by the Office of the Federal Environmental Executive (OFEE) to calculate its reduction target. DOT is committed to achieving a 12.3 percent reduction in scope 1 and 2 GHG emissions by FY 2020.

DOT will implement aggressive energy and fuel savings activities to reach the GHG reduction target identified above. GHG reduction will be achieved through a High Performance Sustainable Buildings (HPSB) program (see Goal 4 in this plan) along with additional initiatives specifically targeting alternative fuels and high efficiency vehicles. The GHG reduction goal requires establishing new initiatives, tools, and policies, along with developing awareness and training. The following is an overview of the goals and short, medium, and long-term initiatives that will achieve the EO goals. The GHG reduction goal will be integrated with other EO goals (e.g., Sustainable Buildings requirements) to achieve greater over all implementation efficiency. These strategies will be further refined in future annual updates of this Plan.

a. Goal description –

To fulfill the requirements of EOs 13423 and 13514, DOT will plan and take action working across the OAs to:
• Develop and implement innovative policies and practices to reduce overall agency scope 1 and 2 GHG emissions by 12.3 percent by 2020 relative to an FY 2008 baseline.

BUILDINGS
• Reduce facility energy intensity by 30 percent by 2015 (Baseline: FY 2003).

• Purchase Green Power or Renewable Energy Certificates (RECs)--the equivalent of 10 percent of the Department's 2015 electricity consumption which is approximately 110,000 MWH of renewable electricity annually (DOT currently purchases 32,000 MWH of renewable electricity).
• Install onsite renewable energy power project(s), where appropriate, with the goal of doubling the Department's current on-site renewable energy production to 820 MWH.
• Reduce per capita energy consumption through space management policies. This is being address through DOT orders to comply with EO 13327.

FLEET
• Reduce petroleum use in fleet vehicles by 2 percent annually through FY2020 (Baseline FY2005).
• Increase use of alternative fuels in Fleet AFVs.
• Optimize use of vehicles and right-size fleet.
• Increase use of low GHG- emitting and high fuel economy vehicles.
• Replace conventional senior executive fleet with low-GHG emitting, highly-efficient vehicles.
• Streamline existing shuttle bus routes by consolidating ridership with other agencies. Identify specific challenges related to consolidation of and/or sharing of transportation services with other agencies.

b. Department lead for goal –

The Assistant Secretary for Administration is the designated Agency lead for scope 1 &2 GHG emissions, and has responsibility for target development implementation, monitoring, evaluation and oversight.

c. Implementation methods –

DOT plans to achieve the established scope 1 and 2 reduction targets by increasing building energy efficiency and renewable energy use through Green Power Purchases, on-site generation and/or Renewable Energy Certificates and aggressive use of telework program to reduce commuter emissions. DOT will also revamp its space design and allocation standards to enhance reduction of GHG emissions. DOT plans to reduce fossil fuel use in non-tactical vehicle fleets, by acquiring low GHG emitting vehicles such as hybrids and AFVs; optimizing the number of vehicles in the agency's fleet, using alternative fuel in AFVs and FFVs; developing alternative fuel infrastructure; direct spending on training; and procurement of environmentally preferable motor vehicle products

BUILDINGS:
• Reduce non-excluded* facility energy intensity by 30 percent by 2015 (Baseline: FY 2003).
• Reduce electricity by 10 percent in non-excluded* facilities from 2015 to 2020.
• Reduce natural gas 10 percent in non-excluded* facilities from 2015 to 2020.
• Purchase 110,000 MWH of renewable electricity annually (DOT currently purchases 32,000 MWH of renewable electricity).
• Install onsite renewable energy power project(s), where appropriate, with the goal of doubling the Department's current on-site renewable power production to 820 MWH.
• Purchase Renewable Energy Certificates (RECs) to the equivalent of 10 percent of the Department's 2015 electricity consumption from 2015 to 2020.
• Perform comprehensive energy and water evaluations in 75 percent of the Department's total building inventory (based on annual energy consumption) every four years.
• Benchmark all metered buildings using the U.S. Environmental Protection Agency's Energy Star® Portfolio Manager. A metered building is a building with one or more meters (advanced or standard) installed to measure energy consumed within that building. Metered energy includes electricity, natural gas, and steam. Other utilities may be metered as an energy or water management best practice.
• Establish space allocation standards that consider the cost savings of telework and provide a standardized means to capture the savings from telework on new space requests.

Note: *Non-excluded facilities are the facilities covered under EO 13423 and which are required to meet the 2015 target of 30 percent reduction in energy consumption.

FLEET:
• Reduce petroleum use in fleet vehicles by 2 percent annually through FY2020 (Baseline FY2005).
• Reduce gasoline usage by 15 percent from 2015 to 2020.
• Reduce diesel fuel usage by 10 percent from 2015 to 2020.
• Increase use of alternative fuels in Fleet AFV's by 10 percent annually through FY2020 (baseline FY2005).
• Use of 15,000 gasoline gallon equivalents (GGE) from biodiesel from 2015 to 2020.
• Use 5,000 GGE of electric power for electric vehicles from 2015 to 2020.
• Increase use of alternative fuels in fleet AFVs.
• Optimize use of vehicles and right-size fleet.
• Increase use of low emission and high fuel economy vehicles.
• Develop alternative fuel infrastructure where practicable.
• Target and track spending on training; and procurement of environmentally preferable motor vehicle products.

DOT has developed scope 1 and 2 emissions reduction strategies that include short-, medium-, and long-term initiatives to accomplish these goals.

1.1. Short-Term Initiatives (1-2 years)

1.1.1. Policy and Guidance
• Develop policy and guidance to reduce the energy intensity of buildings and maximize the use of renewable (e.g., solar, wind) and alternative energy (e.g., combined heat & power), especially through on-site generation and partnering with other federal agencies.
• Develop policy for fuel efficient and alternative fuel vehicles and issue administrative order requiring use of low emission and high fuel economy vehicles, when practical.

1.1.2. Planning and Design
• Use Energy Star® Portfolio Manager and US EPA eGRID to identify the best locations for renewable purchasing and/or onsite renewable generation, where appropriate.
• Use Energy Star® Portfolio Manager to conduct baseline energy audits at DOT sites to determine existing and future energy sources and energy consumption, where appropriate.
• Use the FEMP Alternative Fuel Station Location website to determine the appropriate acquisition and distribution of alternative fuel vehicles.

1.1.3. Training and Awareness
• Develop training and awareness to ensure that appropriate agency programs and technical personnel are knowledgeable about the energy and sustainable buildings requirements of EISA 2007, EO 13514 and the Sustainable Building Implementation Plan (SBIP).
• Communicate DOTs progress in meeting the energy and water reduction and renewable energy goals to senior management.
• Require employees to use alternative fuels (where appropriate) to help meet the requirements and increase DOT's alternative fuel usage overall.

1.1.4 Buildings
• Reduce facility energy consumption through the use of energy conservation measures (ECMs), energy audits, ESPCs and UESCs.
• Pursue reduction of agency space by implementing aggressive telework policy and guidance together with space allocation policy allows the agency to realize real space reduction.

• Perform comprehensive energy and water evaluations in 75 percent of the Department's total building inventory (based on annual energy consumption) every four years.

1.1.5. Fleet
• Direct OAs to right-size their fleets using the criteria established by the DOT Fleet Manager.
• Reassess vehicle needs for mission support to ensure the optimal type and size of vehicles are acquired according to the mission it supports.
• Continue efforts to reduce petroleum consumption through increased alternative fuel usage beyond the minimum requirement, acquisition of AFVs, and acquisition of hybrid and fuel efficient vehicles.
• Continue to swap out E85 vehicles where alternative fuel infrastructure is non-existent with hybrids and electric cars.
• Maximize the use of public transportation, enhance the Department's shuttle program, and requisition of alternative fuel vehicles where alternative fuel stations are located.
• Schedule business trips to avoid roadway congestion associated with peak travel times.

1.1.6. Tracking and Reporting
• Track energy reduction performance and renewable energy use in Energy Star® Portfolio Manager.
• Implement a real time, interactive data system to monitor DOT's sub-organizations' fuel usage of alternative fuel vehicles; include an early intervention process that will notify DOT Fleet Manager of low alternative fuel usage in DOT's organizations. This system will facilitate targeting the best opportunities for improvement and early intervention to ensure the fleet goals continue to stay on track.
• Identify the percentage and numbers of alternate fuel acquisitions in non-alternative fuel locations to assist DOT in reducing alternative fuel vehicle waivers from 10 percent to 5 percent and increasing new acquisitions of alternative fuel vehicles from 10 percent to 80 percent.

1.2. Medium-Term Initiatives (3-5 years)

1.2.1. Policy and Guidance
• Update Department's energy, renewable energy and water policy order.
• Develop processes and guidance to eliminate the use of ozone depleting compounds in existing buildings. Instead, where available, utilize alternative, environmentally preferable products, consistent with either the Montreal Protocol or Title VI of the Clean Air Act Amendments of 1990 or equivalent overall air quality benefits that take into account lifecycle impacts.
• Utilize statements of work or specifications to eliminate virgin material requirements; promote the reuse of products, require the use of alternative fuels and alternative fueled vehicles; products containing recovered materials (e.g. EPA-designated products), products that are Energy Star® and FEMP designated or energy-efficient, water conserving WaterSense® labeled products, bio-based products, Environmentally Preferable Products, EPEAT registered products, and non-ozone depleting products.

1.2.2. Planning and Design
• Establish a continuous commissioning program for DOT facilities to resolve operating problems, improve comfort, optimize energy use and identify candidate buildings for retrofit projects.
• Develop policy and guidance to require the use of telework to a sufficient level to reduce the amount of space required to house the agency and establish space allocation standards that reduce space utilization rates across DOT.
• Develop DOT-wide space allocation policy that is designed to realize space savings resulting from department-wide telework policy.
• Investigate and implement a DOT-wide onsite process to generate onsite biodiesel (e.g., use cafeteria grease) for vehicles and ships, where appropriate.
• Partner with private sector and DOE on alternative fuel station locations and new vehicle technologies.

1.2.3. Training and Awareness

• Communicate DOT's progress in meeting the energy reduction and renewable energy goals to senior management.
• Facilitate and coordinate training and professional certification programs (e.g., Certified Energy Manager (CEM™) certification for energy managers, Leadership in Energy and Environmental Design (LEED) professional accreditation or a standard equivalent) for employees and contractors, to the extent possible or where appropriate.
• Implement awareness program to promote energy conservation and energy efficiency, and distribute information on best practices through awareness and outreach programs across the OAs.
• Share Annual Energy Report with other stakeholders to ensure transparency and create awareness.

1.2.4. Buildings
• Continue to reduce facility energy consumption through the use of energy conservation measures (ECMs), energy audits, ESPCs and UESCs.
• Continue to produce on-site renewable energy and reduce energy purchases from off-site sources.
• Continue to benchmark and report building performance in Energy Star® Portfolio manager.
• Compare actual performance data from the first year of operation with the energy design target using Energy Star® Portfolio Manager for building and space types covered by Energy Star®.
• Perform comprehensive energy and water evaluations in 75 percent of the Department's total building inventory (based on annual energy consumption) every four years.
• Install building level electricity meters in new major construction and renovation projects to track and continuously optimize performance. Per EISA Section 434, include equivalent meters for natural gas and steam, where natural gas and steam are used.
• Install advanced meters at all high performance sustainable buildings and "covered" EISA 2007 Section 432 buildings, where appropriate.
• Implement policy and guidance that requires consideration of space saving by use of telework, hoteling, alternative work schedules whenever acquiring or leasing a new building.

1.2.5. Fleet
• Identify the percentage and numbers of alternate fuel acquisitions in non-alternative fuel locations to assist DOT in reducing alternative fuel vehicle waivers from 10 percent to 5 percent and utilize conventional fuel efficient vehicles where no alternative fuel infrastructure exists.
• Utilize a fleet monitoring data base to track usage and daily miles of vehicles, and track performance to assist DOT OAs in meeting fleet management goals.

1.3. Long-Term Initiatives (6-10 years)

1.3.1. Policy and Guidance
• Identify, collect and consolidate best management practices for reducing scope 1 and 2 GHG emissions and develop guidance documents.

1.3.2. Planning and Design
• Conduct facilitated workshops with key stakeholders to develop and implement strategies for long-term initiatives to achieve DOT scope 1 and 2 emissions reduction goals for 2015 to 2020.
• Develop technology to drive innovation to meet the goals taking into consideration to different geographic areas where DOT operates.

1.3.3. Training and Awareness
• Communicate DOTs progress in meeting the energy and water reduction and renewable energy goals to senior management.

1.3.4. Buildings
• Expand performance contracts (e.g., ESPCs, UESCs) throughout DOT

• Maximize use of advanced meters and data available to meet energy intensity reductions.
• Perform comprehensive energy and water evaluations in 75 percent of the Department's total building inventory (based on annual energy consumption) every four years.

1.3.5. Fleet
• Introduce new electric vehicle technology into fleet.

d. Positions –

Additional resources are needed at HQ and the OA level to ensure the Department meets all of the energy, water and renewable energy requirements in its buildings and the fuel reduction and alternative fuel use requirements in its vehicle fleet.

e. Planning table –

The Department's planning table for this goal can be found at the end of this section.

f. Department status –

The Department is currently on track to meet its scope 1&2 reduction target of 12.3 percent for agency-wide GHG emissions by 2020. In FY 2010, DOT emitted approximately 732,900 metric tons CO2-equivalent (MTCO2e) of scope 1&2 GHGs from its operations. This represents a 57,636 MTCO2e decrease in absolute scope 1&2 emissions from its FY2008 baseline. Contributing to this decrease was the reduction in use of electricity in buildings subject to the EO 13423 goal across the Department.

Energy Consumption: DOT energy consumption as measured by intensity has decreased 23.4 percent since FY2003. DOT energy usage (BTU-per-gross-square-foot (BTU/GSF)) for FY2003 (base year) and FY2010 are summarized below, which also includes the percent change in BTU/GSF between baseline and current year.

DOT Energy Consumption*:
FY2003 (base year): 101,426
FY2010: 77,664
Difference: -23,762
Percent Change from Baseline: -23.4 percent
*As measured by intensity (BTU/GSF) per EO 13423

As per EO 13423, the Department is required to reduce its energy consumption (as measured by intensity) by 30 percent by 2015 from base year 2003. In FY2010, the Department had reduced its total energy consumption (as measured by intensity) by 23.4 percent, meeting the Energy Policy Act of 2005 (EPAct 2005) requirement.

Renewable Energy: Also contributing to the reduced energy consumption and scope 1&2 GHG emissions was the use of renewable energy at DOT facilities across the nation. In FY2010 approximately 3.6 percent of electricity consumed by the Department came from renewable resources. Under EPAct 2005, the Department is required to ensure that at least 5 percent of its total electricity consumption came from renewable sources. As a result, DOT must step up its efforts to increase the use of renewable energy across the organization through funding, training, promoting, and partnering with other federal agencies.

Vehicle Fleet Fuel Use: In fiscal year 2010, DOT consumed 3,473,429 gallons of petroleum fuel and achieved a reduction of five percent from its 2005 baseline. DOT must continue to decrease the use of petroleum in its fleet in order to achieve the target requirement of 20 percent by 2015. During this same period DOT consumed 34,895 gasoline

gallon equivalents (GGE) of alternative fuels, and must continue to increase the use of alternative fuel to meet EO 13423 requirements.

In order to reach petroleum and alternative fuel goals, DOT has implemented the new 'Integrated Logistics Management System' (ILMS). ILMS enables fuel usage monitoring. This allows for identification of problem areas within the fleet and the Department's OAs. Going forward the Department's fleet manager will use this tool to employ early intervention measures in order to get and stay on track with petroleum reduction and alternative fuel requirements. DOT will also launch an alternative fuel awareness campaign and continue right sizing of the fleet and vehicles initiatives. These efforts will enable DOT to meet its 2011 to 2015 petroleum reduction and alternative fuel use goals.

g. Return on Investment –

At this time, DOT does not have any projects that have been deliberately cancelled, suspended, or expanded due to ROI considerations. However, given the limited resources, progress on some initiatives is slower than expected. DOT will provide more specific information in future plans as these types of decisions are made.

h. Highlights –

DOT is pleased to provide a short summary of scope 1 and 2 achievements for the previous year by OA:

FAA
The Mike Monroney Aeronautical Center (MMAC) in Oklahoma City, OK, purchased sixteen electric maintenance vehicles for FY 2010, converting its gasoline powered maintenance vehicles to full electric.

MMAC installed a new Plate and Frame Heat Exchanger for the Aviation Records building. The Plate and Frame Heat exchanger provides free cooling and enables the chiller compressor to shut down when the outside wet-bulb temperature drops below the required chilled water set-point. The total cost for the project was $75,000, and it has an annual estimated energy savings of $7,000 and 563 MMBTU.

MMAC's Office of Facility Management (AMP) distributed Compact Fluorescent Lamps (CFL) to 400 employees during energy awareness month and provided information on Energy Star® products.

MMAC's Energy Manager coordinated energy efficiency technology training for Facility Management Staff to learn new technology and applications to building construction, renovation and maintenance. A total of 21 staff members were trained on utility energy service contracts (UESCs), ground source heat pumps, lighting automation, light emitting diodes (LEDs), solar day lighting, insulation and commissioning.

MARAD
Installed high efficiency geothermal heat pumps at the U.S. Merchant Marine Academy. These energy improvements decreased the electrical usage by 1,300 MWH from 2009 to 2010. Additionally, the natural gas use decreased to 64,174 thousand cubic ft in 2010 as compared to 64,468 thousand cubic ft. in 2009.

Reduced the GSA Vehicle Fleet by 23 percent in 2009. Additionally, in 2010, MARAD purchased alternative fuel source vehicles (electric) accounting for four percent of the inventory.

A Super Energy Savings Performance Contract (ESPC) is currently underway at the US Merchant Marine Academy. The Super ESPC has financed a $4.8 million capital outlay that provides many energy conservation measures including energy efficient lighting upgrade, chiller interconnection and control, water fixture upgrades, and energy management control system upgrades. The annual ESPC savings verification report for 2010 indicates an energy saving of 29,571 MBtu/yr was realized resulting in an energy cost saving of $857,338 and an operation and maintenance savings of $518,190.

NHTSA
In support of DOT's Fleet right-sizing initiative to reduce gasoline consumption and the GHG associated with it, NHTSA reduced its agency fleet by 8.33 percent in FY2010. This right-sizing initiative examined vehicles leased from GSA with less than 800 miles per month. NHTSA will continue to monitor this area closely in order to seek opportunities for further reduction.

FHWA
Beginning with the installation of solar panels in 2003 at the Turner Fairbanks Highway Research Center, FHWA has reduced energy consumption at both of our owned facilities. Below are the numbers from 2009 and 2010 on electricity usage at FHWA owned facilities.

FHWA Electricity Usage
(Owned Facilities)
FY 2009: 7507.9 MWh
FY 2010: 7098.7 MWh
% Decline: 5.5%

The FHWA offices nationwide continue to lease or purchase E85 vehicles whenever possible. Over 60 percent of FHWA's vehicles in non-waivered areas are E85 vehicles.

The FHWA's shuttle bus between the Turner Fairbanks Highway Research Center (TFHRC) in McLean, Virginia and the Headquarters building in Washington, D.C., was replaced with an alternative fuel vehicle (AFV) powered by propane. The shuttle travels 154 miles a day, 260 days a year, and 40,040 miles a year. Compared to gasoline, propane yields 87 percent; less smog producing hydrocarbons, up to 90 percent less carbon monoxide, 12 percent less carbon dioxide, and 50 percent fewer toxins and other smog producing emissions.

RITA
During the FY 2010 reporting period, the Volpe Center documented the following GHG and energy progress:
• Reduced scope 1 and 2 GHG emissions by 6.5 percent;
• Reduced energy intensity in goal-subject facilities by 9.3 percent, relative to a targeted 12 percent reduction for FY 2010;
• Used approximately 5 percent renewable energy from electric, thermal, or mechanical sources to power facilities and equipment, relative to a target of 5 percent; and
• Reduced fleet (for single vehicle) petroleum use compared with the FY 2005 baseline, relative to a 10 percent reduction target for FY 2010.

SLSDC
As a result of the third-party study of energy and water use at the SLSDC's facilities, the SLSDC has worked on the HVAC controls at the Administration Building to correct issues found with the night-time setbacks.

In addition, the SLSDC continued to purchase more energy efficient vehicles to replace vehicle in the fleet and utilized webcasts and online training to limit business travel whenever possible.

OIG
This year OIG's Regional Office in Ft. Worth, TX will serve as a test site for low GHG vehicles. OIG has leased five new low GHG-emitting vehicles, making Ft. Worth the first OIG office well on the way to a completely "green fleet". If low GHG-emitting vehicles prove successful in meeting OIG law enforcement functional requirements, low GHG-emitting vehicles will be phased in nationwide as leased vehicles come up for replacement. OIG's ultimate goal is an OIG fleet that is composed entirely of low GHG-emitting vehicles. Employees are also encouraged to use E85 fuel whenever possible.

FRA
A 1.9 percent total reduction of scope 1 and 2 GHG emissions was demonstrated from 2008 to 2009. This reduction is on par to meet the DOT agency wide scope 1 and 2 GHG emissions reduction target of 12.3 percent by FY 2020 relative to FY 2008 (average annual reduction of 1.025 percent).

FMSCA
FMCSA made progress in its efforts to increase fleet vehicle efficiency. FMCSA increased its average fleet miles per gallon by 22.0 percent for city miles per gallon (mpg) and 10.0 percent for highway mpg in 69 of its fleet vehicles in the last year. By using mpg as a measure, FMCSA is on track to meet the goal to reduce petroleum use by 20 percent by 2015.

Below is the planning table for this goal.

.	SCOPE 1&2 GHG TARGET	Unit	FY10	FY11	FY12	FY13	FY14	FY15	...	FY20
Buildings										
Buildings										
Buildings	Energy Intensity Reduction Goals (BTU/SF reduced from FY03 base year)	%	15	18	21	24	27	30		
Buildings	Planned Energy Intensity Reduction (BTU/SF reduced from FY03 base year)	%							...	
Buildings	Renewable Electricity Goals (Percent of electricity from renewable sources)	%	5	5	5	7.5				
Buildings	Planned Renewable Electricity Use (Percent of electricity from renewable sources)	%							...	
Fleet	Petroleum Use Reduction Targets (Percent reduction from FY05 base year)	%	10	12	14	16	18	20		30
Fleet	Planned Petroleum Use Reduction (Percent reduction from FY05 base year)	%							...	
Fleet	Alternative Fuel Use in Fleet AFV Target (Percent increase from FY05 base year)	%	61	77	95	114	136	159		
Fleet	Planned Alternative Fuel Use in Fleet AFV (Percent increase from FY05 base year)	%							...	
Fleet	Senior Executive Fleet Replaced with Low-GHG, High Efficiency Vehicles (Percent replaced from FY08 base year)	%							...	
.	Other as defined by agency								...	
.	Total Scope 1&2 GHG Emissions (Comprehensive)	MMTCO2e							...	
.	Total Scope 1&2 GHG Emissions (Subject to Agency Scope 1&2 GHG Reduction Target)	MMTCO2e							...	
.	Overall Agency Scope 1 & 2 Reduction (reduced from FY08 base year)	%							...	

Goal-Specific Items

The goal-specific items were addressed within the basic performance section above.

GOAL 2: Scope 3 Greenhouse Gas Reduction & Develop and Maintain Agency Comprehensive Greenhouse Gas Inventory

EO 13514 defines scope 3 greenhouse gas (GHG) emissions as emissions from sources not owned or directly controlled by a Federal agency, but related to agency activities, services, and employee travel and commuting. However, scope 3 emissions are the consequence of agency activities. For this reason, DOT is committed to reduce emissions beyond its own organizational boundaries and to influence the behavior of its employees and suppliers toward actions that reduce GHG emissions and protect the climate.

DOT submitted an overall scope 3 reduction target, in addition to reduction targets for each scope 3 category, to the CEQ Chair and the OMB Director on June 2, 2010. These reduction goals were calculated using the scope 3 target tool developed by the Office of the Federal Environmental Executive (OFEE).

The reduction in business travel and commuting by DOT employees will be the cornerstones of the strategy for reducing the Department's scope 3 GHG emissions. The Department has identified a goal of reducing employee travel emissions by 10 percent by 2020. To achieve this goal, the organization is going to deploy technology to remove the burden of place-based work and fully enable employees to work and collaborate from remote locations. For example, the Department has identified several opportunities to reduce employee business travel and commuting emissions through the use of video and web conferencing technology.

Additionally, the Department plans to pilot test a hotelling approach to space management combined with telework and compressed work week strategies to assess how to better utilize office space.

As part of its commitment to meeting EO 13514, DOT has made much progress in the last year on Goal 2 (scope 3 emissions/ GHG inventory) including:
• DOT instituted a Sustainability Scorecard into its quarterly "regulatory review" process—individual meetings held between the Deputy Secretary and the Administrator of each of DOT's OAs. Targets for reduced employee commuting are on this scorecard and each Administrator is now regularly accountable for progress and success.
• Issued an administrative order to all employees asking for participation in a transportation survey developed by the Volpe Center. The survey data was used to establish an initial baseline of employees' commuting characteristics, including mode of transportation used, distance traveled, and frequency of commute.
• Completing the Department's first comprehensive GHG inventory and being on track to meet reduction targets
• Issuing an administrative order codifying a comprehensive recycling policy and a companion quick reference guide
• Finalizing and disseminating a printing and copying administrative order that requires all copiers and printers to be set to double-sided as a default and communicates other paper-saving guidelines
• Beginning to leverage the 2010 Telework Enhancement Act to promote increased telework
• Piloting hotelling practices in a few OAs
• Beginning to monitor progress and establish metrics for employee commuting in the Department's EMS and internal scorecard that evaluates EO and other Sustainability requirements and objectives across all 12 OAs and OST, twice annually.
• Establishing a DOT-wide green team that includes all the OAs and is focused on creating a culture of sustainability across the Department and serves as a community of interest
• Increasing the capacity to use video teleconferencing and web-meeting technologies within several OAs

• Initiating two Department-wide “IdeaHub” Challenges asking employees how they can reduce travel and commuting emissions and be more green at work with great response rates

a. Goal description -

To fulfill the requirements of EOs 13423 and 13514, DOT will plan and take action working across the OAs to:
• Develop and implement innovative policies and practices to reduce overall departmental scope 3 GHG emissions by 10.9 percent by 2020 relative to an FY 2008 baseline.
• Sub-Target – Reduce emissions from Federal business travel and commuting by 10 percent by 2020.
• Improve data accuracy and overall data collection and analysis methods related to scope 3 GHG emissions.
• Divert at least 50 percent of non-hazardous municipal solid waste, excluding construction and demolition (C&D) debris, by the end of fiscal year 2015.
• Divert at least 50 percent of C&D materials and debris by the end of fiscal year 2015.

b. Department lead for goal -

The Assistant Secretary for Administration is the designated Department lead for scope 3 GHG emissions and the GHG inventory, and will have responsibility for target development implementation, monitoring, evaluation and oversight.

c. Implementation methods -

DOT will achieve the goals listed above by addressing the following scope 3 emissions categories, which were included when establishing the reduction targets (above):
• Federal employee travel
 - Business air travel
 - Business ground travel
 - Federal employee commuting
 - Conference planning and acquisition
• Contracted waste disposal
 - Contracted solid waste disposal
 - Contracted wastewater treatment
• Transmission and distribution (T&D) losses from purchased electricity

Using an integrated higher-tier Environmental Management System, DOT will identify and address additional scope 3 categories in the future as the methodologies, policies, and data sources for such categories are developed, as required by the CEQ Chair and the OMB.

Federal employee travel
• Implement policies and activities to improve data accuracy and overall data collection and analysis methods related to Federal employee travel.

Contracted waste disposal
• Divert at least 50 percent of non-hazardous solid waste, excluding C&D debris, by the end of fiscal year 2015
• Divert at least 50 percent of C&D materials and debris by the end of fiscal year 2015

Transmission and distribution losses from purchased energy
• Reduce T&D system losses by increasing use of renewable energy sources.

DOT has developed scope 3 emissions reduction strategies that include short-, medium-, and long-term initiatives to accomplish these goals.

2.1. Short-Term Initiatives (1-2 years)

2.1.1. Policy and Guidance
• A transportation survey will be issued to all DOT employees on a periodic basis to measure GHG emissions from commuting.
• Establish a DOT-wide recycling policy.
• Create awareness of DOT-wide double-sided copying and printing policy included in DOT Electronic Stewardship Plan.

2.1.2. Planning and Design
• Explore, promote and expand additional flexible work place and schedule options, including hotelling, compressed work week scheduling, telework centers, adding a combined telework and compressed work week option for appropriate employees.
• Plan to update departmental space standards to actively pursue space reduction resulting from the above initiative and develop metrics to capture the savings generated from these efforts.
• Develop a plan to measure employee commuting benefits/subsidies offered by DOT to promote the use of public transportation.
• Leverage the Telework Enhancement Act of 2010 to increase the levels of telework participation.
• Develop a program to monitor and measure telecommuting benefits and report to senior management periodically.
• Monitor progress and establish metrics for employee commuting in the Department's EMS and internal scorecard that evaluates EO and other Sustainability requirements and objectives across all 12 OAs and OST, twice annually.

2.1.3. Training and Awareness
• Increase awareness of DOT's telework program through a communications strategy that includes e-mails, electronic newsletters, webinars (net meetings), TMS training modules, and briefings.
• Develop training on productivity management for both managers and employees to facilitate manager acceptance and improve productivity for all employees, both in the office and working at home.
• Create a DOT-wide greening initiative, that includes energy conservation and waste reduction, to foster culture change that is directed to all employees with an emphasis on key stakeholders and decision-makers.

2.1.4. Federal Employee Travel and Commuting
• Encourage employees to increase utilization of conference calls, videoconference technology, webinars, and web conferences, including real-time document sharing and modification capabilities.
• Provide tools that encourage employees to request more fuel-efficient rental vehicles.
• Encourage managers and employees to telework, use alternative work schedules, utilize public transportation, bike, or walk to work.
• Implement policies and activities to require minimizing business travel and use of mass transit when planning conference locations and the use of "green" conference facilities whenever feasible.

2.1.5. Contracted waste disposal
• Require all new and renewed waste management and janitorial contracts include recycling of waste streams, and require contractors to measure, track and report waste disposal and recycling rates.
• Recycle mixed office paper, which includes nearly all waste paper generated in an office, such as white paper (copier, printer, and notepaper), colored paper, file folders, and envelopes.
• Encourage sensible practices for office paper usage, such as (a) reviewing documents on-line, rather than printing them out; (b) providing information electronically instead of through paper; and (c) distributing paper documents through routing rather than through duplication.
• Set double-sided copying or printing as the default mode for all copiers and printers DOT-wide.

• Quantify amount of office paper reduction by mode to increase accountability. Compare the quantities purchased during a baseline period (i.e., before implementation of the double-sided copying/printing policy) and a post-implementation period to monitor changes in consumption of paper from double sided printing.
• Evaluate lifecycle of office products prior to purchasing (See Goal 6).
• Use alternative technologies (e.g., websites) to disseminate information to stakeholders instead of using paper, pamphlets, etc.

2.1.6. Transmission and distribution losses from purchased energy
• Reduce T&D emissions at DOT by reducing facility energy consumption through the use of energy conservation measures (ECMs), energy audits, commissioning, Energy Savings Performance Contracts (ESPCs) and Utility Savings Energy Contracts (USECs). (See Goal 1)
• Produce on-site renewable energy and reduce energy purchases from off-site sources. (See Goal 1)

2.1.7. Facility Tracking and Reporting
• Improve data accuracy and overall data collection and analysis methods.
• Communicate results/conclusions/analysis of data collection to employees to create awareness and change behavior.
• Develop an employee commuting and business travel dashboard to communicate key goals, requirements, etc.
• Develop a community of interest to capture best practices (e.g., green alternatives for traveling) and share implementation strategies.
• Identify POCs for procurement to make sure people know who to contact to get information on products and services.
• Participate in interagency working groups on employee commuting and business travel to help refine these methodologies for data collection and reporting.

2.2. Medium-Term Initiatives (3-5 years)

2.2.1. Federal Employee Travel
• Utilize on-line booking agent GovTrip to collect data and request for modifications to GovTrip to provide end point data and incorporate fuel efficiency requirements to support tracking progress and calculate emission reductions.
• Launch a DOT-wide share space (hotelling) program pilot coupled with space allocation standards and develop metrics, and measure costs and benefits.
• Launch a program for alternative modes of transportation (e.g., bike to work program).
• Assess and develop new technologies (e.g., higher quality videoconferencing, user friendly IT tools to support videoconferencing from desktops) to reduce trips. Current technologies (e.g., web conferencing) may be limiting.
• Develop productivity management tools for employees and managers to promote telework.
• Provide secure access to allow employees to login from remote locations to DOT systems/secure lines.
• Consider utilizing the Aviation Environment Design Tool (AEDT) developed by FAA to calculate the emissions associated with Federal aircraft business travel.

2.2.2. Contracted waste disposal
• Adopt best practices for all other office supplies management, besides paper.
• Calculate cost savings from being “paper-smart”; which could be used for investing in other recycled products. Develop methodology to make DOT a paperless office in terms of records management to optimize space usage and establish performance metrics to measure progress.
• Capture waste stream by mass/weight and type as opposed to by volume to facilitate comparison DOT-wide wide and to achieve compliance with EOs. (See Goal 5)
• For leased buildings (without delegated authority), request waste generation weight by streams.
• Review existing and newly issued waste management and janitorial contracts to ensure that recycling provisions are being included. (See Goal 5)

2.2.3. Transmission and distribution losses from purchased energy

• Reduce T&D emissions at DOT by reducing facility energy consumption through the use of energy conservation measures (ECMs), energy audits, Energy Savings Performance Contracts (ESPCs) and Utility Savings Energy Contracts (USECs). (See Goal 3)
• Where practical and economical, switch to direct fuel usage for energy needs that have lower net GHG emissions. (See Goal 1)
• Produce on-site renewable energy, and reduce energy purchases from off-site sources. (See Goal 1)

2.3. Long-Term Initiatives (6-10 years)

2.3.1. Planning and Design
• Conduct facilitated workshops with key stakeholders to develop and implement strategies for long-term initiatives to achieve DOT scope 3 emission reduction goals.

2.3.2. Policy and Guidance
• Identify, collect and consolidate best management practices for reducing scope 3 GHG emissions and develop guidance document.
• Develop guidance for employees on “preferred” (greener) modes of transportation and require consideration of all modes of transportation (both rail and air) costs and benefits (including overall cost, value of employee time, emissions, etc.) when submitting travel authorizations.
• Develop a community of experts across the OAs that can address scope 3 emissions across DOT.

2.3.3. Training and Awareness
• Share Annual Energy Report with stakeholders to create awareness and communicate goals to management on energy consumption and identify opportunities for improvement.

d. Positions -

DOT needs to acquire either internal or external greenhouse gas subject matter expertise. DOT will also need to build expertise within other offices across the Department such as human resources, facilities management, contracts, and travel management. Without the support and buy-in of these offices, implementing policies and programs related to employee work arrangements, contracted waste, and employee business travel will not be successful. For each of the offices mentioned, it will be challenging to get staff to focus on these issues which are not directly relevant to their daily activities and could be seen as a new burden.

e. Planning Table -

The Department's planning table for this goal can be found at the end of this section.

f. Department Status -

DOT has made some progress in its scope 3 goals in FY10. The primary focus was on improved data collection and beginning to increase employee awareness of the GHG emissions related to commuting and business travel.

DOT issued an administrative order to all OAs encouraging all employees participate in a transportation survey developed by the Volpe Center. The survey data was used to establish an initial baseline of employees’ commuting characteristics, including mode of transportation used, distance traveled, and frequency of commute.

For business travel, DOT utilized GSA's Travel Management Information System (TMIS) to automatically calculate air travel and rental car emissions based on travel card transaction data for all of DOT's business travel. This method led to some questions about whether the TMIS tool offers a complete picture of DOT's travel emissions. DOT is currently investigating these issues.

To reduce GHG emissions associated with employee commuting, DOT has a telework policy and program in place. DOT has designated telework coordinators who work with the Office of Personnel Management to implement DOT's telework program. They have increased their efforts as a result of the passage of the Telework Enhancement Act of 2010, although full implementation of the new law will take effect in the next couple of years. This program provides policy, guidance, leadership, planning, and consulting services for telecommuting in DOT. DOT offers online telework training for managers and employees and a mandatory IT security training for all teleworkers. In addition, DOT offers other resources for performance management, including guidance documents, websites and a work plan structure agreement that provides a framework for the discussion that needs to take place between the manager and the employee about expectations.

Several of the DOT Offices plan to investigate and potentially pilot emerging best practices for sharing work stations through alternative work stations and intensifying use of floor space (e.g. hotelling).

DOT formed a bicycle commuter group in 2007 for commuters who bike or walk to DOT HQ. The group meets periodically to discuss topics of interest and to develop methods which encourage and promote wider participation in bicycling and walking as modes of transportation. The group shares information about commutes with cyclists and other interested parties and is working to improve bicycle facilities for people who work at DOT HQ. On May 24, 2010, Assistant Secretary for Administration Linda Washington signed a new transit benefit policy for bikers. The policy is the first of its kind, and grants up to $20 per month for bicycle maintenance to DOT employees who bike to work. The goal is to encourage employees to choose transportation methods that improve air quality and personal health. DOT HQ has also provided additional bike racks to support this policy,

DOT's future plans are outlined above with the near, medium, and long term initiatives. For example, the Department is already actively working on the recycling policy and promoting the new double-sided printing policy. DOT has also started a DOT-wide Green Team that will help to raise awareness and promote culture change.

g. Return on Investment -

At this time, DOT does not have any projects that have been deliberately cancelled, suspended, or expanded due to ROI considerations. However, given the limited resources, progress on some initiatives is slower than expected. DOT will provide more specific information in future plans as these types of decisions are made.

h. Highlights -

<u>Commuter Survey – Measuring Scope 3 GHG Emissions</u>

The U.S. DOT Volpe Center has contributed to the greater Federal GHG inventory effort by creating and providing the advanced methodology for scope 3 Federal commuter emissions through designing the "Commuter Choice Survey." The White House Council on Environmental Quality (CEQ) recognized the Volpe survey as the "best available method" for estimating GHG associated with Federal commutes and recommended its use to all Federal agencies for calculating their scope 3 emissions for the GHG inventory. DOT used this Volpe survey tool to survey all employees across the Department to measure their FY10 commuting emissions and achieved a reasonable response rate.

<u>Teleworking and Commuting</u>

A number of DOT's OAs have reported an increase in the number of their employees that are participating in teleworking. For example, FHWA reported that 43 percent of their employees telework at least once a pay period and the number continues to increase. This resulted in 66,400 fewer commuting trips.

Another OA, NHTSA, has been promoting telework and achieved an almost 10 percent increase in telework hours from FY09 to FY10. This was coupled with an 8 percent increase in employees who applied for commuter benefits and switched to public transportation as their commuting method.

Deploying Video and Webconferencing Capabilities

DOT plans to continue to increase awareness and capability of collaborating through video and webconferencing tools. Some parts of the Department have made great strides in this area. For example, the Office of the Inspector General has installed video conferencing capability at their headquarters and all 17 regional offices, greatly reducing business travel. Other OAs such as FHWA, RITA, and FAA also offer video teleconferencing capabilities. Although DOT is making progress, there is still much to be done to deploy this capability throughout the Department.

Challenges: Growth in number of employees and accurate data

Although DOT is taking steps to not only quantify but also reduce scope 3 emissions, the Department faced some uphill battles in achieving reductions. The first factor was an increase in number of DOT employees since 2008. The measure is an absolute measure, but a growth in employees has a direct impact on all elements of scope 3 emissions - commuting, travel, waste, and transmission losses.

The second challenge was related to accurate data. Although DOT collected data through various systems such as the TMIS tool and electricity bills, DOT will continue to strengthen the confidence in its data collection. As indicated above, DOT is an active participant in interagency groups to refine these data collection methodologies.

Below is the planning table for this goal.

SCOPE 3 GHG TARGET	Units	FY10	FY11	FY12	FY13	FY14	FY15	...	FY20
Total Scope 3 GHG Emissions (Comprehensive)	MMTCO2e	325.9						...	
Total Scope 3 GHG Emissions (Subject to Agency Scope 3 GHG Reduction Target)	MMTCO2e	324.3						...	
Overall Agency Scope 3 Reduction (reduced from FY08 base year)	%	+4.76						...	
Overall Agency Scope 3 Reduction Target (reduced from FY08 base year)	%	1	1	1	1	1	2	...	11

Goal-Specific Items

Most of the goal-specific items were addressed within the basic performance section above, however the GHG inventory development process is described below.

GHG Inventory Development

With the cooperation of each of its OAs, DOT established a new baseline estimate of greenhouse gas emissions for FY 2008 and completed its comprehensive FY2010 inventory as per EO 13514. The Department used the template developed by DOE FEMP, the Greenhouse Gas and Sustainability Data Report, to assist in developing its baseline and inventory.

DOT identified, collected, and managed all data required to inventory emissions in a top-down fashion. The Department used existing data streams and reporting tools when possible, and developed new reporting tools as needed. In particular, the data call process utilized existing data collection processes for annual energy reporting including data from the Real Estate Management System (REMS), fleet management data from the Federal Automotive Statistical Tool (FAST), solid waste information captured in the Green Purchasing and Waste Management report and employee business travel captured in the GSA TravelTRX system.
The Office of the Secretary (OST) maintained the DOT-wide GHG data reporting spreadsheet provided by DOE FEMP. OST provided each OA POC with a data call template requesting only data that is managed at or within the OA level.

DOT created an Inventory Management Plan (IMP) for the management of greenhouse gas (GHG) accounting within for the Department.
DOT did perform 2nd party audits; however DOT did not pursue external verification this past year. ISO 14064 requires external verification, but the Guidance does not require agency inventories to be ISO 14064 compliant. OA POCs were responsible for internally reviewing their GHG inventory data for gaps or errors before submitting data to OST Administrative Policy GHG Lead (GHG Lead). The GHG Lead conducted two independent data reviews: a pre-submission review, and a post-submission review.

Pre-submission review
Before submitting the DOT inventory for management review, the GHG Lead independently reviewed OA data for gaps or errors. The GHG Lead compared OA submissions to historic baselines, and as necessary, OST requested OA POCs to correct and resubmit data, as needed.

Post-submission review
After submitting the DOT inventory for management review, the GHG Lead performed an in-depth analysis of OA data submissions. This analysis consisted of: contacting utilities to verify submitted utility bills, requesting documentation of fugitive emission releases and interviewing facility managers on data systems.

The SSO, Kathryn B. Thomson (Counselor to the Secretary), is responsible for the final review and approval of the GHG inventory, as outlined in Section 3. This review is required by January 15 of each year, in advance of the January FEMP submission deadline.

Challenges
One of the most significant challenges was calculating the s3 Business Air Travel Emissions. DOT found that the GSA TravelTRX system only included about two-thirds of flights taken, because it only captured flights booked through a Travel Management Center or GovTrip. The business air travel emissions appeared to rise dramatically between FY2008 and FY2010, however when DOT investigated, a large portion of this apparent increase was because more employees were using these systems and not because they were travelling more. DOT is looking to add a third methodology which is a hybrid of the two existing methodologies to the Technical Support Document that allows agencies to both use TravelTRX and add flights that are not captured by that system through a formula.

GOAL 3: High-Performance Sustainable Design / Green Buildings & Regional and Local Planning

The Department is committed to achieving the high performance/sustainable buildings (HPSB) design goals of EOs 13423 and 13514. DOT will make all efforts to support these goals during the design, construction, maintenance and operation of all new and existing facilities and major renovation projects.

DOT will systematically review, update and modify its real property portfolio based on the HPSB goals identified below. DOT will strengthen its HPSB program responsible for the identification, implementation and monitoring of projects and activities undertaken to meet the HPSB goals. DOT will create awareness of the HPSB principles among employees and train key stakeholders. DOT will develop a single-source HPSB data system integrating utility consumption, project and physical asset information building on existing systems. The HPSB goals will be integrated with other EO goals, e.g., renewable energy, to achieve greater system performance and efficient implementation.

DOT is also dedicated to enhancing regional and local planning. As appropriate, DOT will participate in regional transportation planning; align departmental policies to increase effectiveness of local energy planning, incorporate sustainable building location into policy and planning. In addition, DOT will update department policy and guidance to ensure that Environmental Impact Statements (EISs) and Environmental Assessments (EAs) for Federal facilities, required under the National Environmental Policy Act (NEPA) identify and analyze impacts associated with energy usage, climate change, and alternative energy sources. Moreover, DOT will ensure coordination and consultation with Federal, State, Tribal and local management authorities during regional and local planning activities.

DOT will participate in regional and local transportation planning by integrating this key concept into current operating policy. DOT will continue to build a center of excellence on Greenhouse Gases, Climate Change, Adaptation and Transportation through its Transportation and Climate Change Clearinghouse (TCCC). Through the TCCC website, DOT provides regional and local transportation planning leaders around the world access to state-of-the-art research and technical guidance surrounding this global issue. Internally, DOT will establish a “green travel” policy which outlines carbon reduction strategies for employees on official travel, including recommendations for fuel-efficient vehicles and "green" lodging services. These strategies will be refined and enhanced in future annual updates of this Plan.

As part of its commitment to meeting EO13514, DOT has made much progress in the last year on Goal 3 including:

• DOT instituted a Sustainability Scorecard into its quarterly ‘regulatory review’ process—individual meetings held between the Deputy Secretary and the Administrator of each of DOT’s OAs. Sustainable buildings targets are on this scorecard and each Administrator is now regularly accountable for progress and success.
• Identified three more buildings that meet the HPSB Guidelines in the past year
• Created a process for identifying and prioritizing the best value target buildings for meeting the HPSB, renewable energy and greenhouse gas requirements.
• Based on the outcome of the above process, established a portfolio of the targeted buildings for inclusion in the HPSB program
• Implementing a number of sustainable building initiatives, which include installing several sustainable features (e.g., green roofs, solar array systems, energy efficient fluorescent and light emitting diode (LED) lighting, new boilers and HVAC systems, geothermal systems, demand management systems, and state of the art metering).
• Added the Sustainability data element to the Real Estate Management System (REMS) Database
• Issued policy guidance from the Deputy Secretary that required each OA to develop an action plan to meet their HPSB targets, and update this plan periodically.
• FAA’s initiation of the development of Green Real Property Leasing AMS Guidance and clauses, which would include a component to incorporate environmentally sustainable principles in the siting, design, and construction of FAA facilities.

• Starting programs within several OAs to incorporate the HPSB Guiding Principles in all new buildings and major renovation projects.
• Hosting a number of trainings including a tailored training on using Energy Star Portfolio Manager. As a result, several OAs have begun entering data into this system.
• MARAD undertaking a $4.8 million dollar ESPC project and two other OAs are starting an ESPC process.
• Several OAs assessing public transportation in future site locations of administrative offices.
• MARAD now working with local and regional planning officials to improve efficiency and reduce truck traffic by instituting marine highway, infrastructure, and port development projects nationwide.

a. Goal description -

To fulfill the requirements of EOs 13423 and 13514, DOT will plan and take action working across the OAs to:
• Design, beginning in FY 2020, all new Federal buildings to achieve zero-net energy by FY 2030.
• Ensure all new construction, major renovation or repair and alteration of Federal buildings comply with, "Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings (Guiding Principles)."
• Meet the HPSB Guiding Principles by FY 2015 in at least 15 percent of the Department's existing buildings and building leases [5,000 GSF threshold for occupied existing buildings and building leases].
• Demonstrate annual progress toward 100 percent conformance with Guiding Principles for entire building inventory.
• Demonstrate use of cost-effective, innovative building strategies to minimize energy, water and materials consumption.
• Manage existing building systems to reduce energy, water and materials consumption in a manner that achieves a net reduction in Department deferred maintenance costs.
• Optimize performance of the Department's real property portfolio – examine opportunities to decrease environmental impact through consolidation, reuse and disposal of existing assets prior to adding new assets.
• Incorporate consultation with local and metropolitan planning organizations regarding the impact, or potential impact, of Federal actions on local transportation infrastructure and local development plans into existing policy and guidance.
• Align Department policies to increase effectiveness of local planning efforts regarding transportation, energy resources and the environment.
• Incorporate sustainable building siting guidelines into policy and planning for new Federal facilities and leases.
• Update Department policy and guidance to ensure that all EISs and EAs required under NEPA for proposed new or expanded Federal facilities identify and analyze impacts associated with energy usage and alternative energy sources.
• Update Department policy and guidance to ensure coordination and (where appropriate) consultation with Federal, State, Tribal and local management authorities regarding impacts to local ecosystems, watersheds and environmental management associated with proposed new or expanded Federal facilities.

b. Department lead for goal -

The head of the Real Property Council, as the designated Department lead for Goal 3, will direct the activities of the Real Property Council, facilities managers, and environmental managers for target development, implementation, monitoring, evaluation and oversight. The FAA serves at the Executive Agency for managing Real Property data.

c. Implementation methods -

DOT will implement the goals listed above by addressing policy and guidance, planning and design, construction, operation and maintenance, tracking and reporting for new buildings, major renovations, and buildings identified as best value opportunities for upgrading to meet the HPSB guiding principles and other goals of EOs 13423 and 13514 by utilizing the following overarching strategy.

<u>Overarching Strategy</u>

Policy and Guidance

• DOT policy for achieving the high performance/sustainable buildings design is defined in the High Performance and Sustainable Buildings Implementation Plan (SBIP). The SBIP describes how DOT will support the goals, the design, the construction, and the maintenance and operation practices of all new facilities and major renovation projects, and the maintenance and operation practices of existing facilities. It outlines the criteria for new construction and what elements will determine which existing buildings will be targeted to meet the 15 percent goal. This plan will be periodically reviewed and updated as necessary.
• Form a HPSB community of subject matter experts across DOT OAs to develop guidance to implement the EO, SBIP, and comply with related statutory requirements.

Planning and Design
• Develop a collaborative HPSB planning and design process that integrates a cross functional team in all stages of the project. This includes leveraging capabilities within DOT OAs such as FAA's ESPC expertise.
• Establish a process for identifying and prioritizing the best value target buildings for meeting the HPSB, renewable energy and GHG requirements.
• Based on the outcome of the above process, establish a portfolio of the targeted buildings for intervention and inclusion in the HPSB program and update the Sustainable Buildings Plan of Action and Milestones (POAM) document to include this process and portfolio for achieving HPSB status for all targeted buildings in the HPSB portfolio by 2020, including the programs and resources that will be required to reach all objectives.
• Establish facility performance goals for siting, energy, water, materials, and indoor environmental quality along with other comprehensive design and EOs goals that will result in meeting the HPSB goals throughout the lifecycle of the building.
• Optimize performance of the department's real property portfolio – dispose and consolidate excess and underutilized property, co-locate field offices, consolidate across metropolitan and regional locations.
• Align department space actions (new leases, new construction, and consolidation) with Department scope 1&2 and scope 3 GHG reduction targets.

Construction of New Buildings, Major Renovations, and New Leases
• Develop a new comprehensive HPSB Departmental Policy that addresses existing buildings and new construction.
• Incorporate the HPSB Guiding Principles in all new buildings and major renovation projects and leased facilities where DOT has designated authority.
• Incorporate sustainable principles into all acquisitions contracts for construction and leases.
Require a LEED Silver rating or higher (or a standard equivalent) for new DOT-owned buildings and non-GSA leases and Energy Star certification for buildings over 10,000 SF or equivalent third party certification, to the extent possible.

Operations and Maintenance (O&M)
• The O&M program shall:
o Measure and benchmark building O&M performance for sustainability.
o Set O&M annual sustainable performance goals for portfolio assets.
o Conduct audits for targeted buildings and actively monitor space and adjust requirements (i.e., modifying the HVAC, lighting, electrical, telecommunications, safety, housekeeping, and building automation control systems) to changing operational needs.
o Repair, upgrade, and recommission building systems to ensure that they are working to meet current needs and are on track to meet HPSB goals.
o Extend the useful service life of materials and equipment.
o Prevent disruptive failures in the building.
o Where feasible and cost-effective, participate in the LEED® Existing Building Operations and Maintenance (EBO&M) Program, either by obtaining this certification or where certification is not advantageous satisfying the majority of the principles outlined in EBO&M.

Facility Tracking and Reporting

• Maintain and update sustainable building inventory data in the Federal Real Property Profile (FRPP) database. The FRPP will include data element #25 on sustainability to be reported with the FRPP annual data report.
• Utilize the Energy Star Portfolio Manager Tool, or equivalent to track and report on the status of the inventory that meets the HPSB goals.

Regional & Local Planning
• Developing policy and guidance that incorporates participation in regional transportation planning.
• Updating Department policy and guidance to ensure that all EISs and EAs required under NEPA for proposed new or expanded Federal facilities identify and analyze impacts associated with energy usage and alternative energy sources.
• Updating Department policy and guidance to ensure coordination and (where appropriate) consultation with Federal, State, Tribal and local management authorities during the NEPA process.
• Continue to participate in implementation of regional Federal partnerships that support sustainability and livable communities.
o Under the Chesapeake Bay Watershed Protection and Restoration Strategy, support regional planning efforts to develop integrated transportation, land use, housing and water infrastructure plans for smart growth and environmental stewardship, continue to ensure that DOT implements stormwater requirements for new and redeveloped facilities and promotes reduced stormwater impacts in Federally-assisted transportation projects.
o Under the Great Lakes Restoration Initiative, implement assistance for projects that restore wetlands and other habitats in connection with highway projects and carry out research on technologies to combat invasive species.
o Through DOT programs, support sustainable, safe, secure and productive access to and use of the ocean, including marine transportation, and enhance the sustainability of ocean and coastal economies and promote sustainable practices on land.

DOT has developed a more detailed approach that includes short-, medium-, and long-term initiatives to accomplish these HPSB goals.

3.1. Short-Term Initiatives (1-2 years)

3.1.1. Policy and Guidance
• Identify gaps in policies, guidance documents, criteria, contracts, leases, training and other areas of the real property, facilities management, and sustainable building programs.
• Establish a whole building performance target that takes into account the intended use, occupancy, operations, plug loads, other energy demands, and design to earn the Energy Star® targets for new construction and major renovation and non-GSA leases.
• Require a LEED Silver rating or higher (or a standard equivalent) for DOT -owned buildings and non-GSA leases, to the extent possible.

3.1.2. Planning and Design
• Build a new program with new and existing FTEs and external subject matter experts to identify, prioritize and execute a building upgrade program to meet the EOs and HPSB goals, including a highly trained and experienced Departmental infrastructure team that includes facility managers, energy managers and procurement specialists.
• Investigate (or expand) performance contracts (e.g., energy savings performance contracts (ESPCs), utility energy services contracts (UESCs)) as a means to integrate energy-savings technologies and infrastructure in a cost-effective and efficient manner.

3.1.3. Training and Awareness
• Continue to develop training and awareness initiatives to ensure that appropriate department programs and technical personnel are knowledgeable on the energy and sustainable buildings requirements of EISA, EO 13514 and the SBIP.

• Continue to utilize IdeaHub, a system to solicit ideas from employees on regular basis.

3.1.4. Construction of New buildings, Major Renovations and New Leases
• Incorporate the Guiding Principles HPSB in all new buildings and major renovation projects and pursue LEED Silver buildings, where possible
• Develop a green lease template for non-GSA buildings.
• Develop HPSB specifications and model contract templates for inclusion in construction and non-GSA leasing projects for all DOT buildings.
• Develop GSA Occupancy Agreement requirements that specify that space GSA acquires for DOT and any of its modes must be LEED Silver or above and support the Guiding Principles.
• DOT will augment its existing building upgrade plan, with a comprehensive new facilities strategy. The new facilities strategy will result in modern, high performance, sustainable buildings that will feature significant sustainability improvements, and will be critical to meeting DOT's sustainability targets.

3.1.5. Operations and Maintenance
• Develop a survey of facilities to identify current status/condition of buildings.
• Conduct energy assessments of top 15 percent of buildings most qualified to meet the Guiding Principles and prioritize implementation.
• Operate and maintain, and conduct all minor repairs and alterations for existing building systems to reduce energy, water and materials consumption in a manner that achieves a net reduction in department deferred maintenance costs.

3.1.6. Facility Tracking and Reporting
• Conduct periodic assessments of the sustainable buildings program and progress.
• Begin to enter data into Energy Star Portfolio Manager

3.1.7. Regional & Local Planning
• Provide support to State and Regional agencies by providing guidance and technical support, review and input of State transportation climate action plans, and sponsorship of peer exchanges to assist agencies in developing effective planning practices under existing regulations.
• Provide leadership support to promote climate adaptation strategy and the incorporation of climate change considerations in planning and investment decisions.
• Conduct a series of facilitated workshops to develop and implement strategies and outline long-term initiatives to achieve these goals.
• Initiate actions to implement national adaptation strategy.
• Assess public transportation options at future site locations of administrative offices.
• Incentivize managers and employees to pursue alternative work arrangements and commuting methods besides single occupancy vehicles by strategically locating facilities to reduce negative transportation impacts. (Link with Goal 2)
• Train Real Property managers, engineers, contracting officers and other appropriate staff on the principles of regional and local planning associated with the goals of EOs 13423 and 13514.

3.2. Medium-Term Initiatives (3-5 years)

3.2.1. Policy and Guidance
• Develop or update building sustainability policies and guidance contracts, leases, training and other areas of the sustainable building program.
• Develop Green Real Property Leasing AMS Guidance and clauses, which would include a component to incorporate environmentally sustainable principles in the siting, design, and construction of FAA facilities.
• Incorporate criteria for sustainable design and development, energy efficiency, and verification of building performance into build-to-suit lease solicitations where DOT has delegated authority.

• Develop processes to eliminate the use of ozone depleting compounds in existing buildings where alternative environmentally preferable products are available, consistent with either the Montreal Protocol and Title VI of the Clean Air Act Amendments of 1990, or equivalent overall air quality benefits that take into account lifecycle impacts.
• Certify that the ozone depleting equipment has been replaced properly and maintain the new equipment.
• Develop hotelling, teleworking and other space management approaches to better utilize or reduce existing building space and achieve reduced costs of DOT facility operations and expand delivery of remote work tools. (See Goal 2)

3.2.2. Planning and Design

• Meet at least 30 percent of the hot water demand through the installation of solar hot water heaters, when lifecycle cost effective. (See Goal 1)
• Develop model green non-GSA lease template on HPSB and assess results in a geographic area with few vendors to generate market demand and create a change in the market place for more sustainable buildings available for lease by the government.
• Require a LEED Silver rating or higher (or a standard equivalent) for DOT owned buildings and non-GSA leases, to the extent practicable.
• Incorporate sustainable practices into Department policy and planning for new construction, non-GSA leases, and lease renewal strategies.

3.2.3. Training and Awareness

• Develop and institute a change management process including awareness training to ensure HPSB goals are being implemented and measured.
• Include criteria encouraging lease clauses and provisions that support the Guiding Principles according to the High Performance and Sustainable Buildings Guidance.
• Share Annual Energy Report with other stakeholders to ensure transparency and awareness on results.
• Continue communicating goals to senior management and facility managers on energy consumption and identify opportunities for improvement.
• Provide management training and tools for telework and hotelling principles.
• Develop an education and awareness program for performance contracts (e.g., ESPCs, UESCs).

3.2.4. Construction of New Buildings, Major Renovations and New Leases

• Institute whole building performance targets that take into account the intended use, occupancy, operations, plug loads, other energy demands, and design to earn the Energy Star® targets for new construction and major renovation, where applicable.
• Include documentation of energy savings and or cost avoidance information when designing new buildings.
• Analyze existing underutilized properties before initiating new construction
• Demonstrate use of cost-effective, innovative building and sustainable landscape strategies to minimize energy, water and materials consumption.
• Utilize energy-efficient technologies and systems for all HPSBs, where technically and economically feasible. These include building envelope, HVAC and lighting systems, and other non-mission critical equipment and systems. Bundle energy efficiency projects (i.e., those with short payback/return on investment and those with longer payback periods), in order to produce a weighted average payback that is an acceptable ROI, where possible.
• Consider the implementation of ESPCs and UESCs to leverage private sector financing for the construction of energy conservation or renewable energy technologies where technically and economically feasible. Carefully examine all technical, legal, financial and other ramifications before proceeding with an ESPC. By default, utilize DoD or GSA "Super ESPCs" contract vehicles and contractors, except where clearly disadvantageous to DOT.
• Install submetering of energy and water at all major DOT facilities (criteria to be determined at a later date) or wherever expected to yield data that will result in significant cost savings and/or energy and water usage savings through implementation of targeted upgrade projects.
• Conduct periodic feasibility studies of innovative and emerging green buildings technologies suitable for DOT facilities.

3.2.5. Operations and Maintenance
• Develop processes and technologies for tracking and monitoring energy consumption and other utilities at facilities.
• Perform energy audits to reduce energy consumption and water and renewable energy.
• Install building level electricity meters in new major construction and renovation projects to track and continuously optimize performance. Per EISA Section 434, include equivalent meters for natural gas and steam, when natural gas and steam are used.
• Install real time energy metering at all high priority facilities.
• Expand performance contracts (e.g., ESPCs, UESCs) throughout DOT, as appropriate.

3.2.6. Facility Tracking and Reporting
• Compare actual performance data from the first year of operation with the energy design target, preferably by using Energy Star® Portfolio Manager for building and space types covered by Energy Star®.

3.2.7. Regional and Local Planning
• Develop and implement "live where you work" programs, to encourage use of telework centers and employees to live in communities and neighborhoods near DOT facilities.
• Examine the potential for offering incentives for employees to move into surrounding communities enabling walk and transit commutes.
• Provide secure indoor storage for bicycles, and proper facilities to support commuting via bicycle, where needed, feasible, and cost-effective across field sites and HQ.
• Enhance Transportation and Climate Change Clearinghouse (TCCC) website and update content.
• Increase effectiveness of regional measures that enhance integrity of local ecosystems and watersheds.
• Assist communities with new potential DOT facilities to achieve LEED for Neighborhood Development (ND) certification.
• Continue agency participation in critical local and regional efforts and initiatives (e.g., EO on Chesapeake Bay Protection and Restoration, EO on Stewardship of the Ocean, Our Coasts, and the Great Lakes, etc.).

3.3. Long-Term Initiatives (6-10 years)

3.3.1. Policy and Guidance
• Develop a template that can be used in SOW for renovations or new construction that incorporates all HPSB Guiding Principles. The template should include energy and water requirements.
• Identify potential opportunities to integrate high performance sustainable building goals into DOT's inventory of technical buildings. (How would this be incorporated? It is global positioning satellite systems? Mainly structures not buildings).

3.3.2. Planning and Design
• Develop technology to drive innovation to meet HPSB goals addressing the regional considerations linked to different geographic areas where DOT operates.
• Develop a HPSB building phased implementation plan based on size, age, etc.
• Design net-zero energy buildings for all new construction
• Dispose and consolidate excess and underutilized property, co-locate field offices, consolidate footprint across metropolitan and regional locations.

3.3.3. Training and Awareness
• Develop infrastructure teams of subject matter experts that can address HPSB issues across DOT.
• Continue to implement change management process, including awareness to ensure HPSB goals are met.
• Communicate goals to management on energy consumption regularly and identify opportunities for improvement.

3.3.4. Construction of New Buildings, Major Renovations, and New Leases

• Construct net-zero energy buildings. Implement five (HPSB) guiding principles into the design requirements for construction.
• Utilize energy-efficient technologies and systems for all HPSBs, where technically and economically feasible. These include building envelope, HVAC and lighting systems, and other non-mission critical equipment and systems. Bundle energy efficiency projects (i.e., those with short payback/return on investment and those with longer payback periods), in order to produce a weighted average payback that is an acceptable ROI, where possible.
• Consider the implementation of ESPCs and UESCs to leverage private sector financing for the construction of energy conservation or renewable energy technologies where technically and economically feasible. Carefully examine all technical, legal, financial and other ramifications before proceeding with an ESPC. By default, utilize DoD or GSA "Super ESPCs" contract vehicles and contractors, except where clearly disadvantageous to DOT.
• Develop on-site renewable energy generation projects (e.g., photovoltaics installations). (See Goal 1)
• Conserve, rehabilitate, and reuse historic Federal properties, using current best practices and technology.
• Install submetering of energy and water at all major DOT facilities (criteria to be determined at a later date) or wherever expected to yield data that will result in significant cost savings and/or energy and water usage savings through implementation of targeted upgrade projects.
Conduct periodic feasibility studies of innovative and emerging green buildings technologies suitable for DOT facilities.

3.3.5. Operations and Maintenance
• Develop technology and processes to centrally monitor and control HPSB facilities.
• Expand O&M performance contracts (e.g., ESPCs, UESCs) throughout DOT.

3.3.6. Facility Tracking and Reporting
• Develop a dashboard system for communicating energy monitoring results and status of HPSB goals. (See Goal 1)
• Maximize use of meters and data available to meet HPSB requirements.

3.3.7. Regional and Local Planning
• Locate future DOT facilities near transit stops in more urban areas of America's low Vehicle Miles Traveled (VMT) cities where possible and achieving this objective will not inhibit DOT's mission.
• Ensure that DOT facilities are an integrated part of the community, where possible without adversely impacting DOT's mission.
• Integrate methods and practices necessary to achieve the goals of this plan into Departmental master planning documents (i.e., HPSB goals; pollution prevention and waste reduction goals; water use reduction goals; sustainable acquisition goals; electronic stewardship and data center consolidation, etc.).

d. Positions -

The Department is trying to train and build a comprehensive strategy to increase this capacity. Some elements of this strategy include:
• Hire/contract LEED accredited experts for technical support.
• Develop "Performance Contracting" contract specialists
• Hire/contract positions for HPSB program implementation
• Identify line item for HPSB in budget.
• Utilize expertise and resources from within the OAs
• Recruit staff with the knowledge, skills and capabilities to work with local and regional groups and to address employee-related transportation issues.
• Continue to maintain the TCCC as a cross-Department initiative.

e. Planning Table -

The Department's planning table for this goal can be found at the end of this section.

f. Department Status -

To meet the HPSB goals identified above, DOT developed the High Performance and Sustainable Buildings Implementation Plan (SBIP). This document describes how DOT will support the goals of EOs 13423, 13514 and the Energy Independence and Security Act (EISA) through 1) the design, construction, and maintenance and operation practices of all new facilities and major renovation projects and 2) the maintenance and operation practices of existing facilities, and 3) using ESPCs to meet the requirements of HPSB goals. See Goal 3 Introduction for specific accomplishments.

A prime example of DOT's commitment to HPSB is the FAA NextGen Facilities Program which aims to design and build modern, high-performance, sustainable, green Air Traffic Control facilities across the Nation. The FAA's commitment to building new LEED® Silver HPSBs Air Traffic Control facilities will result in dramatic energy, carbon, and other environmental savings/benefits, and also assist in facilitating fuel, carbon, air pollution, and noise reduction from more efficient and effective operation of the NAS.

DOT started and maintains the Transportation and Climate Change Clearinghouse (TCCC) to be the focal point of technical expertise on transportation and climate change. Through strategic research, policy analysis, partnerships, and outreach, the Center creates comprehensive and multi-modal approaches to reduce transportation-related greenhouse gases and to mitigate the effects of global climate change on the transportation network. The Center researches transportation strategies and technologies to reduce greenhouse gases, identifies facilities that may be at risk from possible effects of climate change and climate anomalies, and develops an array of tools to assess the transportation system's ability to adapt to variances in global climate.
DOT continues to be an active participant in a number of interagency working groups, including chairing the group that developed the Guidelines for Sustainable Locations for Federal Facilities and engaging with the Group evaluating the HPSB Criteria called the Interagency Sustainability Working Group (ISWG).

Other activities related to Goal 3 that are in progress include:
3.1.1. Policy and Guidance
• Identifying all buildings that meet the HPSB Guiding Principles in the newly created Sustainable Buildings field in the REMS (Real Property) Database.
• Identifying best practices and develop building sustainability implementation guidance document.
• FAA initiated the development of Green Real Property Leasing AMS Guidance and clauses, which would include a component to incorporate environmentally sustainable principles in the siting, design, and construction of FAA facilities.

3.1.2. Planning and Design
• Conducting baseline energy audits at DOT sites to determine existing and future energy sources and energy consumption.
• Include Renewable Energy and space needs assessments considerations in DOT Sustainable Building Program.
• Verifying the baseline of facilities that are >5000 sq ft and identifying exemptions for technical facilities and/or data centers to support the business case.
• Conducting comprehensive assessment on the top 15 percent or more of the buildings having the highest potential for meeting the Guiding Principles.

3.1.3. Training and Awareness
• Developing training and awareness initiatives to ensure that appropriate Department programs and technical personnel are knowledgeable on the energy and sustainable buildings requirements of EISA, EO 13514 and the SBIP.
• Communicating goals to senior management and facility managers.

3.1.5. Operations and Maintenance

• Several of the OAs are actively pursuing LEED for new buildings and working toward meeting the HPSB Guiding Principles in their existing buildings.
• DOT's Maritime Administration has undertaken a $4.8 million dollar ESPC project and two other OAs are in the process of starting ESPCs.
• DOT HQ is currently installing technologies for tracking and monitoring energy consumption and other utilities on a continuous basis.

3.1.6. Facility Tracking and Reporting
• Request OMB exemption for specific building types that are not appropriate for HPSB, e.g., unstaffed equipment shelters, from the DOT inventory when calculating progress toward the 15 percent goal by 2015.
• At the end of FY10, four buildings met the HPSB guidelines and several others were making progress by meeting one or more elements.

3.1.7. Regional and Local Planning
• Begin to incorporate adaptation planning and vulnerability assessment into DOT's operations and policies
• Some of the OAs have begun updating their policy and guidance to ensure that all EISs and EAs, required under NEPA for proposed new or expanded Federal aid eligible facilities, identify and analyze impacts associated with energy usage and alternative energy sources.
• The Federal Highway Administration will begin reviewing State transportation climate action plans, and sponsorship of peer exchanges to assist agencies in developing effective planning practices under existing regulations.
• Many DOT OAs are now assessing public transportation in future site locations of administrative offices.
• FAA has initiated the development of Green Real Property Leasing AMS Guidance and clauses, which would contain guidance pertaining to the recognition of existing transportation infrastructure when siting new Federal facilities and consideration for the availability of renewable energy sources.
• In support of the goals, the Maritime Administration is working with local and regional planning officials to improve efficiency and reduce truck traffic by instituting marine highway, infrastructure, and port development projects nationwide.

g. Return on Investment -

At this time, DOT does not have any projects that have been deliberately cancelled, suspended, or expanded due to ROI considerations. However, given the limited resources, progress on some initiatives is slower than expected. DOT will provide more specific information in future plans as these types of decisions are made.

h. Highlights -

<u>HPSBs and the Federal Aviation Administration</u>

FAA's Western Service Area towers designed over the past decade demonstrate sustainable measures in energy and water efficiency, indoor air quality, and material selection. The Western Service Area has integrated the LEED system with tower requirements in their Standard Design. Within each project, members of the Tower Design Program, including a LEED accredited professional, balance sustainable design with financial requirements and Department mission. As a result, the Seattle Air Traffic Control Tower was the first DOT building to meet the HPSB guidelines. Their experience was fundamental to elevating tower design for Oakland and Palm Springs International Airports to target LEED Gold and Silver status, respectively. Highlights of the projects include a geothermal heat pump, PV solar cells to supply 50% of the electrical power, 30% less water demand, use of low VOC building materials, and daylight views for 93% of building occupants.

<u>Energy Saving Performance Contracts</u>

A Super Energy Savings Performance Contract (ESPC) is currently underway at the Maritime Administration's Merchant Marine Academy. The Super ESPC has financed a $4.8 million capital outlay that provides many energy conservation measures including energy efficient lighting upgrade, chiller interconnection and control, water fixture upgrades, and energy management control system upgrades. The annual ESPC savings verification report for 2010 indicates an energy saving of 29,571 MBtu/yr was realized resulting in an energy cost saving of $857,338 and an operation and maintenance savings of $518,190.

Recommendations for Sustainable Locations for Federal Facilities

DOT is taking a leadership role in promoting more transportation choices, promoting affordable housing and valuing communities through its interagency collaboration and leadership. By chairing the interagency team and working with the General Services Administration, EPA, Department of Housing and Urban Development and in coordination with the Department of Homeland Security and DOD, DOT developed the Guidelines for Sustainable Locations for Federal Facilities required by the Executive Order. The impact of this work is significant as the Guidelines are to be used by all Federal agencies in determining site locations.

Below is the planning table for this goal.

GOAL 3 Targets	Units	FY10	FY11	FY12	FY13	FY14	FY15	...	FY20
Owned Buildings	%	1	2	2	2	3	10	...	
FRPP-Reported Leased Buildings	%	1	1	1	1	1	5	...	
Total Buildings	%	2	3	3	3	4	15	...	
Other (Buildings), as defined by agency		?	?	?	?	?	?	...	
Other (Reg/Local Planning), as defined by agency		n/a	n/a	n/a	n/a	n/a	n/a	...	

Goal-Specific Items

The goal-specific items were addressed within the basic performance section above.

GOAL 4: Water Use Efficiency and Management

As part of its commitment to meeting EO 13514, DOT has made much progress in the last year on Goal 4 including:

• DOT instituted a Sustainability Scorecard into its quarterly 'regulatory review' process—individual meetings held between the Deputy Secretary and the Administrator of each of DOT's OAs. Water reduction targets are on this scorecard and each Administrator is now regularly accountable for progress and success.
• Begin entering water consumption data into Energy Star® Portfolio Manager.
• Identify data limitations and methods to improve water consumption data.
• Complete comprehensive water evaluations at DOT facilities which constitute 75 percent of total energy consumption as per EISA 2007 Section 432.
• Develop a consistent set of metrics to measure water consumption across the organization.

• Communicate goals to senior management on water use efficiency.

The Department is committed to reducing potable water use intensity, industrial, landscaping, and agricultural water use, identifying and implementing water reuse strategies and achieving objectives established by EPA in Stormwater Guidance for Federal Facilities. The requirements for water use efficiency will be achieved through the HPSB program (Goal 3) along with additional initiatives specifically targeting best value water efficiency opportunities. Water efficiency goals require establishing new initiatives, tools, and policies, along with developing awareness and training. The following is an overview of the goals and short, medium, and long-term initiatives that will achieve the EO goals. The HPSB goals will be integrated with other EO goals (e.g., Sustainable Buildings requirements) to achieve greater overall efficiency of EO implementation. These strategies will be further refined in future annual updates of this Plan.

a. Goal description –

To fulfill the requirements of EOs 13423 and 13514, DOT will plan and take action working across the OAs to:
• Reduce potable water use intensity by at least 26 percent by FY 2020.
• Reduce industrial, landscaping, and agricultural water use by at least 20 percent by FY 2020.
• Identify and implement water reuse strategies, landscaping water conservation strategies, such as micro-irrigation and drought tolerant plants, in coordination with high performance sustainable buildings initiatives.
• Achieve objectives established by EPA in Stormwater Guidance for Federal Facilities.
• Incorporate appropriate reduction strategies for non-potable water use into DOT policy and planning.
• Achieve 100 percent containment for 95th percentile storm or restoration to pre-development hydrology for new construction or major renovations on buildings greater than 5,000 sqft.

b. Department lead for goal –

The head of the Real Property Council, as the designated Department lead for Goal 4, will direct the activities of the Real Property Council, facilities managers, and environmental managers for target development, implementation, monitoring, evaluation and oversight. The FAA serves at the Executive Department for managing Real Property data.

c. Implementation methods –

DOT will implement the goals listed above by using the following approaches: deploy new building designs and upgrade existing buildings to improve water efficiency and drive water conservation initiatives, water efficient landscaping and irrigation design and policies, and water reuse and recycling initiatives. DOT will implement design and construction strategies to reduce storm water runoff and polluted site water runoff.

DOT has developed a strategic approach that includes short-, medium-, and long-term initiatives to accomplish these goals.

4.1. Short-Term Initiatives (1-2 years)

4.1.1. Policy and Guidance
• Develop a policy and strategy for management and efficient use of water.
• Form a community of subject matter experts across DOT OAs to develop policies and guidance.

4.1.2. Planning and Design
• Enter water consumption data into Energy Star® Portfolio Manager and establish baseline as per EO 13423.
• Identify data limitations and methods to improve water consumption data.
• Complete comprehensive water evaluations at DOT facilities which constitute 75 percent of total energy consumption as per EISA 2007 Section 432.
• Identify a baseline through water audits at DOT sites to determine opportunities for water conservation.

• Conduct best in class study of DOT and Federal Agencies for water use.
• Employ strategies that reduce potable water use by 20 percent.

4.1.3. Training and Awareness
• Develop communication strategy focused on water use and conservation.
• Develop a training program for water conservation policy, techniques, design, and best available water-efficient technologies to ensure that appropriate Department program and technical personnel are knowledgeable on the water use efficiency and management goals in EO 13514.
• Communicate goals to senior management on water use efficiency and recommend opportunities for improvement.
• Develop a process to solicit water conservation ideas from employees on a regular basis.

4.2. Medium-Term Initiatives (3-5 years)

4.2.1. Policy and Guidance
• Initiate the development of a water use information system by adding new fields and requirement to provide consumption information from invoices in the Delphi financial database. Develop new business rules and enter new information, where applicable.
• Develop strategies for the different operational areas to attain DOT-wide goals.
• Develop a consistent set of metrics to measure water consumption across the organization.

4.2.2. Planning and Design
• Compare actual performance data from the first year of operation with the water design target using Energy Star® Portfolio Manager.
• Include alternative ways (e.g., alternative technologies) to make use of rain water, treated wastewater, and air conditioner condensate.
• Conduct benchmarking of best-in-class practices utilized by other federal agencies and the private sector.
• Pursue strategies to reduce water consumption in DOT facility cooling towers.
• Employ design and construction strategies that reduce storm water runoff and discharges of polluted water offsite.
• Establish baselines for buildings, after meeting the EPAct 1992, Uniform Plumbing Codes 2006, and the International Plumbing Codes 2006 fixture performance requirements.
• Begin establishing dedicated metering for supply verses sewerage to the extent practicable.

4.2.3. Training and Awareness
• Develop training modules in TMS for engineers in the field and other DOT employees on water conservation policy, technologies and best practices.

4.2.4. Operations & Maintenance
• Install meters at the highest water consumption facilities to capture actual water consumption which allows for the management of water use during occupancy. Include separation of water supply and sewerage so that facilities can save money for water that is reused on site (e.g. gray water) and also not be charged for water that evaporates (i.e. lost from cooling tower or landscaping).
• Institute water efficient landscape and irrigation policy and strategies, such as beneficial landscaping, xeriscaping, water reuse, recycling, and harvested rainwater use to reduce outdoor potable water consumption.

4.3. Long-Term Initiatives (6-10 years)

4.3.1. Policy and Guidance
• Develop a template that can be used in SOWs for renovations or new construction that incorporates all HPSB Guiding Principles. The template would include all water conservation requirements.

4.3.2. Planning and Design

• Conduct a series of facilitated workshops to develop and implement strategies and outline long-term initiatives to achieve these goals.

4.3.3. Training and Awareness
• Develop a center of excellence (part of Goal 3, Sustainable Buildings strategy) for subject matter experts that can address water issues, along with other facility sustainability objectives, across DOT.
• Continue to implement change management process including awareness to ensure HPSB goals are met.
• Communicate goals to senior management on water consumption and recommend opportunities for improvement.
• Institute process to solicit ideas for innovative methods and ideas for water conservation from employees.

4.3.4. Operations and Maintenance
• Choose irrigation contractors who are certified through a WaterSense labeled program.
• Specify EPA's WaterSense-labeled products or other water conserving products in contracts, where available.
• Conduct a business case analysis for reuse of gray water.
• Identify products and practices that make low flow and no water plumbing fixtures effective and acceptable to employees.

d. Positions –

Additional resources are needed at HQ and the OA level to ensure the Department meets all of the water requirements in its buildings.

e. Planning table -

The Department's planning table for this goal can be found at the end of this section.

f. Department status –

In FY 2010, DOT consumed 508 million gallons of potable water in its buildings resulting in a water intensity of 41.6 gallons per gross square foot. This represents an increase of 1.2 percent from the Department's FY 2007 baseline under EO 13423. Currently, the Department must increase efforts to meet the potable water reduction goal of 26 percent by 2020. The Department has stepped up its efforts to reduce the use of potable water across the organization through funding, training, promoting, and partnering with other federal agencies.

g. Return on Investment –

At this time, DOT does not have any projects that have been deliberately cancelled, suspended, or expanded due to ROI considerations. However, given the limited resources, progress on some initiatives is slower than expected. DOT will provide more specific information in future plans as these types of decisions are made.

h. Highlights –

DOT is pleased to provide a short summary of potable water reduction achievements for the previous year by OA:

<u>FAA</u>
Compared to its FY 2007 baseline, FAA experienced a 1 percent potable water intensity increase in FY 2010. However, FAA implemented notable water efficiency improvement projects in FY 2010. The William J. Hughes Technical Center (ACT) in Atlantic City, NJ installed 11 waterless urinals resulting in an estimated savings of 440,000 gals/year. In addition, the Mike Monroney Aeronautical Center (AMC) in Oklahoma City, OK, improved its water irrigation controls and replaced showerheads and valves to comply with low flow standards generating a projected savings of

2,535,000 gals/year. EO 13514 requires agencies to track and record industrial, landscaping, and agricultural water consumption. FAA must plan to incorporate processes that will enable capturing and reporting this data.

MARAD

By implementing water management strategies including water-efficient and low-flow fixtures and efficient cooling towers; reducing OA industrial, landscaping, and agricultural water consumption by two percent annually or twenty percent by the end of fiscal year 2020. MARAD goals are on track to improving water use and management.

NHTSA

The San Angelo Test Facility (SATF), a facility that NHTSA operates on Goodfellow Air Force Base (GAFB) in San Angelo, Texas. This facility tests tires for compliance with NHTSA regulations. Pursuant to the regulations, the tests are performed on a pavement surface that is wetted with precise volumes of water. The water is not recovered following test completion and either evaporates or runs off the surface. In Calendar Year 2010, the SATF used a total of 324,500 gallons of water, both for testing purposes and, more minimally, for office use. This represented an increase from the 257,400 gallons the facility used in Calendar Year 2009. The increase in water consumption is attributed to increase use of the SATF test track by outside testers, which may not be the responsibility of NHTSA to reduce total consumption. The outside testers pay a fee for use of the test track and the cost of water is included in this fee. The water used on the test track is non-potable, required per the tire testing procedures, and therefore not targeted for reduction. The test track use and inside use (potable) of water is not separately metered; however, the SATF Director estimates that approximately 90 percent is on the test track and 10 percent is inside. The installation of meters to separately measure outside and inside water consumption will be necessary in order to establish a baseline for the consumption of potable water, if this is to be targeted for reduction.

FHWA

The FHWA reduced its consumption of water at owned facilities since 2005 by over 20 percent. Below are the numbers from 2009 and 2010 on water consumption at FHWA owned facilities. The numbers are in millions of gallons.

FHWA Total Water Usage
FY09: 7.7gal
FY10: 6.9gal
10.4 percent decrease from FY09

RITA

Compared to its FY 2007 baseline, Volpe Center experienced a 14.7 percent potable water intensity decrease in FY 2010. The Volpe Center initiated a retrofit of all indoor plumbing fixtures that will be complete in FY 2011. Once the retrofit is finished, it will result in an estimated additional 13 percent of water (~900,000 gallons) saved annually. EO 13514 requires agencies to track and record industrial, landscaping, and agricultural water consumption. RITA plans to incorporate processes that will allow for capturing and reporting this data and that will likely require additional water sub-metering at the Volpe Center.

Below is the planning table for this goal.

Water Use Efficiency & MGMT	Units	FY10	FY11	FY12	FY13	FY14	FY15	...	FY20
Potable Water Reduction Targets (gal/SF reduced from FY07 base year)	%	6	8	10	12	14	16	...	26
Planned Potable Water Reduction (gal/SF reduced from FY07 base year)	%	6	8	10	12	14	16	...	26

Water Use Efficiency & MGMT	Units	FY10	FY11	FY12	FY13	FY14	FY15	...	FY20
Industrial, Landscaping, and Agricultural Water Reduction Targets (gal reduced from FY10 base year)	%	0	2	4	6	8	10	...	20
Planned Industrial, Landscaping, and Agricultural Water Reduction (gal reduced from FY10 base year)	%	0	2	4	6	8	10	...	20
Other, as defined by agency								...	

Goal-Specific Items

The goal-specific items were addressed within the basic performance section above.

GOAL 5: Pollution Prevention and Waste Reduction

The DOT is committed to complying with the requirements of EOs 13423 and 13514 and the Pollution Prevention Act of 1990 (PPA), which describes Congress' preferred hierarchy for reduction and management of wastes. The Department has pursued pollution prevention and waste minimization activities through Green Procurement, Electronic Stewardship and High Performance Sustainable Buildings programs.

The DOT developed a Green Procurement Plan (GPP) (see Appendix 3) to enhance and sustain the Department mission through cost effective acquisition that achieves compliance, reduces resource consumption and solid and hazardous waste generation. One of the objectives of this Plan is to emphasize pollution prevention as part of the purchasing process and it applies to all acquisitions and contracting mechanisms, including service contracts, leases, purchases made with government purchase and fleet cards and purchases below the micro-purchase threshold.

As part of its commitment to meeting EO 13514, the Department has made much progress in the last year on Goal 5 including:

• Published DOT Recycling Order for all OAs in the DOT HQ.FAA two centers have continued to work closely in increasing their recycling at their recycling center.
• RITA achieved better than 64 percent waste diversion rate at the Volpe Center which won local and state-wide awards for recycling.
• FAA has two centers have continued to work closely in increasing their recycling at their recycling center.

a. Goal description –

To fulfill the requirements of EOs 13423 and 13514, DOT will plan and take action working across the OAs to:
• Increase source reduction of pollutants and waste.
• Divert at least 50 percent non-hazardous municipal solid waste (MSW) by FY 2015.
• Discuss agency strategies to reduce MSW sent to landfills and how implementation will assist the agency in achieving FY 2020 GHG reduction targets (see Goals 1 and 2 above).
• Divert at least 50 percent of C&D materials and debris by FY 2015.
• Reduce printing paper use.
• Increase use of uncoated printing and writing paper containing at least 30 percent postconsumer fiber.
• Reduce and minimize the acquisition, use, and disposal of hazardous chemicals and materials, and discuss how implementation will assist the agency in achieving FY 2020 GHG reduction targets [See Goals 1 and 2 above].

• Increase diversion of compostable and organic materials from the waste stream
• Implement integrated pest management and landscape management practices to reduce and eliminate the use of toxic and hazardous chemicals and materials.
• Increase agency use of acceptable alternative chemicals and processes
• Report in accordance with Sections 301-313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986.

b. Department lead for goal –
The Senior Sustainability Officer (SSO), as the designated Department lead, will direct the activities through the Higher Tier Environmental Management System (EMS) for target development, implementation and oversight.

c. Implementation methods –
The Department will implement the goals listed above by addressing two main categories: solid waste management and pollution prevention. Several of the pollution prevention and waste reduction goals are directly linked to Sustainable Acquisition activities, which are discussed under Goal No. 6

Solid Waste Management:
"Solid waste" consists of MSW, including landscape waste and food waste, discarded electronic items (e-waste), and construction debris. Universal waste items (e.g., lead-acid batteries, fluorescent lamps), special non-hazardous wastes (e.g., scrubber and wastewater treatment sludges), or hazardous wastes are not included in this definition.

• Divert at least 50 percent of non-hazardous solid waste from landfills by the end of fiscal year 2015 by requesting MSD sheets from vendors certifying recycled percentage of solid waste.
• Minimize the generation of waste and pollutants through source reduction.
• Increase the diversion of compostable and organic material from the waste stream.
• Begin tracking the data on reduction C&D materials and debris through data calls to the OAs.
• Decrease agency use of chemicals to assist the agency in achieving greenhouse gas reduction targets.
• Reduce printing paper use and acquire uncoated printing and writing paper containing at least 30 percent post-consumer fiber.

Pollution Prevention (P2) and Waste Reduction strategies generally consist of one of the following actions: equipment or technology modifications; process or procedure modifications; reformulation or redesign of products; substitution of raw materials; and/or improvements in housekeeping, maintenance, training, or inventory controls, acquiring more recycled content material and establishing recycling centers to reduce waste in landfills.

• Decrease agency use of chemicals to assist the agency in achieving greenhouse gas reduction targets.
• Reduce printing paper use and acquiring uncoated printing and writing paper containing at least 30 percent post-consumer fiber.

The Department has developed a strategic approach that includes short-, medium-, and long-term initiatives to accomplish these goals.

5.1. Short-Term Initiatives (1-2 years)

5.1.1. Policy and Guidance
• Review and update procurement and real property policies, regulations, contract clauses and grant provisions in consonance with green procurement requirements.
• Publish DOT Recycling Order for all OAs in DOT HQ.
• FAA two centers have continued to work closely in increasing their recycling at their recycling center.

• Execute long-term contracts with waste collection contractors to ensure best possible revenue from sale of recyclable materials.
• Research an initiative to require that construction and demolition contractors develop a project waste management plan, and place recycling container(s) on site for duration of the project.
• Increase the number of office waste recycling programs that include not only high-grade paper and corrugated cardboard but other items including beverage containers, compostable cafeteria wastes, newspapers, dry cell batteries, toner cartridges, used furniture, and e-waste (e-waste management is discussed under Goal 7, Electronic Stewardship).

5.1.2. Planning and Design
• Conduct a series of facilitated workshops to develop long-term initiatives to achieve these goals.
• Develop a DOT-wide P2 and Waste Management Strategic Plan focusing on source reduction, recycling, and (where absolutely necessary) disposal or diversion.
• Establish a pilot program for collecting and composting wastes at DOT owned and leased facilities.

5.1.3. Training and Awareness
• Implement an awareness program to promote the GPP, and distribute information on best practices through awareness and outreach programs to promote acquisition of environmentally preferable products, services and new technologies.
• Establish web sites for Department policies and information on waste management and pollution prevention.
• Develop module in TMS and conduct training for procurement personnel at least annually.
• Facilitate and coordinate educational and promotional programs for employees and contractors, as appropriate.
• Establish an incentive program for employees and managers to encourage waste minimization and P2 ideas from employees.
• Discourage production of hard copy memos and reports to reduce waste; promote paperless office practices.

5.1.4. Facility Tracking and Reporting
• Identify green procurement data for compilation and distribution to key stakeholders.
• Report the status of the implementation of the GPP within the Department to senior management and externally to other applicable Federal agencies and offices.
• Conduct self assessments by OAs to continually improve green procurement process and better describe environmental and other green requirements in statements of work and contracts.
• Conduct P2 and waste audits at priority facilities identified by DOT, including assessment of waste generation and disposal; waste streams; waste stream composition; source reduction opportunities; effectiveness of current recycling programs; and implemented waste diversion technologies.
• Quantify amount of office paper reduction by OA to increase accountability. Compare the quantities purchased during a baseline period, i.e., before implementation of the department policies such as double-sided copying/printing policy, workforce demographics and printer locations with a post-implementation period to monitor changes in consumption of paper.

5.1.5. Solid Waste Management
• Use “just-in-time” methods to reduce excessive construction-related debris.
• Ensure that demolition is performed in a manner that allows debris to be readily recycled (e.g., wrecking ball rather than explosives, shear attachments to separate scrap metal from other debris).
• Use crushed brick and concrete rubble from demolition as fill material on the project site, where possible.
• Where permissible, and cost-effective, decontaminate debris on site rather than directly dispose of it at off-site facilities.
• Where feasible, use a three-bin collection system at the point of generation, to ensure organics are not mixed with other MSW.
• For facilities that generate small amounts of waste, evaluate benefits, limitations, and costs of on-site composting; if composting on site, take all necessary steps to control odor or rodents.
• Minimize use of toxic or hazardous solvents and cleanup chemicals in laboratory operations, where feasible.

• Procure recyclable and reusable items over disposable versions (e.g. recyclable binder covers; rechargeable batteries).

5.1.6. Pollution Prevention and Waste Reduction
• Make DOT a paper-smart agency; evaluate business processes to identify those that may be made paperless, through electronic means (e.g., scanning, and appropriate tools to read scanned documents, faxing, and electronic versions of all standard forms).
• Calculate cost savings from going paperless; and reinvest savings into P2 programs.
• Recycle mixed office paper, which includes nearly all waste paper generated in an office, such as white paper (copier, printer, and notepaper), colored paper, file folders, and envelopes.
• Substitute electronic systems for paper based ones to eliminate unnecessary paper (e.g. shipping request forms, etc.)
• Encourage sensible practices for office paper usage, such as (a) reviewing documents on-line, rather than printing; (b) providing information electronically instead of through paper; and (c) distributing paper documents through routing rather than through duplication.
• Set double-sided copying or printing as the default mode for all copiers and printers DOT-wide.
• Reduce recordable media waste, such as CD-ROMs, by providing secure flash drives and remote access to agency data storage.
• Purchase digital magazine subscriptions and route them via e-mail.
• Use traps and physical barriers to prevent contact between pests and plantings.
• Leave mowed grass clippings on lawn areas (provided odor is not objectionable) and use recycled wood chips or compost for mulch.
• Compost all yard waste on site if possible.
• Evaluate potential use of organic and non-toxic soil amendments and/or pesticides.
• Use natural vegetation and xeriscaping rather than turf grass and non-native trees or shrubs, where appropriate.
• Use standard available products without Ozone Depleting Substances to refill existing chillers and refrigeration units.
• Convert existing refrigeration units to non-CFC and non-HCFC where practicable.
• Prevent fugitive emissions and manage CFCs purged from older units in accordance with Clean Air Act requirements.
• Require that all vendors reduce the amount of packaging waste, including substitution of reusable shipping containers for disposable packaging.
• Ensure that P2 and waste minimization programs are consistent with DOT-wide and lower-tier EMS's.
• Explore synergies between this Goal and the HPSB, Sustainable Acquisitions and Electronics Stewardship Goals, to maximize P2 and source reduction efforts.

5.2. Medium-Term Initiatives (3-5 years)

5.2.1. Planning and Design
• Implement a Hazardous Material Management policy for the Department and its OAs to reduce the quantities of hazardous materials purchased, used, and disposed.
• Promote the procurement and use of products with low levels of volatile organic compounds (VOCs) or non-toxic chemicals.
• Seek out innovative technologies for water, energy, and waste reduction.
• Develop a Department-wide financial strategy for contracting end of life recycling of e-waste.

5.2.2. Training and Awareness
• Conduct targeted analysis of use of green procurement practices and update training module in TMS.
• Establish a green procurement training module in TMS for the purchasing community.
• Consider starting campus clean up days/week at all DOT facilities to increase waste reduction awareness.

5.2.3. Facility Tracking and Reporting
• Audit facilities and field operations on a periodic basis to assure compliance with green procurement policies and practices.

• Gather data and conduct retroactive audits to determine which existing programs should be continued, and then fine-tune remaining programs to maximize waste reduction and cost-effectiveness.

5.2.4. Solid Waste Management
• Implement organics composting contracts where technically feasible and cost-effective.
• Determine a baseline for the amount of food waste generated at every DOT facility.

5.2.5. Pollution Prevention and Waste Reduction
• Perform life-cycle assessments (LCAs) of materials or products that DOT uses in large quantities.
• Explore opportunities to eliminate use of paper towels in restrooms.

5.3. Long-Term Initiatives (6-10 years)

5.3.1. Planning and Design
• Establish a DOT-wide contract for replacement of ink jet and toner cartridges that includes mandatory use of remanufactured ink jet and toner cartridges, easy recycling of spent ink jet and toner cartridges, and credit for recycled ink jet and toner cartridges.
• Encourage carbon footprint minimization through the supply chain by including contract provisions with suppliers of all materials, goods, and services to identify and use more energy-efficient products.
• Provide guidance, facilitate acquisition planning and establish Federal supply sources, such as the General Services Administration (GSA), Government Printing Office (GPO), Javits-Wagner-O'Day (JWOD) Program, the Defense General Supply Center (DGSC), and UNICOR for EPA-designated items and other recycled content products.

5.3.2. Solid Waste Management
• Ensure that all DOT facilities are CFC- and HCFC-free.
• Evaluate alternatives to expand P2 and source reduction such that the EO 13514 targets are significantly exceeded and that DOT is positioned to comply with any future, more stringent statutes, regulations, and/or EOs.
• Continue to engage with vendors and contractors to reduce upstream impacts in the supply chain, e.g., carbon emissions, air pollutants, wastewater, solid wastes, etc.
• Implement cost-effective, innovative P2 technologies.
• Identify and evaluate ways to use operations and purchasing, where possible, to contribute to chemical security by promoting a transition to the purchasing and use of safer chemicals.

5.3.3. Pollution Prevention
• Implement steps to reduce overall air, water, waste, carbon, and other impacts from the supply chain, consistent with LCAs.
• Continue to engage with vendors and contractors to reduce upstream impacts in the supply chain, e.g., carbon emissions, air pollutants, wastewater, solid wastes, etc.

5.3.4 Training and Awareness
• Establish web sites for Department policies and information on waste management and pollution prevention.

d. Positions –

DOT is planning to hire subject matter experts in the areas of pollution prevention, waste management, and green procurement.

e. Planning table –

The Department's planning table for this goal can be found at the end of this section.

f. Department status –

DOT developed a Green Procurement Plan (GPP) to enhance and sustain the DOT mission through cost effective acquisition that achieves compliance and reduces resource consumption and solid and hazardous waste generation. DOT's procurement of green products and services contributes to sound management of the Department's financial resources, natural resources, and energy. In its day-to-day operations, DOT is committed to be environmentally and energy conscious in its selection and use of products and services. The GPP demonstrates DOT's commitment to environmental stewardship by becoming a model consumer of green products and services.

DOT has implemented a Sustainable Acquisition Compliance System to ensure the GPP is being implemented. The Sustainable Acquisition Compliance System was initiated to 1) determine if the goals of the GPP are being implemented and progress made; and 2) provide a mechanism to provide continual improvement in contracting and using environmentally friendly materials and services.

Best practices for sustainable acquisition will be formally shared among the OA of the Department. For example, the Maritime Administration has a model Green Procurement Program. Key points of this initiative include acquisition of low sulfur marine fuel, alternative fuels, alternative-fueled vehicles, bio-based products, Energy Star® and energy efficient products, environmentally preferable products, non-ozone depleting substances for air conditioning, recovered material, renewable energy, and water efficient products. Limiting acquisitions and procurement to contractors (such as shipyards) that meet specified environmental standards is being evaluated.

g. Return on Investment -

At this time, DOT does not have any projects that fall into this category. However, given the limited resources, progress on some initiatives is slower than expected. DOT will provide more specific information in future plans as these types of decisions are made.

h. Highlights -

DOT
The DOT issued a new recycling policy for the DOT OAs.

FAA
The FAA's two centers have continued to work closely in increasing their recycling at their recycling center.

RITA
RITA has achieved better than 64 percent waste diversion rate at the Volpe Center which won local and state-wide awards for recycling.

FHWA
FHWA has implemented in multiple locations the following recycling and waste prevention: 1) participated in an electronic recycling drive (i.e., cell phones, computers, computer screens, television sets) resulting in 150 lbs of old electronics equipment being recycled, and 2) volunteered to be a "test floor" for the GSA's building recycling initiative.

Below is the planning table for this goal.

Pollution Prevention & Waste Reduction	Units	FY10	FY11	FY12	FY13	FY14	FY15	...	FY20
Non-Hazardous Solid Waste Diversion Targets (Non-C&D)	%	?	5	10	15	20	50	...	

Pollution Prevention & Waste Reduction	Units	FY10	FY11	FY12	FY13	FY14	FY15	...	FY20
C&D Material & Debris Diversion Targets	%	?	5	10	15	20	50	...	
If agency uses on-site or off-site waste-to-energy, estimated total weight of materials managed through waste-to-energy	Tons or Pounds	0	0	?	?	?	?	...	
Number of sites or facilities with on-site composting programs	#	2	2	?	?	?	?	...	
Number of sites or facilities recycling through off-site composting programs	#	0	0	?	?	?	?	...	
If agency has on-site or off-site composting programs, estimated total weight of materials diverted to composting	Pounds	441	441	?	?	?	?	...	
% of agency-operated offices/sites with a recycling program	%	95	95	?	?	?	?	...	
If agency offices located in multi-tenant buildings, % of those buildings with a recycling program	%	0	0	?	?	?	?	...	
% of agency-operated residential housing with recycling programs	%	0	0	?	?	?	?	...	
Other, as defined by agency	n/a	n/a						...	

Goal-Specific Items

The goal-specific items were addressed within the basic performance section above.

GOAL 6: Sustainable Acquisition

The Department has established policies, procedures, guidance and programs that will achieve the sustainable acquisition requirements of EOs 13423 and 13514. The DOT's Transportation Acquisition Regulation (TAR) establishes uniform acquisition policies that implement and supplement the Federal Acquisition Regulations (FAR) and Acquisition Management System (AMS) for sustainable acquisitions.

The EOs 13423 and 13514 establishes goals and a number of sustainable practices related to the acquisition of environmentally preferable products, including designated recycled-content products, designated biobased-content products, non-ozone depleting substances, non or less toxic materials, and green environmentally preferable and energy efficient) electronics.

To reduce solid and hazardous waste disposition, DOT has developed a GPP to enhance and sustain the DOT mission through cost effective acquisition that achieves compliance and reduces resource consumption and solid and hazardous waste generation. DOT's procurement of green products and services contributes to sound management of the Department's financial resources, natural resources, and energy. In its day-to-day operations, DOT is committed to be environmentally and energy conscious in its selection and use of products and services. The GPP demonstrates DOT's commitment to environmental stewardship by becoming a model consumer of green products and services. As well, the DOT has implemented a Green Procurement Compliance System to ensure the GPP is being implemented. The Green Procurement Compliance System was initiated to 1) determine if the goals established by the Senior Sustainability Officer in the GPP are being implemented and progress made and 2) provide a mechanism to provide continual improvement in contracting and using environmentally friendly materials and services

As part of its commitment to meeting EO 13514, DOT has made much progress in the last year on Goal 6 including:

• DOT instituted a Sustainability Scorecard into its quarterly 'regulatory review' process—individual meetings held between the Deputy Secretary and the Administrator of each of DOT's OAs. The 95% green procurement target is on this scorecard and each Administrator is now regularly accountable for progress and success.
• Continued to implement the GPP policy to ensure EPEAT-registered electronic product procurement preference is almost 100%.
• Conducted a DOT wide training on Green Procurement for all contracting officers, engineers, program officers and senior maangement with speakers from Department of Veterans Affairs, Department of Agriculture and MARAAD with over 200 attendees (live and webinar).
• DOT implemented a Green Procurement Compliance System to ensure the GPP is being implemented.
• DOT COTR's are required to complete a Green Procurement training course to obtain FAC-COTR Certification.
• FAA has updated their GPP and distributed it to all the Contracting Officers.
• All FHWA's purchase card holders and contracting officers take training that includes Going Green guidance. This policy has been in place for several years and now encompasses areas such as construction contracts.

a. Goal Description –

The Department adopts the following EO 13514 related goals:
• Ensure 95% of new contract actions, are in compliance with acquisition plans, statement of works and relevant contract clauses. Update Departmental affirmative procurement plans (also known as GPP or Environmentally Preferable Purchasing Plans), policies and programs to ensure that Federally-mandated designated products and services are included in all relevant acquisitions.

b. Department lead for Goal –

The DOT Senior Procurement Executive (SPE) is charged with implementing EOs 13514 and 13423 and will have responsibility for target development implementation, monitoring, evaluation and oversight.

c. Implementation method –

The DOT SPE in collaboration with the Office of Administrative Policy will develop and update policies that will facilitate sustainable acquisitions for the DOT.

DOT will implement the goals by ensuring that 95 percent 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, water efficient, biobased, environmentally preferable, non-ozone depleting, contain recycled content, or are non-toxic or less toxic alternatives, and by updating agency affirmative procurement plans, policies and programs to include all Federally-mandated designated products and services in all relevant acquisitions.

DOT will assess needs and institutionalize industry best practices; use reporting systems as a management tool to track contract clauses as well as segregate by Product Service Code contract actions that appear to be sustainable, work cross modal to share ideas and provide training. As well DOT will also benchmark other agencies for their best practices.

6.1. Short-Term Initiatives (1-2 years)

6.1.1. Policy and Guidance
• Facilitate environmental programs in the areas of acquisitions, facilities management, standards, waste prevention, recycling, and logistics activities as they relate to GPP.
• Review new contract actions to verify that green products and services are being acquired when appropriate.
• Issue procurement policies, regulations, and grant provisions in consonance with green procurement requirements.
• Incorporate use of green products in real property leasing policy and guidance.

• Utilize statements of work or specifications to eliminate virgin material requirements, promote the reuse of products, require the use of alternative fuels and alternative fueled vehicles, products containing recovered materials (e.g., EPA-designated products), products that are Energy Star® and FEMP designated or energy-efficient, water conserving WaterSense® labeled products, bio-based products, Environmentally Preferable Products, EPEAT registered products, and non-ozone depleting products.
• Continue to implement the GPP policy to ensure EPEAT-registered electronic product procurement preference.

6.1.2. Training and Awareness
• Conduct training on green procurement for procurement personnel (e.g., live, web-based, via training slides).
• Distribute information on best practices through awareness and outreach programs to facilitate markets for environmentally preferable products, services and new technologies.
• Create a module in TMS and eLMS and conduct green purchasing training for procurement personnel (e.g., live, web-based, via training slides)
• Facilitate and coordinate educational and promotional programs for employees (the purchasing community) and contractors, as appropriate.
• Implement an awareness program to promote the GPP.
• Conduct market research to determine the availability of environmentally preferable good and services.
• Promote the DOT GPP through articles in newsletters, workshops to educate employees, and using logos/recycling statements on official stationary and publications directed to reach field operations, procurement officials, supply and requirements personnel and individuals who purchase material or products with a government credit card.

6.1.3. Facility Tracking and Reporting
• Identify green procurement data for compilation and distribution to key stakeholders.
• Report the status of the GPP within the Department to Senior Management and externally to other applicable Federal agencies and offices.
• Require quarterly data calls to the OAs to continually improve green procurement process and better describe environmental and other green requirements in statements of work and contracts.
• Develop key metrics and create a system for tracking performance.
• Monitor DOT contracts for compliance with FAR Subpart 23.7- Contracting for Environmentally Preferable Products and Services, anf for requirements of certificate programs such as FAR 52.223-4, Recovered Material Certification.
• Ensure that FAR 52.204-4, Printed or Copied Double Sided on Recycled Paper and 52.223-6, Drug Free Workplace is in all DOT contracts.

6.2. Medium-Term Initiatives (3-5 years)

6.2.1. Planning and Design
• Provide guidance and facilitate acquisition planning and establish Federal supply sources, such as the General Services Administration (GSA), Government Printing Office (GPO), Javits-Wagner-O'Day (JWOD) Program, the Defense General Supply Center (DGSC), and UNICOR for EPA-designated items and other recycled content products.

6.2.2. Training and Awareness
• Conduct targeted analysis of use of green procurement practices and update training module in TMS and eLMS.
• Develop intranet website for sustainable acquisition frequently asked questions.
• Provide training opportunities to learn about life-cycle assessments (LCAs) of materials or products that DOT uses in large quantities.

6.2.3. Facility Tracking and Reporting
• Audit facilities and field operations on a periodic basis to assure compliance with green procurement policies and practices.
• Develop metrics to measure progress such as total dollars of procured green products vs. conventional.

6.3. Long-Term Initiatives (6-10 years)

6.3.1. Planning and Design
• Conduct a series of facilitated workshops to develop long-term initiatives to achieve these goals.
• Promotes a DOT-wide contract for replacement of ink jet and toner cartridges that includes mandatory use of remanufactured ink jet and toner cartridges, easy recycling of spent ink jet and toner cartridges, and credit for recycled ink jet and toner cartridges.
• Encourage carbon footprint minimization through the supply chain by including contract provisions with suppliers of all materials, goods, and services to identify and use more energy-efficient products.

d. Positions –

DOT Chief of the Contracting Officers (COCOs) is committed to incorporating sustainable acquisition as part of the Contracting Officers (COs) duties. COs are responsible for acquisition planning and to ensure the inclusion of applicable contract clauses in all new awards.

The DOT acquisition community must take a hard look at how it plans to implement this plan due to scarce resources. Currently, implementation plans are accomplished by a single FTE in DOT headquarters that has many competing and collateral priorities.

e. Planning Table –

The Department's planning table can be found at the end of this section.

f. Department Status -

DOT policies, procedures and green procurement language are contained within the FAR, AMS, TAR, TAM, and DOT Acquisition Policy Letter. There are several government websites and other sources that contain listings of EPPs, EPEAT and other sustainable products. Procurement uses these regulations and lists for all appropriate purchases and contracts.

The following are actions planned in FY 2011:

• The DOT will update master listings of environmentally preferable products to enable efficient access, and to better incorporate appropriate provisions, for services, commodities and technology.
• The DOT will update its GPP by fourth quarter of FY-11
• The DOT is currently developing a Green Guide for use by the Operating Administration.
• On an ongoing basis, the DOT will update the master listing of environmentally preferred products for access on the internal M60 website.
• The DOT will identify and make available computer based training that will be posted to the M60 website as well as TMS.
• he DOT has developed a Self Assessment Checklist and expect completion in the third quarter of FY-11

g. Return on Investment –

At this time, DOT does not have any projects that have been deliberately cancelled, suspended, or expanded due to ROI considerations. However, given the limited resources, progress on some initiatives is slower than expected. DOT will provide more specific information in future plans as these types of decisions are made.

The DOT will conduct periodic reviews of FedBizOps to ensure that sustainable requirements are included in Request for Proposals, Solicitations and Contract Awards. The DOT will follow-up on all corrective action plans to ensure agency implementation.

h. Highlights –

DOT's policies, procedures and green procurement language are contained within the FAR, AMS, TAR, TAM Policy Letters and the DOT Strategic Plan. Additionally, there are several government websites and other sources that contain listings of EPEAT and other sustainable products. DOT procurement and contractor purchasing personnel use these regulations.

Department-wide
The DOT OAs have incorporated green requirements during the acquisition planning process for all contract actions.

The DOT OAs are monitoring all contracts for compliance with FAR Subpart 23.7- Contracting for Environmentally Preferable Products and Services, anf for requirements of certificate programs such as FAR 52.223-4, Recovered Material Certification. Ensuring that FAR 52.204-4, Printed or Copied Double Sided on Recycled Paper and 52.223-6, Drug Free Workplace is in all DOT contracts.The DOT has developed a procurement checklist that will be distributed to each OA in the next few weeks.

The DOT conducts internal Compliance Reviews to ensure acquisition plan requirements incorporate the applicable sustainability goals herein and the goals identified in the DOT Green Purchasing Plan.

Currently DOT is one of the few agencies where COTR's are required to complete a Green Procurement training course to obtain FAC-COTR Certification.

OST
The OST conducted a DOT wide training on Green Procurement for all contracting staff, engineers, program officewith speakers from Department of Veterans Affairs, Department of Agriculture and had over 200 attendees.

FHWA
All FHWA's purchase card holders and contracting officers take training that includes Going Green guidance. This policy has been in place for several years and now encompasses areas such as construction contracts.

Challenges - A challenge for the Department is that it lacks an internal data tracking system for sustainability requirements. As well, the current Federal Procurement Data Reporting System (FPDS- NG) does not have data fields that support the requirements of the EOs. As a result, reporting is a labor intensive manual exercise that would require multiple resources.

Below is the planning table for this goal.

Sustainable Acquisition	Units	FY10	FY11	FY12	FY13	FY14	FY15	...	FY20
New Contract Actions Meeting Sustainable Acquisition Requirements	%	95%	95%	95%	95%			...	Hold
Energy Efficient Products (Energy Star, FEMP-designated, and low standby power devices)	%	n/a	TBD	?	?	?	?	...	
Water Efficient Products	%	n/a	TBD	?	?	?	?	...	
Biobased Products	%							...	

Sustainable Acquisition	Units	FY10	FY11	FY12	FY13	FY14	FY15	...	FY20
Recycled Content Products	%	n/a	TBD	?	?	?	?	...	
Environmentally Preferable Products/Services (excluding EPEAT - EPEAT in included in Goal 7)	%	n/a	TBD	?	?	?	?	...	
SNAP/non-ozone depleting substances	%	n/a	TBD	?	?	?	?	...	
Other, as defined by agency		n/a	TBD?	?	?	?	?	...	

SUSTAINABLE ACQUISITION CONTRACT REVIEW	1st QTR FY 11	2nd QTR FY 11	3rd QTR FY 11 (planned)	4th QTR FY 11 (planned)
Total # Agency Contracts	493	1204	TBD	TBD
Total # Contracts Eligible for Review	32	305	TBD	TBD
Total Contracts Eligible Contract Reviewed (i.e., 5% or more eligible based on previous OMB guidance)	32	58	TBD	TBD
# of Compliant Contracts	27	58	TBD	TBD
Total % of Compliant Contracts	85	100%	TBD	TBD

The DOT in an effort to provide a consistent method for collecting and providing DOT data, the Office of Administrative Policy in collaboration with the Office of the Senior Procurement Executive developed a template for submitting the results of the compliance review. The report was used to provide data on DOT efforts towards meeting EOs 13423 and 13514 goal of requiring 95% of all new contracts be considered green purchases. Each of the OA's was required to review five percent of all new contracts for the performance period between January 1, 2011 through March 31, 2011. The OAs selected the following types of contracts for review, i.e., products, construction and services. In total the OA's reviewed 329 contracts from a total contract of 1204. DOT reviewed 61 (approximately 5%) of the total eligible contract. Contracts reviewed included sustainable acquisition aspects, i.e., acquisition plan, statement of work, and contract clauses. All contracts reviewed were in compliance with the green procurement requirements. All the contracts in compliance included the appropriate clauses, i.e., energy efficient products, recycled content, biobased products, environmentally preferred etc. This review revealed 100% compliance with the sustainable acquisition goal. As well, OAs were required to submit corrective action plans.

Goal-Specific Items

The goal-specific items were addressed within the basic performance section above.

GOAL 7: Electronic Stewardship and Data Centers

The Department is committed to the principles and practices of electronic stewardship and efficient data center management. Electronic stewardship addresses the life-cycle management of electronics from procurement to disposal for the purpose of reducing the environmental and energy impacts of electronic product acquisition, operation, maintenance

and disposition. This goal also seeks to reduce the environmental and energy impacts of data centers. The EOs 13423 and 13514 set goals, objectives and sustainable practices applicable to electronics stewardship and data center management.

As part of its commitment to meeting EO 13514, DOT has made much progress in the last year on Goal 7 including:

• DOT instituted a Sustainability Scorecard into its quarterly 'regulatory review' process—individual meetings held between the Deputy Secretary and the Administrator of each of DOT's OAs. Power management targets are on the scorecard for OST and FAA, the managers of DOT's two computer networks system. The FAA Administrator and the OST CIO is now regularly accountable for progress and success.
• Ensured new IT related contracts contain an exchange clause referencing FMR 102-39 to avoid disposal costs for the Agency and to ensure recycling;
• Continued to implement the GPP to ensure EPEAT-registered electronic product procurement is the preference 100%.
• Currently DOT has consolidated 1 Tier I-IV and 2 Tier V data centers and continues to strive toward meeting targets defined in the attached DOT FDCCI Plan.
• DOT OAs began implementing duplex printing on its multi-function copier/printers and other energy-efficient or environmentally preferable features on its office equipment starting in January 2010, in accordance with DOT Printing Order 1360.5C.
• FHWA has purchased software products (e.g., productivity management software) to support telework and reduce business travel with webinar and video conferencing technology.
• RITA created and shared Federal Commuter Choice Survey for inventorying commuter greenhouse gases – survey tool was distributed to all Federal agencies as the best method available for accounting for Federal employee trips to and from work.

a. Goal description –

To fulfill the requirements of EOs 13423 and 13514, DOT will plan and take action working across the OAs to:
• Comply with OMB Federal Data Center Consolidation Initiative (FDCCI) data collection and planning activities deadlines to develop and submit updates to DOT Data Center Consolidation Plan;
• Implement defined Department milestones as defined in the FDCCI DOT Data Center Consolidation Plan;
• Use OMB defined performance metrics to monitor the Department's progress in meeting reduction goals in its data centers;
• Ensure 95% of new contract actions include task and delivery orders for products and services are energy efficient (ENERGY STAR or FEMP-designated) and environmentally preferable (EPEAT certified);
• Establish and implement policies to enable power management, duplex printing, and other energy efficient or environmentally preferable features on all eligible DOT electronic products;
• Establish and implement policies to extend the useful life of DOT electronic equipment to four years for desktops and laptops;
• Ensure environmentally sound practices with respect to the DOT's disposition of all DOT excess or surplus of electronic products; and
• Implement best practices in energy efficient management of servers and data centers.

b. Department lead for goal –

The Director of Information Technology and the Manager, Personal Property, as the designated Department leads, will direct the activities for policy, target development, implementation and oversight. The DOT Chief Technology Officer will act as Program Manager for FDCCI.

c. Implementation methods –

DOT will implement the goals listed above by addressing the four life-cycle phases for electronics assets: Acquisition, Operations & Maintenance (O&M), Facility Tracking and Reporting and End-of-Life (disposition).

Acquisition

• DOT will implement the OMB "Cloud First" planning for all relevant acquisitions, if a Cloud alternative is not chosen as an IT solution DOT will show that an alternatives analysis was completed and a Cloud Computing option was explored;
• Ensure procurement of Energy Star® and FEMP designated equipment;
• Ensure new IT related contracts contain an exchange clause referencing FMR 102-39 to avoid disposal costs for the Agency and to ensure recycling;
• Ensure new IT related contracts contain preferential or provisioned clauses for: double-sided or duplex printing capabilities, environmentally preferable products, and energy-efficient products (Note: These clauses should also be contained within solicitation provisions);
• Evaluate existing IT vendor contracts to see if they can be modified to include data elements and/or metrics for reporting to improve data quality (Note: New IT contracts should also include reporting capabilities, as applicable); and
• Require that all new printers and/or copiers, both network and personal, provide duplex printing capability in accordance with DOT Printing Order 1360.5C.

Operations & Maintenance

• Implement best management practices in energy-efficient management of servers and DOT data centers (e.g., consolidation, server virtualization, cloud computing);
• Maintain average lifespan of desktops, laptops, and servers to 4 years or better;
• Enable power management on all eligible desktops and laptops;
• Establish Department directive or guidance for power management;
• Develop or update IT operations and maintenance (O&M) policies, procedures and guidance, to ensure compliance and continued sustainability of power management, duplex printing, and other environmentally preferable features within the DOT;
• Enable duplex printing features on all imaging equipment as the standard "default" setting. DOT Printing Order 1360.5C establishes standards for duplexing as well as other environmentally preferred imaging practices; and
• Provide adequate training, awareness, and communication to DOT employees on the importance of ES and the efforts the DOT is taking to reduce our environmental footprint and enhance sustainability.

Facility Tracking and Reporting

• Establish performance metrics for electronic stewardship activities and data centers.
• Implement DOT-wide integrated reporting and tracking systems.

End of Life Management

• Implement environmentally sound management practices for recycling (eCycling) and final disposal of electronic wastes to help keep electronic components out of the landfill and recover materials for use in the manufacture of new products, including the following:

Donate or recycle used electronics to qualified organizations;

Dispose of usable or refurbished equipment through the General Services Administration and recycle unusable, unsold equipment using sustainable environmental practices;

Implement program to partner with electronics recyclers that adhere to strict environmentally sustainable practices; and

Recycle end of life electronics and attempt to increase DOT reuse/recycle percentage.

• Improve data collection and metrics on the reutilization and disposition of DOT electronic equipment in the areas of: Exchange/Sale (e.g., Federal Management Regulation (FMR) 102-39, Asset Recovery Program), reuse internally, declared excess and reported to GSA, donation through Computers for Learning (CFL), transfer to eligible Federal entities (e.g., Direct Transfers), declared surplus, public sales (e.g., GSA Auction), and abandonment/ destruction and/or eCycling (e.g., Unicor);

• Establish and implement policies mandating the use of Asset Recovery Services or R2 certified recycling agents for Agency electronic equipment at its end of life;
• Ensure new IT related contracts contain an exchange clause referencing FMR 102-39 to avoid disposal costs for the Agency and to ensure recycling.
DOT has developed Electronic Stewardship and Data Centers milestones that include short-, medium-, and long-term initiatives to accomplish these goals.

7.1. Short-Term Initiatives (1-2 years)

7.1.1. Policy and Guidance
• Continue to implement the GPP to ensure EPEAT-registered electronic product procurement preference.
• Conduct a gap analysis of existing policies and programs that address electronic stewardship.
• Form a community of subject matter experts across DOT OAs to develop policies and guidance.
• Monitor Electronic Stewardship progress by establishing metrics via the Department's EMS communications and monitoring system and internal scorecard that evaluates EO and other Sustainability requirements and objectives across all 12 OAs and OST, twice annually.

7.1.2. Planning and Design
• Study consolidation and virtualization of select data centers and continue to participate in the Federal Data Center Consolidation Initiative (FDCCI).
• Update DOT list of all data center construction, expansion and/or consolidation activities currently planned or under way across all Departmental modes through submission of DOT FDCCI Asset Inventory and Final Consolidation Plan deliverables.
• Update DOT-wide data center consolidation plan to reflect all Agency FY11 FDCCI activities and planning.
• Update DOT data center baseline by conducting hardware and software (e.g., major systems and support) inventory validation to include energy usage and cost information.
• Develop guidance on the most effective methods of benchmarking current energy consumption/utilization.
• Conduct benchmarking study to identify current and best management.

7.1.3. Training and Awareness
• Develop aggressive awareness campaign to promote telework (see Goal 2, Scope 3 Greenhouse Gas Emissions Reduction) and to ensure employees (management employees specifically) are aware of the full range of support and resources available to them.
• Develop training for telework technologies.
• Create awareness of DOT-wide double-sided copying and printing policy.
• Develop and implement DOT FDCCI Communications Plan

7.1.4. Acquisition
• Review internal Department procurement supply, program, logistics procedures, plans and directives and revise them as necessary to achieve the goals of EO 13514.
• Review and revise specifications, product descriptions, and standards during the acquisition planning stage to enhance DOT's procurement of EPEAT-registered products, Silver rated or higher (or equivalent). Develop IT Blanket Purchase Agreements (BPAs) that include EPEAT requirements; revise existing contracts and BPAs to include EPEAT compliance provisions.
• Require that all new printers and/or copiers, both network and personal, provide duplex printing capability.
• Ensure procurement of Energy Star® and FEMP designated equipment.
• Procure EPEAT Silver-rated electronic products or higher if available. • Purchase 95 percent or better of the DOT electronic computing equipment from EPEAT registered manufacturers that are Energy Star® 5.0 compliant.
• Continue four-year refresh policy, buying new EPEAT monitors, computers, and laptops, Silver rated or higher (or equivalent), when possible and applicable.

7.1.5. Operations and Maintenance
• Enable Energy Star® power management features on desktops, laptops and monitors.
• Extend the useful life of electronics to a minimum of 4 years to the maximum degree possible based on mission needs.

7.1.6. End of Life Management
• Develop policy to use environmentally sound disposal practices for excess or surplus electronic products.
• Recycle end of life electronics and attempt to increase DOT reuse/recycle percentage.

7.1.7. Facility Tracking and Reporting
• Establish milestones for reaching electronic stewardship goals based on input from acquisition, property, and IT staff.

7.2. Medium-Term Initiatives (3-5 years)

7.2.1. Policy and Guidance
• Define method to calculate the incremental costs for buying energy efficient equipment and associated cost savings.

7.2.2. Planning and Design
• Conduct an analysis of the potential costs (considering life cycle costs) and benefits of investing in technology tools to support teleworkers.
• Conduct an analysis of the potential costs and environmental benefits of virtualization through the use of cloud computing.

7.2.3. Training and Awareness
• Develop power management training and broadcast to all DOT employees and contractors about policy and power management commitment.
• Determine power management training requirements and develop any necessary training.
• Develop training modules in electronic training system relating to the energy-efficient operation of computers and monitors that will be customized to meet the needs of target audiences, with general modules for all DOT employees

7.2.4. Acquisition
• Assess and purchase software products to support telework or reduce business travel.

7.2.5. Operations & Maintenance
• Revise O&M policies to reflect the requirement of the EO 13514 and incorporate language to enable telework.
• Continue to update DOT FDCCI Plan to reflect milestones achieved and planned future milestones in accordance with OMB guidance aligned to the OMB FDCCI.
• Implement virtualization of the environment where appropriate through cloud computing aligned with the OMB FDCCI and Federal Cloud Computing Initiatives.

7.2.6. End of Life Management
• Use vendors' exchange/take back programs.

7.2.7. Facility Tracking and Reporting
• Strengthen the existing reporting system for tracking, reporting and communicating electronic property disposal actions.

7.3. Long-Term Initiatives (6-10 years)

7.3.1. Planning and Design
• DOT will conduct a series of facilitated workshops to develop and implement strategies and outline long-term initiatives to achieve these goals.

7.3.2. Operations and Maintenance
• Consolidate selected data centers across DOT in order to achieve cost savings, energy consumption reductions, optimal space utilization and improvements in IT asset utilization. These data centers are identified in the DOT Data Center Consolidation Plan developed in compliance with guidance provided by the OMB FDCCI.

d. Positions -

The majority of data center consolidation is completed by full-time staff, but other O&M activities and lack of resources restrict DOT from the ability to assign dedicated employees to this project. Major staffing concern for the FDCCI are repurposing of federal FTEs from decommissioned sites and labor union issues.

The majority of non data center consolidation projects and initiatives are completed as collateral duties for federal FTEs; therefore, the implementation of these projects and initiatives are at the mercy of availability of those assigned.

e. Planning Table –

All data center reduction and optimization goals and targets can be viewed throughout the DOT FDCCI Plan. Section 2 of the plan states the following targets to be achieved by the close of FY 2015.

11% reduction in Tier 1-4 data centers
13% reduction in server rooms/closets
15% reduction in racks
20% reduction in servers
10% savings in energy consumption
10% savings in building operational costs
25% virtualization target
8:1 VM's per host for Windows Servers; 3:1 VM's per host for Non-Windows Servers
60% physical server utilization target for all servers

DOT is 80% power management enabled for eligible PCs and on track for 100% by 12/31/11.

f. Department Status -

The DOT will continue to comply with the OMB FDCCI. An Agency FDCCI Plan was approved 12/2010 and DOT representation participated in a 2-day GSA/OMB facilitated Peer Review of Agency Plans.

Updates to the DOT Asset Inventory and FDCCI Plan were submitted in 2/2011 and 3/2011 to include FAA NAS data center data and planning.

The DOT will submit an updated Asset Inventory by the end of Q3 2011 and an updated DOT FDCCI by the close of Q4 2011.
DOT achieved the goal of ensuring 95% of its information technology (IT) purchases were EPEAT certified and has begun an effort to enable power management settings on eligible desktops and laptops.

The DOT created a Printing Order (1360.5C) to enforce better printing practices and enhanced environmental benefits such as duplex printing, toner and paper reduction, as well as energy reduction by migrating to multifunctional devices (MFPs) versus desktop printers.

g. Return on Investment –

At this time, DOT does not have any projects that have been deliberately cancelled, suspended, or expanded due to ROI considerations. However, given the limited resources, progress on some initiatives is slower than expected. DOT will provide more specific information in future plans as these types of decisions are made.

As stated in the DOT FDCCI Plan, DOT estimates a $23,661,023 return on investment over 5 years for the FDCCI with the first return on investment showing up in FY13 (~1M) and the majority of the return realized in FY15.

The DOT FDCCI Plan includes section 5.1 which addresses Cost Benefit Analysis and defines the Return on Investment throughout the lifecycle of the initiative.

h. Highlights –

Department-wide
Currently the DOT has consolidated one Tier I-IV and two Tier V data centers and continues to strive toward meeting targets defined in the attached DOT FDCCI Plan.

The DOT OAs have begun implementing duplex printing on its multi-function copier/printers and other energy-efficient or environmentally preferable features on its office equipment starting in January 2010, in accordance with Department policies.

FHWA
The FHWA has purchased software products (e.g., productivity management software) to support telework and reduce business travel with webinar and video conferencing technology.

RITA
RITA created and shared Federal Commuter Choice Survey for inventorying commuter greenhouse gases – survey tool was distributed to all Federal agencies as the best method available for accounting for Federal employee trips to and from work.

Challenges

Enabling power management on all eligible desktop and laptop computers has proven to be extremely challenging in the Window XP environment. DOT did not have funds available to purchase a vendor solution and had to pursue this goal by leveraging internal capabilities. Several technological issues still remain and work arounds/mitigation strategies are being developed. Due to the issues inherent in enabling power management settings at the enterprise level in a predominantly Windows XP environment, DOT is working very hard to demonstrate as much compliance as possible by the 6/30/2011 OMB deadline.

Below is the planning table for this goal.

ELECTRONIC STEWARDHIP & DATA CENTERS	Units	FY10	FY11	FY12	FY13	FY14	FY15
% of electronic product acquisition covered by current Energy Star specifications that must be energy-star qualified	%	n/a	100	100			
% of covered electronic product acquisitions that are EPEAT- registered	%	n/a	95	95			
% of covered electronic product acquisitions that are FEMP- designated	%	n/a	95	95			

ELECTRONIC STEWARDHIP & DATA CENTERS	Units	FY10	FY11	FY12	FY13	FY14	FY15
% of agency, eligible PC, Laptops, and Monitors with power management actively implemented and in use	%	n/a	100	100			
% of agency, eligible electronic printing products with duplexing features in use	%	n/a	95	100			
% of electronic assets covered by sound disposition practices	%	n/a	100	100			
% of agency data centers independently metered, advanced metered, or sub-metered to determine monthly (or more frequently) Power Utilization Effectiveness (PUE)	%	n/a	see note	see note			
Reduction in the number of agency data centers	%	n/a	see note	see note			
% of agency data centers operating with an average CPU utilization greater than 65%	#	n/a	see note	see note			
Maximum annual weighted average Power Utilization Effectiveness (PUE) for agency.	#	n/a	1.8	1.7	1.6	1.5	1.4

Goal-Specific Items

In the above planning table all information concerning physical data centers, CPU, and PUE is addressed in the DOT Data Center Consolidation Plan in compliance with the OMB FDCCI.

GOAL 8: Agency Innovation & Government-Wide Support

The Department has a long history of innovation in policies, programs, practices and technology associated with transportation. DOT has shown the same leadership in developing and implementing policies, practices and technology to expand the Department's sustainability mission beyond what is required in EO 13514 and beyond what is described elsewhere in this document.

a. Goal description –

Develop innovative practices, technologies, or techniques that can be used to achieve the goals contained within this plan, which include but are not limited to:
I. Best practices
II. Data systems
III. Technology to facilitate communication and innovation

b. Department lead for goal –

The Assistant Secretary for Administration is the designated Agency lead for innovation and government-wide support.

c. Implementation methods –

Though the Department's higher-tier EMS, DOT will use the framework to implement, monitor, and continuously improve the programs and projects identified in the SSPP. By following the "plan-do-check-act" process in its higher-tier EMS, DOT will be able to identify new, innovative practices to address many of the goals within this SSPP.

d. Positions –

Additional resources are needed at HQ and the OA level to help identify and develop innovative practices and technologies.

e. Planning Table –

The Department's planning table for this goal can be found at the end of this section.

f. Department Status –

DOT is an active participant in many of the Federal Interagency Workgroups that have been formed to address the sustainability goals of EO 13423 and EO 13514. In particular, DOT has been involved with the following groups:
1. Interagency Energy Management Task Force
2. Sustainable Acquisition Materials Management Workgroup
3. Federal Electronic Challenge Workgroup
4. Federal Electronic Stewardship Workgroup
5. Federal Working Group on GHG Accounting and Reporting
6. Interagency Sustainability Workgroup
7. INTERFUELS
8. EISA Section 432 CTS InterAgency Task Force Working Group

In addition to participating interagency workgroups, DOT has developed tools or provided assistance to other agencies in meeting Federal/Congressional reporting requirements.

DOT is taking a leadership role in promoting more transportation choices, promoting affordable housing and valuing communities through its interagency collaboration and leadership. By chairing the interagency team and working with the General Services Administration, EPA, Department of Housing and Urban Development and in coordination with the Department of Homeland Security and DOD, DOT developed the Guidelines for Sustainable Locations for Federal Facilities required by the EO. The impact of this work is significant as the Guidelines are to be used by all Federal agencies in determining future site locations.

Additionally, the U.S. DOT Volpe Center has contributed to the greater Federal GHG inventory effort by creating and providing the advanced methodology for scope 3 Federal commuter emissions through designing the "Commuter Choice Survey." The White House Council on Environmental Quality (CEQ) recognized the Volpe survey as the "best available method" for estimating GHG associated with Federal commutes and recommended its use to all Federal agencies for calculating their scope 3 emissions for the GHG inventory. DOT used this Volpe survey tool to survey all employees across the Department to measure their FY10 commuting emissions and achieved a reasonable response rate.

Finally, DOT will participate in regional and local transportation planning by integrating comprehensive stakeholder participation into current operating policy. DOT will continue to provide comprehensive information on Greenhouse Gases, Climate Change, Adaptation and Transportation through its Transportation and Climate Change Clearinghouse (TCCC). Through the TCCC website, DOT provides regional and local transportation planning leaders around the world access to state-of-the-art research and technical guidance surrounding this global issue. Internally, DOT will work to establish a "green travel"' policy which outlines carbon reduction strategies for employees on official travel, including recommendations for fuel-efficient vehicles and "green" lodging services. These strategies will be refined and enhanced in future annual updates of this Plan.

g. Return on Investment –

At this time, DOT does not have any projects that have been deliberately cancelled, suspended, or expanded due to ROI considerations. However, given the limited resources, progress on some initiatives is slower than expected. DOT will provide more specific information in future plans as these types of decisions are made.

h. Highlights –

DOT formed an organization-wide green team to address many requirements of EO 13424 and EO 13514 in the HQ building. This group contains members from each of the OAs and is responsible for identifying and implementing many sustainability-related activities in the HQ building which can reduce energy and water consumption, paper use, and/or increase recycling.

DOT is pleased to provide a short summary of innovations for the previous year by OA:

FAA
In November 2009, FAA began the Greening Initiative – an FAA-wide, collaborative effort to address EO 13514 and other related mandates. The vision for the Greening Initiative is "to strengthen FAA energy and environmental management to enhance stewardship and compliance, and foster an FAA-wide culture change." The Greening Initiative is comprised of nine program areas: greenhouse gas (GHG) emissions, energy efficiency, water resources, regional planning, high performance sustainable buildings (HPSB), pollution prevention, green procurement, electronics stewardship (ES), and environmental management system (EMS). This initiative is managed and facilitated by a cross-FAA Sustainability Senior Executive Council (SEC) and working groups for each program area. The Sustainability SEC serves in an advisory role and provides input, approval, resources, and recommendations to FAA upper management, as needed. The program area working groups identify near-, medium-, and long-term sustainability activities.

The FAA currently houses NOAA for contract weather support (CWP) throughout the airports in the United States to support the National Air Safety System. Further the FAA allows other agencies to use space in some of the technical facilities as well as use of some of the radar systems in the US. Additionally, The FAA has four buildings at the William J. Hughes Technical Center in Atlantic City that are used by the Department of Homeland Security.

FAA funded Airport Sustainability Master Plan Pilot Projects in 2010 at 10 Regional Airports http://www.faa.gov/airports/environmental/sustainability/

MARAD
The OA continues to meet with local and regional officials in developing an environmental sound, safe and secure maritime transportation system. In support of the goals, the OA is working with local and regional planning officials to improve efficiency and reduce truck traffic by instituting marine highway, infrastructure, and port development projects nationwide.

Recognizing existing community transportation infrastructure, MARAD is working to increase the effectiveness of local planning for energy choices by ensuring planning for new facilities and new leases include considerations for environmentally-sustainable and pedestrian- friendly areas. MARAD is also analyzing impacts from energy usage and alternative energy sources by the National Environmental Policy Act process.

NHTSA
NHTSA's mission is to save lives, prevent injuries, and reduce economic costs due to road traffic crashes. NHTSA also implements the Corporate Average Fuel Economy (CAFE) program and the Medium and Heavy Duty fuel efficiency improvement program, which aim to reduce energy consumption by increasing the fuel efficiency of vehicles on our Nation's roads.

Employing sustainable practices complements NHTSA's ongoing work. EO 13514 emphasizes the importance of data-driven analysis, requiring that agencies prioritize actions based on a full accounting of economic and social benefits

and costs, and drive improvement by annually evaluating performance, extending or expanding projects with net benefits, and reassessing or discontinuing under-performing projects. NHTSA is committed to using scientifically sound methods to ensure the quality and integrity of data underpinning our regulations and policies. An emphasis on sustainability will further the OA's work, enhancing decision-making and efficiency across its key priorities.

In addition to enhancing motor vehicle safety, energy conservation is a key OA function. NHTSA advances national efforts to reduce energy use and associated GHG emissions. The OA is actively working on multiple historic initiatives to improve the efficiency of our Nation's vehicle fleet – from passenger cars to heavy-duty tractor-trailers – and in doing so, to make great strides in reducing petroleum consumption and vehicle emissions.
NHTSA and EPA have proposed first-ever joint regulations to reduce the energy consumption by greenhouse gas emissions from medium- and heavy-duty commercial trucks. This comprehensive national program is projected to reduce GHG emissions by nearly 250 million metric tons and save 500 million barrels of oil over the lives of the vehicles produced within the program's first five years.

Finally, at NHTSA and DOT, we believe that alternative fuel and electric drive vehicles have an important role to play in our continued goal of increasing fuel efficiency and decreasing greenhouse gas emissions. NHTSA is actively working to support President Obama's goal of putting one million plug-in electric vehicles (EVs) on the road by 2015. Under NHTSA's fuel economy program, manufacturers receive a special credit for their EVs' fuel economy, and the credits NHTSA provides incentivize the production of EVs. To support this growing sector, NHTSA is also undertaking research related to electric vehicle safety and advanced batteries. For example, NHTSA has purchased a 2011 Chevrolet Volt and a 2011 Nissan Leaf for compliance testing to various Federal Motor Vehicle Safety Standards (FMVSS). Both vehicles are currently at our labs undergoing testing.

RITA
The RITA has a long commitment to improving environmental performance and has already made progress in meeting EO 13514 goals. In 2006, the Volpe Center created a center-wide Green Team with representatives across disciplines. RITA formed a headquarters Green Team in 2010. RITA headquarters has worked with the Volpe Center to connect both Green Teams and advance sustainability across the OA.

In FY 2010, RITA achieved the following accomplishments:
• Established the RITA-wide Green Team;
• Created and shared Federal Commuter Choice Survey for inventorying commuter greenhouse gases – survey tool was distributed to all Federal agencies as the best method available for accounting for Federal employee trips to and from work;
• Volpe Center full roll-out of the Demand Response program with ISO New England at the Volpe Center;
• Joined the US Green Building Council as a member on behalf of the DOT; and
• Released beta version of the AEDT to calculate aviation pollution and greenhouse gas emissions for all flights in the United States and across the globe.

FHWA
The FHWA has incorporated participation in regional transportation planning (recognition and use of existing community transportation infrastructure) into existing policy and guidance. The FHWA currently cooperates and provides guidance on surface transportation issues nationwide. The FHWA is providing support to State and regional agencies on guidance and technical support. The FHWA will begin reviewing State transportation climate action plans, and sponsorship of peer exchanges to assist agencies in developing effective planning practices under existing regulations. The FHWA is now assessing public transportation in future site locations of administrative offices.

FHWA launched the beta version in 2010 of the Sustainable Highways Self Evaluation Tool to promote environmentally sustainable roadway projects nationwide: http://www.sustainablehighways.org/.

SLSDC

The SLSDC operates and maintains the U.S. infrastructure and waters of the St. Lawrence Seaway, while performing trade development activities focused on economic development for the Great Lakes St. Lawrence Seaway System. Its mission is to serve the marine transportation industry by providing a safe, secure, reliable, efficient and competitive deep draft international waterway, in cooperation with the Canadian St. Lawrence Seaway Management Corporation. By providing a safe, secure, reliable, efficient and competitive deep draft international waterway, the SLSDC will promote more waterborne transportation of goods which creates less GHG emissions per ton mile than moving the same goods on trains or trucks. The reduction of trucks on the nation's highway system will reduce GHG emissions not only from those trucks but also from other vehicles that are delayed in traffic due to that congestion. The SLSDC also meets annually with U.S. and Canadian Mohawk representatives to discuss ice breaking activities prior to the opening of each navigation season.

PHMSA

Through PHMSA, the DOT develops and enforces regulations for the safe, reliable, and environmentally sound operation of the nation's 2.3 million mile pipeline transportation system and the nearly 1 million daily shipments of hazardous materials by land, sea, and air. The OA goals include reducing the risk of harm to the environment due to the transportation of oil and hazardous materials by pipeline and other modes, as well as reducing the consequences (harm to people, environment, and economy) after a pipeline or hazmat failure has occurred.

PHMSA provides support to State and Federal agencies by collaborating with teams around the country, including Coast Guard and EPA, to protect the environment; including finding sources to ensure local citizens have clean drinking water.

Below is the planning table for this goal.

AGENCY INNOVATION & Government-Wide Support	Units	FY10	FY11	FY12	FY13	FY14	FY15	...	FY20
Programs, Projects, Initiatives that support Gov-wide efforts	Number of Innovations	3	TBD	TBD	TBD	TBD	TBD		TBD
Other, as defined by agency									

Goal-Specific Items

The goal-specific items were addressed within the basic performance section above.

Section 3: Agency Self Evaluation

Agency Self Evaluation	Answer
Does your Sustainability Plan incorporate and align sustainability goals, GHG targets and overarching objectives for sustainability with the Agency Strategic Plan?	Yes
Does it provide annual targets, strategies and approaches for achieving the 2015 and 2020 goals?	Yes
Is the Sustainability Plan consistent with the FY2012 President's Budget?	Yes

Agency Self Evaluation	Answer
Does the Sustainability Plan integrate all statutory and Executive Order requirements into a single implementation framework for advancing sustainability goals along with existing mission and management goals, making the best use of existing and available resources?	Yes
Does your plan include methods for obtaining data needed to measure progress, evaluate results, and improve performance?	Yes

1. Did your agency meet by 12/30/10 due date and/or is it now able to demonstrate comprehensive implementation of the EO 13423 Electronic Stewardship goals?

· Acquire at least 95% EPEAT-registered electronics

· Enable energy star or power management features on 100% of eligible PCs

· Extends the life and/or uses sound disposition practices for its excess or surplus electronics

(If these goals have not been met and demonstrated, then agency should describe its plan and milestones to demonstrate full compliance.)

DOT is able to demonstrate implementation of most of the EO 13423 Electronic Stewardship goals. DOT has acquired at least 95% EPEAT-registered electronics. DOT also extends the life and/or uses sound disposition practices for its excess or surplus electronics.

DOT is 80% power management enabled for eligible PCs and is still in the process of enabling power management on 100% of all eligible PCs. Enabling power management on all eligible desktop and laptop computers has proven to be extremely challenging in the Window XP environment. DOT did not have funds available to purchase a vendor solution and had to achieve this goal by leveraging internal capabilities. Several technological issues still remain and work-arounds or mitigation strategies are being developed. Due to the issues inherent with enabling power management settings at the enterprise level in a predominant Windows XP environment DOT is working hard to demonstrate full compliance as soon as possible.

2. Is your agency tracking and monitoring all of its contract awards for inclusion of requirements for mandatory federally-designated green products in 95% of relevant acquisitions?

(If it is finding non-compliance issues, then it should identify corrective actions the agency is taking this year to demonstrate compliance with the 95% sustainable acquisition goal by the end of FY2012.)

DOT is monitoring its contract awards by sampling 5% of its contracts each quarter as instructed for inclusion of requirements for mandatory federally-designated green products in 95% of relevant acquisitions. For the cases of non-compliance, DOT has identified and begun implementing corrective actions such as improved training and revisiting procurement procedures to incorporate green products. Contracts found to be missing green clauses during the 5% quarterly sampling will be subject to appropriate corrective actions that could include modifications, additional guidance, and/or additional training.

3. Has your agency completed energy evaluations on at least 75% of its facilities?

(If agency has not met this goal, then it should describe plans for catching up on this requirement in the next 6 months.)

Yes

4. Will your agency meet the deadline of October 1, 2012 (EPACT'05 Sec 103) for metering of energy use? (Agency should provide current status of buildings metered and plans for meeting the deadline).

DOT is on track to meet the 2012 metering deadline. Based on the data collected in January 2011, for the 2010 GHG Inventory, 95% of buildings have electricity meters and 85% have natural gas meters.

5. If your agency reports in the FRPP, will it be able to report by December 2011 that at least 7% of its inventory meets the High Performance Sustainable Guiding Principles?

(If no, agency needs to provide schedule and plan for actions to be taken in the next six months.)

No, DOT does not expect to be able to report that 7% of its inventory meets the HPSB Guiding Principles by December 2011. DOT is actively focusing efforts to increase the number of its buildings that meet the HPSB guiding principles. Many buildings are in the initial stages of assessment and implementation. Most of these projects will take several years to complete and financial resources are not certain, therefore they will not be ready by December 2011. However, DOT will be adding three more buildings to its HPSB inventory in 2011.

Appendix 1: Energy & Sustainability Resources/Investments (Circular A-11, Section 25)

Treasury Agency Code (2 digits)	Treasury Account Code (4 digits)	Treasury Account Name	Goal	Type of Investment	Type of Alt. Finance	Intended Purpose/Use	Budget FY10 - ($K)	Budget FY11 - ($K)	Budget FY12 - ($K)	Comments
69	1120	Administrative Expenses	3: High Performance Sustainability Design/Green Buildings/Regional and Local Planning	Embedded/ Leveraged Investment	N / A	Operations/ Maintenance	4100	4340	4746	FTA rent for the DOT EPA Energy Star rated Headquarters building which has a high efficiency heating and cooling system and insulating green roof, both which help reduce GHGs and reduce costs for USDOT. In addition, the building's green roof and planters capture stormwater runoff on-site and the buildings infill location on a major transit corridor focuses activity in an existing community accessible by multiple modes.
69	8540	Operations and Safety	3: High Performance Sustainability Design/Green Buildings/Regional and Local Planning	Embedded/ Leveraged Investment	N / A	Operations/ Maintenance			4746	FTA rent for the DOT EPA Energy Star rated Headquarters building which has a high efficiency heating and cooling system and insulating green roof, both which help reduce GHGs and reduce costs for USDOT. In addition, the building's green roof and planters capture stormwater runoff on-site and the buildings infill location on a major transit corridor focuses activity in an existing community accessible by multiple modes.

Treasury Agency Code (2 digits)	Treasury Account Code (4 digits)	Treasury Account Name	Goal	Type of Investment	Type of Alt. Finance	Intended Purpose/Use	Budget FY10 - ($K)	Budget FY11 - ($K)	Budget FY12 - ($K)	Comments
69	1301	Operations - Video Conferencing Core Infrastructure	2: Scope 3 GHG Reduction/Develop and Maintain Agency Comprehensive GHG Inventory	Incremental Investment	N / A	GHG Management	0	0	614	In order to solidify our video infrastructure we will require an ongoing investment in lifecycle management of endpoints and infrastructure equipment. We will also require approximately $50K in additional annual maintenance contracts. The underlying video infrastructure will require an investment in additional components to provide resilient and redundant service. As more and more organizations take advantage of the service investments must be made to increase bridging capacity and bandwidth to outlying facilities. Infrastructure upgrades will cost approximately $300K.
69	1301	Operations - Video Conferencing Core Infrastructure	2: Scope 3 GHG Reduction/Develop and Maintain Agency Comprehensive GHG Inventory	Embedded/ Leveraged Investment	N / A	GHG Management	305	305	314	Video conferencing has saved the FAA approximately $5M in the two years that cost avoidance has been tracked, however necessary investments in the infrastructure have been funded with year end money, or postponed due to budget shortfalls. If this is to be an Agency-wide viable service, investments must be made and an operational funding stream must be created to sustain the growth and support of the program.
69	1301	Operations - Electronic Stewardship	7: Electronic Stewardship and Data Centers	Embedded/ Leveraged Investment	N / A	Energy Management	47	40	40	

Treasury Agency Code (2 digits)	Treasury Account Code (4 digits)	Treasury Account Name	Goal	Type of Investment	Type of Alt. Finance	Intended Purpose/Use	Budget FY10 - ($K)	Budget FY11 - ($K)	Budget FY12 - ($K)	Comments
69	1301	Operations - Electronic Stewardship	7: Electronic Stewardship and Data Centers	Incremental Investment	N / A	Energy Management	0	0	466	In order to demonstrate FAA compliance with EO 13514 federal mandates for Electronic Stewardship incremental investments in both labor and initiatives will be required to ensure sustainability. There are several initiatives identified in the DOT and FAA SSPP that will likely require funding. The request for $466K includes funding for 1 dedicated FTE and 1 Contractor to support the FAA's Electronic Stewardship Program, as well as $250K for sustainable activities. The program is currently being supported by only a half FTE, which does not belong to our organization, and a half contractor. The 250K (ballpark estimate) for sustainable activities, is for initiatives such as, but not limited to: metering electronic devices, enabling power management, and enabling duplex printing. There are other initiatives such as life cycle extension, utilizing R2 certified recycling facilities, and implementing other environmentally preferred features that could require additional or switching costs.

Treasury Agency Code (2 digits)	Treasury Account Code (4 digits)	Treasury Account Name	Goal	Type of Investment	Type of Alt. Finance	Intended Purpose/Use	Budget FY10 - ($K)	Budget FY11 - ($K)	Budget FY12 - ($K)	Comments
69	1301	Operations - Data Center Investments	7: Electronic Stewardship and Data Centers	Embedded/ Leveraged Investment	N / A	Data Center Consolidation	389	291	291	This funding is for the OMB Federal Data Center Consolidation Initiative which includes closing data centers, server virtualization, making sure magnet data centers have sufficient capacity to support consolidation, and third-party co-location services. It does not include funding for sustainability activities.
69	8107	Facilities and Equipment - Data Center Investments	7: Electronic Stewardship and Data Centers	Embedded/ Leveraged Investment	N / A	Data Center Consolidation	365	1900	1000	This funding is for the OMB Federal Data Center Consolidation Initiative which includes closing data centers, server virtualization, making sure magnet data centers have sufficient capacity to support consolidation, and third-party co-location services. It does not include funding for sustainability activities.
69	1301	Operations - Data Center Investments	7: Electronic Stewardship and Data Centers	Incremental Investment	N / A	Data Center Consolidation	0	0	250	There are several goals and objectives identified in the DOT and FAA SSPPs that will likely require funding. The request for $250K is a ballpark estimate that will be used for initiatives such as, but not limited to: enhanced metering of FAA's 156 data centers, virtualization efforts, and a repository to collect data metrics for reporting purposes. These activites are not included in the broader OMB Federal Data Center Consolidation Initiative.

Treasury Agency Code (2 digits)	Treasury Account Code (4 digits)	Treasury Account Name	Goal	Type of Investment	Type of Alt. Finance	Intended Purpose/Use	Budget FY10 - ($K)	Budget FY11 - ($K)	Budget FY12 - ($K)	Comments
69	1301	Operations - Energy Usage Management	2: Scope 3 GHG Reduction/Develop and Maintain Agency Comprehensive GHG Inventory	Embedded/ Leveraged Investment	N / A	Energy Management	906	985	997	Assuming that FY11 and FY12 Ops budget levels will be at par with FY10 budget amounts.
69	1301	Operations - Real Estate Management System	2: Scope 3 GHG Reduction/Develop and Maintain Agency Comprehensive GHG Inventory	Embedded/ Leveraged Investment	N / A	Energy Management	870	1369	1399	1. Update DOT Real Estate Management System (REMS) so that it is capable of capturing energy and water consumption data, sustainable building status and renewable energy generation at each facility. 2. Update policy to include Guiding Principles HPSB in all new buildings, major renovation projects and lease templates
69	8083	Federal Aid Highway -FHWA	3: High Performance Sustainability Design/Green Buildings/Regional and Local Planning	Incremental Investment	N / A	Capital Equipment	3094	334	450	Upgrades at FHWA owned facilities include; Meters, Motion sensors, new HVAC units, Water Chillers, LED Lighting, Energy Saving Solar Panels, Efficent Motor for Lab Dust Collector System.
69	8083	Federal Aid Highways-FHWA	1: Scope 1 & 2 GHG Reduction	Incremental Investment	N / A	Fleet Management	150	200	200	Central to reduction of GreenHouse Gases is the leaseing of Hybrid Vehicles by FHWA to replace non-Hybrids
69	1301	FAA Operations Appropriation (AVS)	7: Electronic Stewardship and Data Centers	Embedded/ Leveraged Investment	N / A	Recycling & Reuse	41	160		No line item request in FY12

Treasury Agency Code (2 digits)	Treasury Account Code (4 digits)	Treasury Account Name	Goal	Type of Investment	Type of Alt. Finance	Intended Purpose/Use	Budget FY10 - ($K)	Budget FY11 - ($K)	Budget FY12 - ($K)	Comments
69	0745	FRA	3: High Performance Sustainability Design/Green Buildings/Regional and Local Planning	Embedded/ Leveraged Investment	N / A	Operations/ Maintenance		50		FRA procured services from a architectural/ engineering design firm to perform a building audit at FRA's Transportation Technology Center in Pueblo, CO. The audit will to identify gaps in the building and propose solutions in order to meet the HPSB requirements in E.O. 13423 and E.O. 13514.
69	0745	FRA	8: Agency Specific Innovation and Government-wide Support	Embedded/ Leveraged Investment	N / A	Operations/ Maintenance	50			FRA procured services from existing contractor to conduct an environmental assessment to identify current practices and existing environmental conditions and determine the actions that need to be taken to address the requirements of E.O. 13423 and E.O. 13514 at the Transportation Technology Center (TTC) in Pueblo, Co.
69	0650	Operations and Research	1: Scope 1 & 2 GHG Reduction	Embedded/ Leveraged Investment	N / A	Administrative	8900	8882	7900	Fuel Economy (CAFE) - The Energy Policy and Conservation Act of 1975 requires NHTSA to establish and revise, as appropriate, the average fuel economy standards for the passenger car and light truck fleets based on the following criteria: (1) economic practicability; (2) technological feasibility; (3) the effect of other motor vehicle standards of the government on fuel economy; and (4) the need of the United States to conserve energy.

Treasury Agency Code (2 digits)	Treasury Account Code (4 digits)	Treasury Account Name	Goal	Type of Investment	Type of Alt. Finance	Intended Purpose/Use	Budget FY10 - ($K)	Budget FY11 - ($K)	Budget FY12 - ($K)	Comments
69	0650	Operation and Research	1: Scope 1 & 2 GHG Reduction	Embedded/ Leveraged Investment	N / A	Operations/ Maintenance	4498	4489	1500	Alternative Fuel Vehicle Safety - NHTSA will continue to conduct its test program to assess fuel system integrity of hydrogen and fuel cell equipped vehicles under a variety of operational and crash conditions. Testing will evaluate causes of failures and mitigation strategies for loss of fuel system integrity, using available fuel system components. NHTSA will also initiate research to evaluate possible safety-related issues with the use of lithium ion and other emerging battery technologies in motor vehicles.
69	0745	FRA	8: Agency Specific Innovation and Government-wide Support	Embedded/ Leveraged Investment	N / A	Administrative		75		The contractor shall develop a Strategic Sustainability Performance Plan (SSPP), a Higher Tier Environmental Management System (EMS), and a Facility Level EMS using FRA templates.
69	8003	Operations and Maintenance	3: High Performance Sustainability Design/Green Buildings/Regional and Local Planning	Embedded/ Leveraged Investment	N / A	Operations/ Maintenance	0	15	50	SLSDC completed its High Performance Sustainable Buildings (HPSB) Action Plan in May 2011, which calls for energy improvements to meet HPSB requirements.

Treasury Agency Code (2 digits)	Treasury Account Code (4 digits)	Treasury Account Name	Goal	Type of Investment	Type of Alt. Finance	Intended Purpose/Use	Budget FY10 - ($K)	Budget FY11 - ($K)	Budget FY12 - ($K)	Comments
69	0650	Operations and Research	1: Scope 1 & 2 GHG Reduction	Embedded/ Leveraged Investment	N / A	Operations/ Maintenance	20	20	20	Transportation-Climate Change Center- The Center for Climate Change and Environmental Forecasting is an initiative of the U.S. Department of Transportation, dedicated to fostering awareness of the potential links between transportation and global climate change, and to formulating policy options to deal with the challenges posed by these links.
69	11-1750	Operating and Training	3: High Performance Sustainability Design/Green Buildings/Regional and Local Planning	Embedded/ Leveraged Investment	N / A	Operations/ Maintenance	3875	3867	1500	MARAD FY 2012 request will support $1.5 million for environmental program efforts aimed at anticipating and addressing marine transportation environmental sustainability and energy impacts. This includes the reduction of port and vessel air pollution, further critical multi-modal transportation research to reduce environmental pollution, implement initiatives to reduce the agencys carbon footprint, and advance ballast water treatment technologies.

THE SECRETARY OF TRANSPORTATION
WASHINGTON DC 20590

POLICY STATEMENT ON CLIMATE CHANGE ADAPTATION
June 2011

The United States Department of Transportation (DOT) shall integrate consideration of climate change impacts and adaptation into the planning, operations, policies, and programs of DOT in order to ensure that taxpayer resources are invested wisely and that transportation infrastructure, services and operations remain effective in current and future climate conditions. The climate is changing and the transportation sector needs to prepare for its impacts. Through climate change adaptation efforts, the transportation sector can adjust to future changes, minimize negative effects and take advantage of new opportunities. Accordingly, DOT modal administrations shall incorporate consideration of climate adaptation into their planning processes and investment decisions. DOT encourages State, regional and local transportation agencies to consider climate change impacts in their decision-making, as well.

The DOT policy is to incorporate climate adaptation strategies into its transportation missions, programs, and operations. Climate change adaptation is a critical complement to mitigation efforts to address the causes and consequences of climate change. Every modal administration has the responsibility to consider climate change impacts on current systems and future investments. Furthermore, planning for climate adaptation assists State and local transportation agencies, and DOT, to identify how climate change is likely to impact their ability to achieve their mission, continue operations, and to meet policy and program objectives. Therefore, DOT agencies will develop, prioritize, implement, and evaluate actions to moderate climate risks and protect critical infrastructure using the best available science and information.

This policy is based on Executive Order (E.O.) 13514 – *Federal Leadership in Environmental, Energy, and Economic Performance*. The E.O. includes direction to address climate adaptation planning. Additionally, the Secretary of Transportation has authority under 49 United States Code (U.S.C.) Section 322 – General Powers. This Policy is effective immediately and will remain in effect until it is amended, superseded, or revoked. This Policy does not alter or affect any existing duty or authority of individual components or Offices.

In implementing this Policy, DOT will adhere to the following guiding principles.

Guiding Principles for Climate Change Adaptation

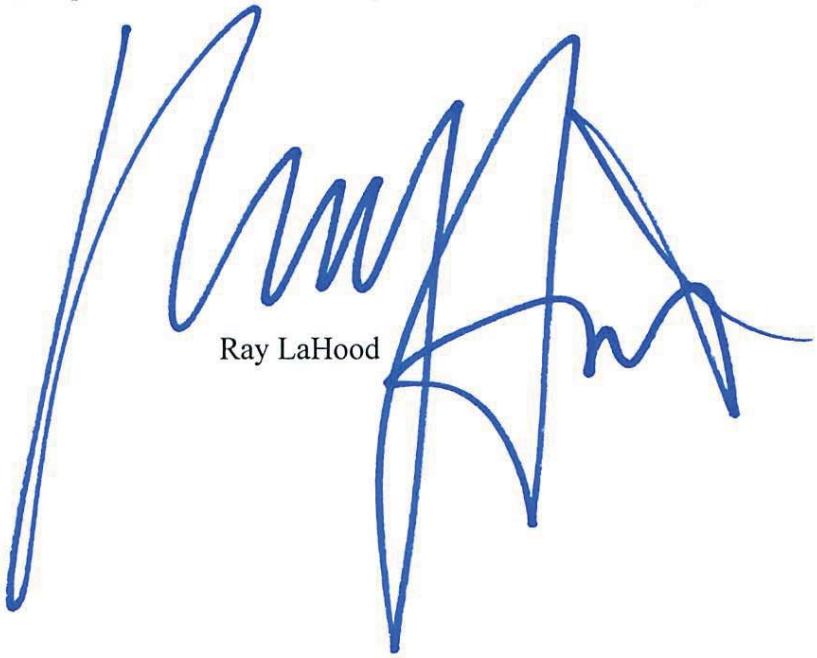
- **Adopt integrated approaches.** Climate change adaptation strategies should be integrated into core policies, planning, practices, and programs.
- **Prioritize the most vulnerable.** Adaptation plans should prioritize helping people, places, and infrastructure that are most vulnerable to climate impacts. They should also be designed and implemented with meaningful involvement from all parts of society. Issues of inequality and environmental justice associated with climate change impacts and adaptation should be addressed.
- **Use best-available science.** Adaptation should be grounded in best-available scientific understanding of climate change risks, impacts, and vulnerabilities. Adaptive actions should not be delayed to wait for a complete understanding of climate change impacts, as there will always be some uncertainty. Plans and actions should be adjusted as our understanding of climate impacts increases.
- **Build strong partnerships.** Adaptation requires coordination across multiple sectors, geographical scales, and levels of government and should build on the existing efforts and knowledge of a wide range of stakeholders. Because impacts, vulnerability, and needs vary by region and locale, adaptation will be most effective when driven by local or regional risks and needs.
- **Apply risk-management methods and tools.** A risk management approach can be an effective way to assess and respond to climate change because the timing, likelihood, and nature of specific climate risks are difficult to predict. Risk management approaches are already used in many critical decisions today (e.g., for fire, flood, disease outbreaks), and can aid in understanding the potential consequences of inaction as well as options for risk reduction.
- **Apply ecosystem-based approaches.** Ecosystems provide valuable services that help to build resilience and reduce the vulnerability of people and their livelihoods to climate change impacts. Integrating the protection of biodiversity and ecosystem services into adaptation strategies will increase resilience of human and natural systems to climate and non-climate risks, providing benefits to society and the environment.
- **Maximize mutual benefits.** Adaptation should, where possible, use strategies that complement or directly support other related climate or environmental initiatives, such as efforts to improve disaster preparedness, promote sustainable resource management, and reduce greenhouse gas emissions including the development of cost-effective technologies.
- **Continuously evaluate performance.** Adaptation plans should include measurable goals and performance metrics to continuously assess whether adaptive actions are achieving desired outcomes. In some cases, the measurements will be qualitative until more information is gathered to evaluate outcomes quantitatively. Flexibility is critical to building a robust and resilient process that can accommodate uncertainty and change.

Each modal administration within DOT shall, in a manner consistent and compatible with its mission:

- Analyze how climate change may impact its ability to achieve its mission, policy, program, and operation objectives.
- Report annually on its accomplishments in implementing climate adaption strategies.
- Coordinate actions with the Senior Official responsible for implementing climate adaptation and the Center for Climate Change Steering Committee member.
- Implement climate change adaptation implementing instructions issued by CEQ.

The Counselor to the Secretary (in her capacity as DOT's Senior Sustainability Officer) and designated modal executives are responsible for ensuring implementation of this Policy supported by the Assistant Secretary for Transportation Policy and the DOT Center for Climate Change.

The climate is changing and will impact the U.S. transportation system. Efforts are already underway at the Federal level and in some States and local areas, but more needs to be done. DOT will encourage efforts to ensure a transportation infrastructure that is resilient to climate impacts; however success will depend on the whole transportation sector embracing and implementing this policy.



Ray LaHood

THE SECRETARY OF TRANSPORTATION
WASHINGTON, D.C. 20590

March 30, 2011

MEMORANDUM TO: Modal Administrators

FROM: Ray LaHood

SUBJECT: DOT Climate Change Adaptation Implementing Instructions

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The White House Council on Environmental Quality (CEQ) has directed all Federal agencies to undertake climate adaptation planning in accordance with the Climate Change Adaptation Task Force's Implementing Instructions and the related Support Document issued on March 4, 2011. Initial actions are to be completed by June 3, 2011. The DOT is committed to integrating climate change adaptation into the planning, operations, policies, and programs of DOT in order to ensure that taxpayer resources are invested wisely and that transportation infrastructure, services, and operations remain effective in current and future climate conditions.

Therefore, I ask that each of you assign a senior executive to oversee the implementation of this effort within your Agency and to serve as part of a DOT-wide coordinating body. This executive will oversee both external and internal strategies—such as the kind you might provide to grantees—as well as the internal actions to consider how our own employees, operations, and facilities might be affected. Kathryn Thomson is the senior DOT official who will oversee this work supported by the Assistant Secretary for Transportation Policy and DOT's Climate Center.

As part of the CEQ requirements, all operating administrations shall complete the actions outlined in the attached document, in coordination with other modes. The actions include:

A) Establish an Agency climate change adaptation policy and mandate.
B) Increase Agency understanding of how the climate is changing.
C) Apply understanding of climate change to Agency mission and operations.
D) Develop, prioritize, and implement actions.
E) Evaluate and learn.

On March 4, 2011, CEQ released Implementing Instructions and a Support Document for climate change adaptation, including a specific set of actions and deadlines which are summarized in the attachment to this memorandum.

In October 2010, the Climate Change Adaptation Task Force, co-chaired by the White House Council on Environmental Quality, the Office of Science and Technology Policy, and the National Oceanic and Atmospheric Administration released its interagency

report outlining recommendations to President Obama for how Federal agency policies and programs can better prepare the United States to respond to the impacts of climate change. Recommended actions of the Task Force include making adaptation a standard part of agency planning, aligning Federal efforts to respond to climate impacts that cut across jurisdictions and missions, and building strong partnerships to support local, State, and tribal decisionmakers.

In October 2009, President Obama signed Executive Order 13514 – *Federal Leadership in Environmental, Energy, and Economic Performance*. The order sets sustainability goals for Federal agencies, including addressing climate change adaptation. The Climate Change Adaptation Task Force was established to develop approaches through which policies and practices of Federal agencies can address climate adaptation.

Please meet the requirements of the attached implementing actions. For more information, contact Linda Lawson at 202-366-4835

Attachment

Required Implementing Actions

A) Establish an Agency climate change adaptation policy and mandate.

(1) By April 15, 2011, identify to Kathryn Thomson a senior official responsible for carrying out the climate change adaptation planning actions who will oversee both internal and external actions. The senior officials will comprise the DOT Climate Change Adaptation Steering Committee (Adaptation Committee) and complete the implementing requirements identified below, supported by the Assistant Secretary for Transportation Policy and DOT's Climate Center.

(2) By June 3, 2011, issue and make publicly available an Agency-wide climate change adaptation policy statement, signed by the head of the Agency, which commits the Agency to adaptation planning to address challenges posed by climate change to the Agency's mission, programs, and operations.

B) Increase Agency understanding of how the climate is changing.

(1) During calendar year 2011, each Agency shall participate in interagency workshops, as necessary, sponsored by the Council on Environmental Quality (CEQ) to increase understanding of how the climate is changing in the context of their own mission. Each Agency shall collect and share within the Agency and its major program elements information relevant to impacts of climate change on Agency mission, programs, and operations.

C) Apply understanding of climate change to Agency mission and operations.

(1) By June 3, 2011, through the intermodal Adaptation Committee, DOT must submit to the Chair of CEQ responses to the guiding questions provided in Appendix E of the *Support Document*. The guiding questions allow DOT to begin to assess how climate change will affect the Department's mission, programs, and operations and to prepare to undertake a high-level analysis of transportation's vulnerability to climate change.

(2) By September 30, 2011, through the intermodal Adaptation Committee, DOT will submit to the Chair of CEQ a draft preliminary high-level analysis of Agency vulnerability to climate change.

(3) By March 2012, through the intermodal Adaptation Committee, DOT will complete a final high-level analysis of Agency vulnerability to climate change. Additional information and instructions to complete the high-level analysis will be provided to agencies during CEQ sponsored interagency training, workshops, or other materials.

D) Develop, prioritize, and implement actions.

(1) By September 30, 2011, through the intermodal Adaptation Committee, DOT will identify and submit to the Chair of the Council on Environmental Quality three to five priority climate change adaptation actions that DOT will implement in FY 2012, including actions to build Agency capacity to assess and build resilience to climate change risks.

(2) By June 4, 2012, through the intermodal Adaptation Committee, DOT will submit to the Chair of the Council on Environmental Quality and the Director of the Office of Management and Budget the DOT Climate Adaptation Plan for implementation in year 2013. DOT will ensure that the plan is made available for public review and comment and update the plan as appropriate.

E) Evaluate and Learn.

(1) During calendar year 2011, all modes should participate in interagency workshops sponsored by the Council on Environmental Quality to share lessons learned with other Agencies.

U.S. Department of Transportation Response
to the Council on Environmental Quality
EO 13514 and Implementing Instructions on Climate Adaptation

The Department of Transportation (DOT) and its modal agencies oversee the safe operation of the vast United States transportation system including more than 3.9 million miles of public roads, 120,000 miles of major railroads, 25,000 miles of commercially navigable waterways, 5,000 public-use airports, 500 major urban public transit operators and more than 300 coastal ports, the Great Lakes, and inland waterways.[1]

Climate variability and change presents new challenges as DOT develops and advocates solutions to national transportation needs. DOT recognizes that some level of climate change has already occurred, and is expected to continue, and that certain changes may require appropriate adaptation strategies. As a consequence, in recent years DOT has begun to explore integrating climate change considerations into its planning and programs. While the Department already has made tremendous strides, the process to more fully integrate climate change considerations into planning and programs, and to build a more resilient transportation system, is expected to take place over time. The early consideration and development of proactive adaptation strategies can help achieve a more efficient and cost-effective approach to preserve transportation infrastructure and enhance public safety.

Under Executive Order 13514 and as directed by the Council on Environmental Quality, DOT has taken the following actions to begin incorporating considerations of climate impacts into programs and policies:

- **Set Mandate**: The Secretary has signed both a Policy Statement and a memorandum directing the operating administrations to begin integrating consideration of climate change impacts and adaptation into DOT's planning, operations, policies and programs. He directed each operating administration to identify a senior official to oversee actions to integrate climate considerations and to begin a climate change vulnerability assessment, and he designated a Senior Executive to serve as DOT's lead. These documents are in Attachment 1.
- **Increase DOT Understanding**: DOT has both participated in and hosted training on climate adaptation and continue to develop a broad base of knowledge building on existing expertise. Some organizations within DOT have been working to address climate adaptation for some time while others are new to the topic.
- **Address Agency Mission**: DOT's has answered CEQ guiding questions (bolded below) about the impact of climate change on Agency mission. DOT's modal administrations have considered what climate change adaptation means for their agencies, focusing on individual missions, goals and objectives and the climate change impacts that would affect those missions. Their analysis is part of DOT's submission. These answers represent a first assessment of how climate change may impact DOT strategic goals and are expected to change or be refined as more knowledge is gained.

1) How is climate change likely to affect the ability of your Agency to achieve its mission and strategic goals?

a) Identify three DOT strategic goals that could be impacted.

Goal 1: Safety. DOT's top priority is making the U.S. transportation system the safest in the world. DOT works with all of stakeholders—transportation agencies, elected officials, law enforcement, safety advocates, industry and the public—to reduce transportation-related fatalities and injuries and maximize the effectiveness of safety regulatory authority to make the nations system safe for all users.

[1] Source: http://www.nationalatlas.gov/transportation.html

Goal 2: State of Good Repair. Recent analyses of the condition of our highways, bridges, transit assets, and airport facilities revealed that many fall short of a state of good repair, and as a result, they compromise the safety, capacity, and efficiency of the U.S. transportation network. At a time when transportation programs face unprecedented fiscal challenges, stewardship of transportation infrastructure is a Federal strategic goal.

Goal 3: Economic Competitiveness. DOT works to maximize the contribution of the transportation system to economic growth while reinforcing the other strategic goals. This requires a calculus of economic returns that includes valuations and returns for safety, the stewardship of transportation assets, livable communities, personal mobility, and environmental sustainability. It requires implementation of new technologies that enable people and goods to be moved more efficiently, fully using existing capacity across all modes. These technologies will in turn require a highly skilled workforce trained to operate, maintain, and repair increasingly sophisticated vehicles and equipment.

b) Identify three major climate change impacts that might potentially affect the goals.

Fluctuating temperatures and longer periods of high temperature; severe weather and precipitation and rising sea level are all expected impacts of climate change and variability that are likely to impact the achievement of DOTs goals. For example, if more frequent, severe storms cripple a city's transit system, they compromise DOT's goals of safety, state of good repair, and can ultimately affect both that city's and the Nation's economic competitiveness. In another example, some climate change effects may positively impact transportation goals, as higher average temperatures in certain regions could reduce safety and maintenance concerns associated with snow and ice accumulation. Because they impact more than one goal, the discussions below are not discussed separately under each goal.

Fluctuating temperatures and longer periods of high temperature

Fluctuating temperatures are expected to place additional stress on transportation infrastructure. For example, transit, highway, airport and other transportation systems across the country will face steadily increasing numbers of days in excess of 90 degrees Fahrenheit, more intense storms and precipitation, and less predictable weather patterns. Some of the impact will be subtle, but may necessitate changes in the design, construction, or maintenance of infrastructure – for instance, the incorporation of materials and building techniques that can better withstand temperature extremes. More extreme conditions also may reduce the life cycle of capital assets and increase operational disruptions.

Warmer temperatures are expected to impact the volume and rates of water in rivers, lakes, reservoirs and marshes, ultimately impacting the water depth and cargo carrying capacity of marine vessels. Increasing temperatures will create greater demands from hydroelectric systems that depend on the water system of the Saint Lawrence Seaway, which may reduce the water available for commercial shipping.

Severe weather and precipitation

Severe weather and precipitation is expected to heavily impact transportation infrastructure. For example, four of the seven largest US transit agencies are located in the country's northeast, where climate change models forecast the largest increase in rain intensity in coming decades. Severe weather events often impair or disable critical power systems and power lines. Catenaries toppled by high winds or ice storms create dangerous situations for passersby and repair crews. Higher temperatures and increased demand for air conditioning create power grid surges and blackouts. They also can result in rail buckling leading to system downtime and/or derailments and asphalt breakdown which damages rubber-tired vehicles.

Severe precipitation which increases the flooding of roadways, tunnels and evacuation routes can reduce the life of highway infrastructure. It can also increase road washout, landslides, and mudslides that damage roadways and overloaded drainage systems, causing traffic backups and street flooding. Ultimately, the result of severe precipitation and wind speeds can be damaged bridges, signs, overhead cables and other tall structures.

National Airspace System efficiency and aviation system infrastructure also are impacted by severe weather and precipitation. Operationally, these events slow air traffic flow management and reduce airport runway arrival and departure rates. More severe events can also increase airfield flooding and erosion, requiring adjustments to infrastructure, drainage and erosion control measures.

Severe weather may impact road safety by heightening the risk of commercial motor vehicle crashes--such as large trucks and buses – or passenger vehicles. Or adverse weather conditions may increase weather-related delays, traffic disruptions and driver fatigue which may affect driver/operator performance and decision-making skills.

Sea level rise

Certain effects, such as sea level rise and increased storm intensity, present obvious challenges to the transportation system and modal infrastructure. For example, storm surge can damage and destroy coastal roadways, bridges and airports and sea level rise will only exacerbate such effects. Rising sea levels can present flooding risks to underground infrastructure such as road tunnels, allowing water to enter through portals and ventilation shafts. As the sea-level rises, the coastline will change and infrastructure that was not previously at risk to storm surge and wave damage may be exposed in the future.

Rising sea levels can also impact transit agencies on the US east and west coasts, possibly including the reduced life cycle of transportation assets. In addition, the systems are likely to experience more downtime due to flooding. Financial costs include those associated with re-routing and accommodating system users and making obsolete earlier transportation investments in low-lying coastal areas.

Rising sea levels may also take a toll on Marine Highway System infrastructure, including ports, terminals, shipyards, and the interfaces with other transportation modes. Sea level changes may add to the rate of infrastructure deterioration, damage shore side equipment and navigational aids. This damage could impact the ability of vessels to access docks and could potentially require the rerouting of freight. Additionally, increased flooding and runoff events may lead to a decrease in water quality, causing ecosystems to become more vulnerable to invasions of aquatic invasive species. As a result, rising sea levels may ultimately result in the loss of port viability.

2) What steps has your agency taken to manage the effects of climate change on the selected goals?

As mentioned above, DOT has taken actions to begin integrating likely effects of climate change on transportation.

- The Secretary issued a DOT Climate Change Adaptation Policy statement establishing that the Department would integrate consideration of climate change impacts and adaptation into the planning, operations, policies and programs of DOT. In a separate memorandum, he directed each operating administration to identify a senior official responsible for overseeing this work.

- DOT has established a senior executive level Adaptation Committee made up of the Secretary's designated official and each of DOT's administrations senior adaptation officials.
- DOT has begun to provide training to DOT staff on considering adaptation in planning and project development and encourage participation in other training. DOT staff will continue to participate to ensure a broad DOT-wide understanding of the challenges and opportunities.
- DOT and its operating administrations have addressed the guiding questions provided.
- DOT's Center for Climate Change and Environmental Forecasting has been working with its component organizations to coordinate research, policies, and actions and promote comprehensive multimodal approaches. DOT's Climate Change Center supported the **Gulf Coast Study:** The *Impacts of Climate Change and Variability on Transportation Systems and Infrastructure: the Gulf Coast Study* is a two-phase project. Phase 1, completed in 2008, examined potential climate change impacts on transportation across the Gulf Coast region. Phase 2 focuses on Mobile, Alabama and is assessing the potential climate change impacts and vulnerability of transportation. It will develop transferable vulnerability assessment and risk management tools and guides to help transportation planners assess the vulnerability of transportation and adapt critical infrastructure to potential climate impacts. The study is being managed by FHWA for the DOT Climate Center and is expected to be completed in 2013.

DOT modal administrations are taking steps to manage the effects of climate change on their mission. For example:

- The Federal Highway Administration has been studying how climate change could affect the nation's highway systems for over a decade. Recognizing the need for adaptive transportation systems, FHWA has focused on initiatives that will help provide FHWA Division Offices, State Departments of Transportation (DOTs), and Metropolitan Planning Organizations (MPOs) with the data and tools needed to identify and adapt vulnerable transportation infrastructure to climate-related impacts.
- The Federal Transit Administration has been participating in transportation adaptation efforts through the U.S. Department of Transportation Climate Change Center since 1999. FTA supported center research with staff and funding. FTA is also initiating a research project specific to public transportation, as transit has unique assets such as subways and overhead catenaries, as well as a central service operation components, and distributional impacts on disadvantaged populations. The research project will include a report, a series of workshops and webinars, and pilots of transit agency adaptation assessments.
- DOT's other operating administrations are beginning to address climate variability and change as indicated in the following pages.

3) **How can your Agency coordinate and collaborate with other Agencies to better manage the effects of climate change?**

Existing and Potential collaboration opportunities are included under each operating administration's section in the following pages.

Federal Highway Administration
Response to CEQ Questions for Agency Adaptation Planning

1. How is climate change likely to affect the ability of your agency to achieve its mission and strategic goals?
a) Identify at least three of your agency's strategic goals or objectives to evaluate:

Goal 1: National Leadership
Goal 2: Program Delivery
Goal 3: System Performance

b) For each goal or objective listed above, identify major climate change impacts that may significantly impact your agency's ability to meet the goal or objective. Briefly describe how these impacts affect your selected goals or objectives.

The projected effects of climate change could have significant implications for the nation's transportation system. Rising sea levels, increasingly extreme temperatures, changes in the characteristics of precipitation and storm events, and accelerating patterns of erosion could damage infrastructure, flood roadways, and disrupt safe and efficient travel. Certain effects, such as sea level rise and increases in storm intensity, present obvious challenges. Storm surge can damage and destroy coastal roadways and bridges, and sea level rise will only exacerbate such effects. Rising sea levels can also present flooding risks to underground infrastructure such as road tunnels, allowing water to enter through portals and ventilation shafts. More subtle changes, such as those expected in temperature or precipitation may also necessitate changes in the design, construction, or maintenance of infrastructure – for instance, the incorporation of materials and building techniques that can better withstand temperature extremes. Some climate change effects may positively impact transportation, as higher average temperatures in certain regions could reduce safety and maintenance concerns associated with snow and ice accumulation. FHWA has placed increasing importance on recognizing that some level of climate change has already occurred and is expected to continue, and that certain changes may require appropriate adaptation strategies.

Development of a proactive adaptation strategy can help achieve a more efficient and cost-effective approach to transportation infrastructure preservation and enhancement of public safety. It is critical to maintenance of the performance of our nation's highway system, successful project delivery, and continued national leadership by FHWA.

Goal 1: National Leadership

Climate change presents new challenges to FHWA in developing and advocating solutions to national transportation needs. Congress charged the Secretary of Transportation and, by extension, the U.S. Department of Transportation (USDOT) and the FHWA to "take the appropriate actions to preserve the Interstate System to meet the needs of the 21st Century." As the agency within the USDOT responsible for ensuring the continued integrity of the nation's highway network, the FHWA has set a national performance objective of assuring that Federal, State, tribal, and local partners have the capacity to address climate change in their transportation plans and programs. An important element of this objective is education, dialogue, and capacity building on approaches to addressing adaptation. FHWA's inclusion of this performance objective in its strategic goals demonstrates our recognition of the importance of this issue in developing and promoting effective transportation policy.

The FHWA also is charged with ensuring that the plans and designs for proposed highway projects provide for facilities that will "adequately serve the existing and planned future traffic of the highway in a manner that is

conducive to safety, durability, and economy of maintenance." When new information that affects its activities becomes available, FHWA exercises leadership by updating its business practices as necessary. The potential impacts of climate change will necessitate the development, promotion, and utilization of best practices for transportation planners, designers, and engineers, derived from experience and knowledge, to ensure that our transportation systems are adequately prepared for future impacts.

The challenges to our leadership goal that are presented by climate change are two-fold. First, given the broad range of projections and lack of reliable local data on future impacts, it is difficult to provide clear guidance or direction on the best approaches to addressing climate change. Second, since many of these impacts will not occur for decades, it is a challenge to focus the attention of our State partners and other transportation stakeholders on these risks when they are faced with so many more immediate concerns.

Goal 2: Program Delivery

An important component of FHWA's program delivery is risk-based oversight and management of the Federal-aid program. These approaches improve FHWA's ability to make operational and strategic decisions to maximize the effectiveness and efficiency of our programs, and contribute to the robustness and integrity of the program. Climate change introduces new risks, and we have various activities underway to begin addressing these issues as part of our oversight and management of the Federal-aid Highway Program. For instance, although highway infrastructure is already planned, designed, and maintained in the context of weather-related effects, a changing climate may result in different environmental conditions for a given asset in the future. When designing highway infrastructure, engineers consider the likelihood of an extreme weather event, such as a 100-year storm (1 percent chance of this or a greater event occurring in any given year), and incorporate the effects of that event into project designs. However, in some areas of the U.S. such storms might occur more frequently in the future as the climate changes, decreasing the applicability of analyses based on the historical record.

Goal 3: System Performance

FHWA works to ensure that the Nation's highway system provides safe, reliable, effective, and sustainable mobility for all users. This includes a strategic objective of making improvements to critical aspects of highway system performance, including safety, congestion, reliability, infrastructure condition, air quality, user satisfaction, and emergency response. Climate change threatens FHWA's ability to meet that goal by degrading transportation infrastructure and operations, potentially causing assets to deteriorate faster and increasing operational disruptions from extreme weather events.

The vulnerability of transportation infrastructure to climate change impacts varies based on the environmental context in which they occur. Sea-level rise, coastal erosion, tropical storms/hurricanes, and storm surges are major concerns in coastal areas. Potential impacts on coastal infrastructure include increased risk of bridge scour and bridge failure during storms, periodic or permanent inundation of coastal roads, increased frequency of infrastructure repair after events, and more frequent and/or intense emergency evacuations on a more fragile and less resilient network.

USDOT's *Gulf Coast Study, Phase I* analyzed the impacts of sea-level rise scenarios on the Gulf Coast region, finding that a rise of four feet would affect a quarter of the region's arterials and interstates and nearly half of the region's intermodal connector miles. Similarly, a University of South Alabama study estimated that there are roughly 60,000 road miles in the United States that are occasionally exposed to coastal waves and surge.[2] After Hurricane Katrina, FHWA conducted an assessment of coastal bridges' potentially vulnerable to failure from

[2] Douglass, S.L., Lindstrom, J., Richards, J.M., and Shaw, J. (2005) "An Estimate of the Extent of U.S. Coastal Highways." Presentation to the AFB06 Committee of the Transportation Research Board.

coastal storm events. Using very broad criteria, the assessment estimated that there are over 36,000 bridges within 15 nautical miles of coasts. Of these, over 1,000 bridges may possibly be vulnerable to the same failure modes as those associated with recent coastal storms, and exposure to these facilities will be more frequent and severe in the future with sea level rise.[3] Other climate change effects, such as increased variability in temperature extremes, more severe precipitation events, changes in the melting rate of snow pack and permafrost, and increased mudslides, fires, and avalanches are not confined to coastal areas and might be experienced more broadly across the nation.

Potential impacts on transportation systems span a wide range of issues: increased pavement deterioration, an inability to implement or maintain environmental mitigation commitments, such as wetlands or forests, and short-term flooding and/or compromised safety. Furthermore, catastrophic events run the risk of destroying vulnerable facilities and straining emergency response abilities. Table 1 provides a list of some of the more significant impacts climate change may have on transportation systems.

Table 1 Climate change's potential impacts on highway system performance.

Projected Climate Effects	Potential Impacts on Highway System Performance
Increases in very hot days and heat waves (higher high temperatures, increased duration of heat waves)	• Increased thermal expansion of bridge joints and paved surfaces, causing possible degradation • Concerns regarding pavement integrity, traffic-related rutting and migration of liquid asphalt, greater need for maintenance of roads and pavement • Maintenance and construction costs for roads and bridges; stress on bridge integrity due to temperature expansion of concrete joints, steel, asphalt, protective cladding, coats, and sealants • Asphalt degradation, resulting in possible short-term loss of public access or increased congestion of sections of road and highway during repair and replacement • Limits on periods of construction activity, and more nighttime work • Vehicle overheating and tire degradation
Decreases in very cold days	• Regional changes in snow and ice removal costs, environmental impacts from salt and chemical use • Changes in pavement designs • Fewer cold-related restrictions for maintenance workers
Later onset of seasonal freeze and earlier onset of seasonal thaw	• Changes in seasonal weight restrictions • Changes in seasonal fuel requirements • Improved mobility and safety associated with a reduction in winter weather • Longer construction season in colder areas
Increases in intense precipitation events	• Increases in weather-related delays and traffic disruptions • Increased flooding of evacuation routes • Increases in flooding of roadways and tunnels • Increases in road washout, landslides, and mudslides that damage

[3] FHWA (2005/2007), Office of Bridge Technology, Potential Vulnerability of National Bridge Inventory to Coastal Storms. Unpublished analyses to support Congressional information requests and testimony.

	roadways • Drainage systems likely to be overloaded more frequently and severely, causing backups and street flooding • Areas where flooding is already common will face more frequent and severe problems • If soil moisture levels become too high, structural integrity of roads, bridges, and tunnels (especially where they are already under stress) could be compromised • Standing water may have adverse effects on road base • Increased peak streamflow could affect scour rates and influence the size requirement for bridges and culverts
Increases in drought conditions	• Increased susceptibility to wildfires, causing road closures due to fire threat or reduced visibility • Increased risk of mudslides in areas deforested by wildfires
Changes in seasonal precipitation and stream flow patterns	• Benefits for safety and reduced interruptions if frozen precipitation shifts to rainfall • Increased risk of floods, landslides, gradual failures and damage to roads if precipitation changes from snow to rain in winter and spring thaws • Increased variation in wet/dry spells and decrease in available moisture may cause road foundations to degrade • Degradation, failure, and replacement of road structures due to increases in ground and foundation movement, shrinkage and changes in groundwater • Increased maintenance and replacement costs of road infrastructure • Short-term loss of public access or increased congestion to sections of road and highway • Changes in access to floodplains during construction season and mobilization periods • Changes in wetland location and the associated natural protective services that wetlands offer to infrastructure
Increases in coastal storm intensity (leading to higher storm surges/wave heights, increased flooding, stronger winds)	• More frequent and potentially more extensive emergency evacuations • More debris on roads, interrupting travel and shipping • Bridges, signs, overhead cables and other tall structures are at risk from increased wind speeds • Increased storm surge and wave impacts on bridge structures • Decreased expected lifetime of highways exposed to storm surge • Risk of immediate flooding, damage caused by force of water, and secondary damage caused by collisions with debris • Erosion of land supporting coastal infrastructure and coastal highways • Damage to signs, lighting fixtures, and supports • Reduced drainage rate of low-lying land after rainfall and flooding events • Damage to infrastructure caused by the loss of coastal wetlands and

	barrier islands
Rising sea levels (exacerbating effect of higher storm surge, increased salinity of rivers and estuaries, flooding)	• Exposes more areas to effects of storm surge/wave action, causing more frequent interruptions to coastal and low-lying roadway travel • Amplifies effect of storm surge, causing more severe storm surges requiring evacuation • Permanent inundation of roads or low-lying feeder roads in coastal areas. Reduces route options/redundancy • More frequent or severe flooding of underground tunnels and low-lying infrastructure, requiring increased pumping activity • As the sea-level rises, the coastline will change and highways that were not previously at risk to storm surge and wave damage may be exposed in the future • Erosion of road base and bridge supports/scour • Highway embankments at risk of subsidence/heave • Reduced clearance (including freeboard) under bridges • Increased maintenance and replacement costs of tunnel infrastructure

Source: *Regional Climate Change Effects: Useful Information for Transportation Agencies*, Federal Highway Administration, May 10, 2010

c) What steps, if any, has your agency taken to manage the effects of climate change on the selected goals or objectives?

FHWA has been studying how climate change could affect the nation's highway systems for over a decade. Recognizing the need for adaptive transportation systems, FHWA has focused on initiatives that will help provide FHWA Division Offices, State Departments of Transportation (DOTs), and Metropolitan Planning Organizations (MPOs) with the data and tools needed to identify and adapt vulnerable transportation infrastructure to climate-related impacts. These have included studies, internal capacity building, and outreach:

- **Gulf Coast Study:** The *Impacts of Climate Change and Variability on Transportation Systems and Infrastructure: the Gulf Coast Study* is a two-phase project. The Phase 1 study, completed in 2008, examined potential climate change impacts on transportation across the Gulf Coast region. The Phase 2 study focuses on Mobile, AL and will assess the potential climate change impacts and vulnerability of transportation in Mobile. It will also develop transferable vulnerability assessment and risk management tools and guides to help transportation planners assess the vulnerability of transportation and adapt critical infrastructure to potential climate impacts. The study is being managed by FHWA for the DOT Center for Climate Change and Environmental Forecasting, and is expected to be completed in 2013. http://www.climatescience.gov/Library/sap/sap4-7/final-report/sap4-7-final-all.pdf
- **Vulnerability/Risk Assessment Model and Pilots:** FHWA created a conceptual model for MPOs and DOTs to use to conduct systems-level vulnerability and risk assessments. FHWA has partnered with transportation authorities in five areas to test and refine the conceptual framework in the San Francisco Bay Area, Hampton Roads, VA, Coastal and Central New Jersey, Washington State, and Oahu, Hawaii. The pilots are scheduled to be completed in the fall of 2011. FHWA plans to share the results of the pilots with other MPOs and State DOTs. http://www.fhwa.dot.gov/hep/climate/pilots.htm
- **Cape Cod Pilot:** The Interagency Climate Change Scenario Planning Cape Cod Pilot Project is meant to establish a successful and replicable process for integrating climate change mitigation and adaptation measures into a transportation and land use planning strategy. It will result in a preferred transportation

and land use strategy for Cape Cod incorporating consideration of GHG emission reductions and adaptation to anticipated sea level rise. The scenario planning exercise has been completed and a final report and guide will be available soon.

- **Bridges in the Coastal Environment:** After several bridges in the Gulf Coast region were damaged by Hurricanes Ivan (2004) and Katrina (2005), FHWA's Office of Bridge Technology conducted a study to understand how the bridges were damaged and develop a strategy to preclude similar damages in the future. The Office produced interim guidance that allows areas to rebuild bridges to withstand more severe coastal storms.
- **Climate Change Effects Report:** *Regional Climate Change Effects: Useful Information for Transportation Agencies* (May 2010) provides basic information on projected future climate change effects (temperature, precipitation, storm activity and sea level rise) over the near term, mid-century and end-of-century. Information in the report is intended to inform general planning efforts and to help the transportation community understand how the environment that affects and supports transportation facilities may change over time. http://www.fhwa.dot.gov/hep/climate/climate_effects/
- **Federal Lands Highways Research**: Federal Lands Highways has conducted several studies examining climate impacts to federally owned highways, including *Adapting the Nation's Refuge Roads System to Climate Change* (Eastern Federal Lands Highway Division) and *Assessing the Impact of Climate Variability on Transportation Infrastructure* (Western Federal Lands Highways Division). The studies examine how to adapt the project development process to changing climate conditions, and include consideration of probabilistic risk analysis techniques that integrate climate variability with project planning and design activities.
- **Institutional/Internal Capacity Building**: FHWA has formed a multi-disciplinary internal Adaptation Working Group to raise awareness on adaptation issues and to coordinate policy and program activities to address climate change impacts on transportation infrastructure. The group, which includes representatives from the Office of Infrastructure, Federal Lands Highway, Safety, and Operations, has been meeting since December 2008 and will have responsibility for developing the FHWA adaptation strategy.
- **Outreach, Communications and External Capacity Building:** Outreach and capacity building efforts have included adaptation peer exchanges for state and local planners, climate change workshops for state DOTs and FHWA field offices (in partnership with the American Association of State Highway & Transportation Officials (AASHTO)), and webinars on climate change designed for state DOTs -- CEOs, Chief Engineers, planning, communications, environmental, engineering, government affairs staff, and others (also co-sponsored by AASHTO). In addition, FHWA partnered with AASHTO and FTA to convene a national symposium on transportation and climate change in Washington D.C. on August 5 and 6, 2010, that gathered policy makers, technical experts, and practitioners from State DOTs, FHWA and FTA staff to provide information to support State DOTs in their efforts to address the challenges of climate change (http://climatechange.transportation.org/symposium/).

2. **How can your agency coordinate and collaborate with other agencies to better manage the effects of climate change?**

a) Identify Federal agencies that are likely to face similar climate change impacts and management challenges to your agency. Describe how their management challenges are similar to yours.

Agency	How Climate Change Management Challenges are Similar
U.S. Army Corps of	USACE designs, builds, and operates water control infrastructure and has

Engineers	authority over the inland waterway transportation system. It also has permitting authority over projects impacting waterways (and wetlands), including highway projects. FHWA and USACE face many similar engineering challenges in designing infrastructure for a changing environment.
Federal Emergency Management Agency	FEMA uses a critical infrastructure risk based approach for natural and man-made disaster planning, similar to the evaluation of infrastructure criticality needed for prioritizing highway investments. In addition, FEMA's emergency response planning and operations are critically dependent on highway infrastructure. Finally, FEMA and FHWA face similar management challenges in overseeing programs that are implemented at the state and local level.
Environmental Protection Agency	EPA administers and enforces water quality regulations, interacting with highway projects in terms of stormwater management.
National Oceanic and Atmospheric Administration	NOAA has management responsibilities for coastal development via the Coastal Zone Management Act, which impacts construction of highway infrastructure in coastal zones.

In addition to the Federal agencies identified above, FHWA's partnership with state and local transportation agencies is critical to the implementation of the Federal-aid highway system. These state and local agencies are the actual owners and operators of the Federal-aid highway system, and therefore the ones that will need to assess risk and vulnerability of their assets to climate change, and develop adaptation strategies to protect these investments and ensure the robustness of our nation's highway system.

b) Is your agency already collaborating with other agencies to develop strategies to adapt to climate change impacts that cut across agency mission and operations? If so, identify the agencies and briefly describe the collaboration or project. If your agency is engaged in many collaboration activities, select a few of the most significant.

The table below identifies FHWA's collaborative efforts with other Federal agencies.

Agency	Existing Collaboration/Project
U.S. Geological Survey	USGS provided climate science data, expertise, and review for the *Impacts of Climate Change and Variability on Transportation Systems and Infrastructure: The Gulf Coast Study* and *Regional Climate Change Effects: Useful Information for Transportation Agencies*
National Oceanic and Atmospheric Administration	NOAA provided climate science data, expertise, and review for the *Impacts of Climate Change and Variability on Transportation Systems and Infrastructure: The Gulf Coast Study,* and *Regional Climate Change Effects: Useful Information for Transportation Agencies.* NOAA also partnered with FHWA in the *Interagency Climate Change Scenario Planning Cape Cod Pilot Project*, in which scenario planning was used to develop and evaluate potential transportation and land use planning strategies that identify areas suitable for varying levels of growth or preservation based on vulnerability to sea level rise. Finally, NOAA is one of FHWA's key partners in the New England Federal Partners, a body that coordinates information sharing on climate adaptation among Federal agencies in the New England region.
Environmental Protection Agency	EPA is one of the key driving forces behind the New England Federal Partners (described above). EPA also participated in the *Interagency Climate Change Scenario Planning Cape Cod Pilot Project*.
Department of Energy	DOE provided expertise and review for *Regional Climate Change Effects:*

	Useful Information for Transportation Agencies.
Fish and Wildlife Service	FWS partnered with FHWA in the *Interagency Climate Change Scenario Planning Cape Cod Pilot Project*.
National Park Service	NPS partnered with FHWA in the *Interagency Climate Change Scenario Planning Cape Cod Pilot Project*.
Federal Emergency Management Agency	FEMA partnered with FHWA in the *Interagency Climate Change Scenario Planning Cape Cod Pilot Project*.
U.S. Army Corps of Engineers	USACE partnered with FHWA in the *Interagency Climate Change Scenario Planning Cape Cod Pilot Project*.
Non Federal State and local partners	FHWA is working to develop approaches to adapting nation's highway system to climate change including pilots, outreach and technical support.

c) Identify and describe opportunities for new or additional collaboration activities with other agencies to leverage resources and develop consistent adaptation strategies.

The table below identifies opportunities for future collaboration.

Agency	Potential Collaboration/Project
U.S. Army Corps of Engineers	Collaboration on developing consistent protocols and data for addressing hydrologic non-stationarity in engineering design.
National Oceanic and Atmospheric Administration	Collaboration on developing consistent protocols and data for addressing hydrologic non-stationarity in engineering design.
Federal Emergency Management Agency	Collaboration on identifying critical infrastructure and evaluating climate impacts on evacuation routes. Collaboration with FEMA to promote coordination of hazard mitigation plans and long range transportation plans particularly as they relate to projected climate change. FEMA can also be a collaborative partner in developing consistent protocols for hydrologic non-stationarity due to its control of flood plain mapping.
Environmental Protection Agency	Similar to the New England Federal Partners, EPA is setting up a Region 2 (New York/New Jersey) Federal Partners coordination effort that FHWA would participate in. In addition, there may be collaboration opportunities with the Office of Water in addressing stormwater concerns in the face of climate change.
Fish and Wildlife Service	FWS will be a key partner in the planned FHWA-led project *Integration of Federal Lands Management Agency Transportation Data, Planning and Practices with Climate Change Scenarios to Develop a Transportation Management Tool,* which will focus on federal lands in the Southeast.
National Park Service	NPS will be a key partner in the planned FHWA-led project *Integration of Federal Lands Management Agency Transportation Data, Planning and Practices with Climate Change Scenarios to Develop a Transportation Management Tool,* which will focus on federal lands in the Southeast..

Federal Transit Administration
Response to CEQ Questions for Agency Adaptation Planning

1. How is climate change likely to affect the ability of your agency to achieve its mission and strategic goals?
a) Identify at least three agency's strategic goals or objectives to evaluate:

Goal 1: State of Good Repair
Goal 2: Safety
Goal 3: Sustainability

b) For each goal or objective listed above, identify major climate change impacts that may significantly impact your agency's ability to meet the goal or objective. Briefly describe how these impacts affect your selected goals or objectives.

Climate change impacts present challenges for the Federal Transit Administration (FTA) in meeting several of the goals identified in the agency's FY 2011 Annual Performance Plan and the draft Department of Transportation's strategic plan, including state of good repair, safety, and sustainability.

The primary challenges from climate change impacts to transit assets and operations stem largely from heat extremes, excessive precipitation resulting in flooding, and sea-level rise (flooding), combined with more frequent and intense storm events and coastal storm surges. Table 1-1 on page 4: **Climate Change Impacts and Effects to Transit Systems** summarizes some of the most prevalent climate change impacts across the United States and how these impacts may affect transit systems.

Transportation Research Board Report 290 (2008) concluded, "The prudent strategy is for transportation professionals to begin now to take a more proactive approach in addressing both past and potential future impacts of climate change." That report recommended that climate change considerations be incorporated into transportation agency long-term capital programs, asset management systems, facility designs, maintenance practices, operations, and emergency response plans. FTA influences each of those areas through its grants, technical assistance, planning requirements, and policy leadership.

FTA is responsible for the stewardship of tens of billions of dollars in taxpayer investments in public transportation. Many communities are building new transit systems or major extensions through FTA's New Starts and other grant programs. FTA also funds the rehabilitation of older transit assets and ongoing vehicle procurement. It is vital to design new and rehabilitated assets to withstand the future environment they will face. Knowledge of how best to respond to climate change impacts is critical to attaining a state of good repair, protecting the safety of travelers, improving sustainability, and ensuring mobility.

Goal 1: State of Good Repair

Understanding climate impacts and how to adapt to them will be crucial to the nation's ability to bring transit assets up to and maintain in a state of good repair over the long-term. FTA launched the State of Good Repair (SGR) initiative to address the large backlog of capital reinvestment needs in the U.S. public transportation industry. An estimated $78 billion in capital assets at transit agencies around the country need replacement or rehabilitation. These assets include vehicles, stations, signaling systems, power systems, maintenance buildings and many other assets. At current reinvestment rates, the backlog increases by about $2 billion each year.

Transit service is unavoidably capital intensive. For example, the nation's seven largest rail transit agencies provide more than three billion passenger trips each year, relying on over 6,000 miles of track, 1,700 passenger stations and close to 15,000 rail vehicles to do so. These seven agencies alone have an estimated $50 billion SGR backlog.

Four of those seven large agencies are in the northeastern United States where climate change models forecast the largest increase in the intensity of rain events in coming decades. Transit agencies across the country will face steadily increasing numbers of days in excess of 90 degrees, more intense storms and precipitation, and less predictable weather patterns. Transit agencies on the coasts will also face sea level rise impacts. These extreme conditions will further reduce asset life cycles. For example, severe climate conditions place additional stress on track and signal systems, and cause more intense and more frequent flooding of tunnels and stations.

Asset management systems designed for tracking and improving SGR also offer a useful framework for incorporating climate adaptation into capital plans and budgets. Incorporating climate change considerations into system planning, siting of facilities, design of new assets, and retrofit and management of existing assets, will ensure that assets remain resilient to the climate conditions they will face throughout their useful life. As extreme weather conditions continue to reduce transit-related capital assets' lifecycles, FTA's SGR initiative will become both more challenging and more vital.

In addition, it is important to consider, at the earliest stages of systems planning, the higher capital, operating and maintenance costs associated with designing projects and facilities to withstand increasingly significant climate change impacts. The federally required transportation planning process calls for the development of long-range plans and short-range programs of proposed projects for which revenues can reasonably be expected to be available. The higher costs of the projects, facilities, and equipment designed to withstand more significant impacts will need to be considered during the planning process – well in advance of implementation.

Goal 2: Safety

Communities across the country are grappling with increases in both the number of intense precipitation events and the number of days above 90 degrees. Extreme weather is projected to be progressively more frequent. This will affect the ability of transit systems to protect their customers and workers from hazardous situations in at least two ways: Severe weather endangers passengers and workers directly, and it causes system failures that increase the exposure of riders and workers to such risks.

Ice- and snowstorms, high winds, and flooding have always been hazardous for bus and rail passengers. An increasing number of these events can only raise the risk of injuries and fatalities. Prolonged high temperature situations at stops and stations, and in vehicles without functioning air conditioning can also cause health problems. Workers conducting construction and maintenance work during heat high conditions must take safety precautions to prevent dehydration and heat stroke.

In addition, severe weather events often impair or disable critical power systems. Power lines and catenaries toppled by high winds or ice storms create dangerous situations for passersby and repair crews. Blackouts may occur more frequently as air conditioning demand on the power grid surges during heat waves. Evacuating passengers from trains stranded by power failures, particularly in tunnels and on elevated structures, is risky. Third-rail systems short-out when flooded, as demonstrated in New York last year. Even escalator and elevator outages have health consequences for many transit-dependent riders.

Climate change disproportionately affects those with the least ability to adapt and those who are most susceptible to climate-related health impacts. This population overlaps with the transit-dependent populations of

the elderly, youth, low-income families, and individuals with disabilities. For instance, those most at risk during heat waves (the elderly and low-income populations without air conditioning in inner city areas) are also disproportionately transit dependent, increasing the importance of transit service to move people to cooling centers.

As climate change increasingly heightens the intensity of weather conditions, it will force transit agencies around the country to devote more capital and staff resources to safety preparedness and response measures. FTA will increasingly be called upon to assist them.

Goal 3: Sustainability

Transit serves as a productive tool for improving environmental sustainability. It reduces emissions of greenhouse gases and also facilitates compact development patterns. However, as noted above, one consequence of climate change will be a faster degradation of transit agencies' capital assets. Furthermore, if climate change impacts worsen transit systems' efficiency or safety, it may threaten the agencies' ability to retain riders or attract more riders.

FTA already encourages transit oriented development (TOD) as part of its commitment to promoting environmental sustainability among its grantees. Using TOD to build compact communities furthers both sustainability and adaptation: it means less area for local government to maintain, manage, and protect, and it requires less dependence on large transportation facilities. Compact communities also use less land than traditional developments reducing the amount of impervious surface in the region's watersheds and lessening flooding impacts.

It is important to consider, at the earliest stages of systems planning, providing redundancy in service delivery in order to provide diversionary or fall-back options should severe degradation occur.

In addition to the direct effects of climate change on transit assets and services, emerging climate conditions may alter some of the ecological functions of lands surrounding transit systems. For instance, sea level rise and changes in precipitation patterns will likely influence existing wetlands, stream banks, and wildlife habitat. FTA can direct transit agencies to consider such changing conditions when developing environmental mitigation strategies as part of their project development process.

Table 1-2: Climate Change Impacts and Effects to Transit Systems

Climate Change Impact	Effect to Transit System
Rising Sea Levels (Short-Term and Long-Term)	• Flooding of fixed guideway systems and other stationary infrastructure • System downtime due to flooding • Costs associated with re-routing and accommodating transit users • Erosion of coastal highways • Changes in water levels impacts ferry routes • Obsolete transit investments in low-lying coastal areas and on barrier islands
Very Hot Days and Heat Waves	• Rail buckling leads to system downtime and/or derailments • Breakdown of asphalt leads to damage of rubber-tired transit vehicles • Customer and employee comfort and health issues • Stress to air conditioning systems and power grids
Intense Precipitation	• Flooding of fixed guideway systems and other stationary infrastructure

Events	• Urban street flooding results in temporary disruptions to bus routes • Landslides, tree toppling and changes in hydrology • System downtime due to flooding or other damage to infrastructure • Costs associated with re-routing and accommodating transit users
Hurricane Frequency and Intensity	• Flooding of fixed guideway systems and other stationary infrastructure from storm surge or fresh water flooding from heavy rainfall • High winds and storm surge damage or destroy system infrastructure • System downtime due to flooding, damage, and debris • Time costs associated with evacuations of essential personnel and regrouping for system restoration • Inland dangers such as flooding, high winds and tornadoes.
Coastal Storm Surge	• Flooding of fixed guideway systems and other stationary infrastructure • Damage or destruction to system infrastructure • System downtime due to flooding and debris associated with floodwaters • Costs associated with re-routing and accommodating transit users

c) What steps, if any, has your agency taken to manage the effects of climate change on the selected goals or objectives?

FTA has been participating in transportation adaptation efforts through the U.S. Department of Transportation Climate Change Center since 1999. FTA supported with staff and funding Phase I of the Gulf Coast Study, published in 2008, which analyzed the impacts of climate change such as sea level rise and intense heat on the multi-modal transportation infrastructure of the Gulf Coast region -- home to major ports, rail lines, interstate highways, public transportation systems, and airports. FTA is currently supporting Phase II of the study -- which will provide a detailed vulnerability and risk assessment of transportation infrastructure in Mobile, Alabama, and will produce risk assessment tools that will be broadly applicable for transportation decision-makers across the country.

FTA is also initiating a research project specific to public transportation, as transit has unique assets such as subways and overhead catenaries, as well as a central service operation components, and distributional impacts on disadvantaged populations. The research project will include a report, a series of workshops and webinars, and pilots of transit agency adaptation assessments.

2. How can your agency coordinate and collaborate with other agencies to better manage the effects of climate change?

a) Identify Federal agencies that are likely to face similar climate change impacts and management challenges to your agency. Describe how their management challenges are similar to yours.

Agency	How Climate Change Management Challenges are Similar
Federal Highway Administration (FHWA)	FHWA provides funding to build and maintain the national highway system. Many FTA grantees operate public transportation services on these highways and roads and are impacted by the climate impacts to these roads. The two agencies have similar management challenges from investing tens of billions of dollars annually in transportation assets that are owned and operated at the State and local level.

Federal Railroad Administration (FRA)	FTA funded rail transit systems operate rail infrastructure that is similar to the rail infrastructure operated by rail companies under FRA regulation. Commuter rail systems typically utilize freight rail tracks, which are under the safety jurisdiction of FRA. Safety of subway and light rail systems is regulated under State safety oversight programs, which are mandated by FTA.

b) Is your agency already collaborating with other agencies to develop strategies to adapt to climate change impacts that cut across agency mission and operations? If so, identify the agencies and briefly describe the collaboration or project? If your agency is engaged in many collaboration activities, select a few of the most significant.

Agency	**Existing Collaboration/Project**
FHWA	Collaboration on vulnerability and risk assessment pilot projects.
U.S. DOT Operating Administrations	Collaboration through U.S. DOT Climate Change Center on a range of projects, most importantly the Gulf Coast Study.
U.S. Global Change Research Program	Collaboration on National Climate Assessment
CEQ Urban Adaptation Work Group	FTA co-chairs this inter-agency group, which developed recommendations for the October 2010 report to the President. The group is currently refining recommendations and reporting on progress for the 2011 report.

c) Identify and describe opportunities for new or additional collaboration activities with other agencies to leverage resources and develop consistent adaptation strategies.

Agency	**Potential Collaboration/Project**
Department of Housing and Urban Development, Environmental Protection Agency	Collaboration on using livable communities' strategies for adapting to climate change. For instance, the Houston-Galveston MPO report recommends the region build "compact communities, meaning less area for local government to maintain, manage, and protect and less dependence on large transportation facilities, especially before and after extreme weather events." Compact communities also use less land than traditional developments, reducing the amount of impervious surface in the region's watersheds and lessening flooding impacts.

Federal Aviation Administration
Response to CEQ Questions for Agency Adaptation Planning

1. How is climate change likely to affect the ability of your agency to achieve its mission and strategic goals?

a) Identify at least three agency's strategic goals or objectives to evaluate:

Goal 1[4]: *Sustaining our Future.* Goal: to develop and operate an aviation system that reduces aviation's environmental and energy impacts to a level that does not constrain growth and is a model for sustainability.

Goal 2: *Delivering Aviation Access through Innovation.* Goal: enhance the flying experience of the travelling public by improved access to and increased capacity of the nation's aviation system. Ensure capacity is more efficient, predictable, cost-effective and matched to public needs.

Goal 3: *Next Level of Safety.* Goal: by achieving the lowest possible accident rate and always improving safety, all users of our aviation system can arrive safely at their destinations. We will advance aviation safety worldwide.

b) For each goal or objective listed above, identify major climate change impacts that may significantly impact your agency's ability to meet the goal or objective. Briefly describe how these impacts affect your selected goals or objectives.

- **Severe weather and precipitation** events can impact aviation system operations and infrastructure. Operationally, these events can adversely affect the efficiency of the National Airspace System by impacting air traffic flow management and reducing airport runway arrival and departure rates. More severe events could also increase flooding occurrences and erosion at some airfields, requiring adjustments to infrastructure, drainage, and erosion control measures.
- **Sea level rise** impacts aviation as it influences design, safety, and engineering considerations for airports and infrastructure directly or indirectly. [5] There is likely to be a financial burden to adapt to rising sea levels.
- **Fluctuating temperatures** could adversely affect aviation system functionality in various ways, including reduced aircraft performance. For example, higher temperature conditions could reduce available engine thrust, resulting in reduced payload and/or range capability and aircraft climb performance.

c) What steps, if any, has your agency taken to manage the effects of climate change on the selected goals or objectives?

The FAA has active programs for tracking weather and weather-related effects on the National Airspace System (NAS). Most importantly, the agency's Next Generation Air Transportation System (NextGen) program is an adaptation plan at its core, as it is designed to evolve aviation towards a more robust, efficient, safe and environmentally friendly future. One of the key goals of NextGen is to develop a system-wide capability to reduce weather impacts. Many activities are being carried out as part of NextGen to strengthen the NAS and address the goals listed above. In addition, FAA environmental oversight, through the Environmental Management Systems (EMS) and National Environmental Policy Act (NEPA) programs, will enable climate considerations to be considered and integrated into the FAA's aviation responsibilities and programs.

[4] Draft "FAA Destination 2025" document, April 2011.
[5] *Potential Impacts of Climate Change on U.S. Transportation, Gulf Coast Study Phase1*. Transportation Research Board Special Report 290. National Research Council of the National Academies of Science, 2008.

a) Identify Federal agencies that are likely to face similar climate change impacts and management challenges to your agency. Describe how their management challenges are similar to yours.

Agency	How Climate Change Management Challenges are Similar
DoD	Aviation facility and operational considerations
NASA	Aviation facility and operational considerations

b) Is your agency already collaborating with other agencies to develop strategies to adapt to climate change impacts that cut across agency mission and operations? If so, identify the agencies and briefly describe the collaboration or project? If your agency in engaged in many collaboration activities, select a few of the most significant.

Agency	Existing Collaboration/Project
NASA	Participate in agency "Forum on Climate Change Impacts and Adaptations" to share ideas and information.

c) Identify and describe opportunities for new or additional collaboration activities with other agencies to leverage resources and develop consistent adaptation strategies.

Agency	Potential Collaboration/Project
NOAA/USGCRP	For improved climate projection data. FAA would benefit from better science and forecasting tools for federal decision makers. Efforts underway to develop science and forecasting tools for federal decision makers will benefit FAA. Limitations on current understanding of the timing, magnitude, and location of climate impacts present a challenge.
DoD	DoD climate planning, such as the Navy Climate Change Roadmap, is very thorough and could provide helpful support for FAA planning efforts.

Maritime Administration
Response to CEQ Questions For Agency Adaptation Planning

1. How is climate change likely to affect the ability of your agency to achieve its mission and strategic goals?
a) Identify Strategic Goals

Goal 1: Reduce congestion by facilitating investment in Marine Transportation System (America's Marine Highways) infrastructure (e.g. expand or improve ports)

Goal 2: Improve maritime policies and programs such as supporting the U.S. commercial shipping fleet (e.g. foster the MARAD fleet (plus national security) and shipping)

Goal 3: Reduce congestion by advocating for the increased use of water transportation to reduce traffic volumes on land routes (i.e. develop or enhance trade routes)

b) For each goal listed above, identify major climate change impacts that may significantly impact your agency's ability to meet the goal or objective. Briefly describe how these impacts affect your selected goals or objectives.

Goal 1: Major climate change impacts may include increased flooding, increased storm water runoff, deterioration or inundation of port infrastructure, lower Great Lakes levels, sea level rise and coastal erosion, longer ice-free periods, changes in trade patterns, and changes in wind and weather patterns.

The Marine Highways System infrastructure includes ports and terminals, shipyards, and the interfaces with other transportation modes. Sea level changes may impact the ability of vessels to access docks, add to the rate of deterioration or inundation of infrastructure, damage shore side equipment and navigational aids, etc. Impediments to port access may result in rerouting of freight. Increased flooding and runoff events may lead to a decrease in water quality, causing ecosystems to become more vulnerable to invasions of aquatic invasive species. Changes in wind patterns may impact the air quality in the port areas. Changes in weather and ocean current patterns may change the frequency and severity of storms. Thus, for example, if the Agency is facilitating improvements in ports and marine transportation related infrastructure, climate change impacts may result in the loss of equipment and structures, changes to infrastructure investments and potentially, alteration of port access, and eventually the loss of port viability

Goal 2: Major climate change impacts may include changes in wind and weather patterns and (water) currents, changes to engine fuel efficiency, changes in shipping routes, and threats to ecosystems.

The commercial shipping industry will feel the impacts of changes in the climate. The change in engine efficiency may have a significant financial impact with regard to fuel. Winds and currents may also have the same effect. Further, if inland waterways continue to have decreasing water levels, crew and vessel designs may require changes to compensate for this impact. Further, ships may serve as increasingly important vectors for non-native species in potentially impaired ecosystems. As Arctic waters become more accessible as shipping routes, the potential for marine casualties in that region will increase and shipping routes may change with a corresponding ripple effect on transportation infrastructure. Adverse impacts to the commercial shipping industry could hamper commerce and the U.S. shipping industry.

Goal 3: Impacts include changes in wind patterns and (water) currents, sea level rise and coastal erosion, longer ice-free periods, storm water runoff, and changes in trade patterns.

The Marine Highway System, from a trade route perspective, is vulnerable to climate change. In some cases, changes may not be adverse. For example, longer ice-free periods enable a longer shipping season in the Great Lakes and in the Arctic. However, with more intense precipitation and resulting increases in storm water runoff, there may be impacts to waterways such as sedimentation and decreases in water depth. Currents may change causing changes in trade patterns.

a) **What steps, if any, has your agency taken to manage the effects of climate change on the selected goals or objectives?**

MARAD has worked through the Department's Center for Climate Change and Environmental Forecasting on projects that include an assessment of the implications of sea level rise to transportation infrastructure along the Gulf Coast. MARAD is aware that NOAA is currently creating a web based data and mapping system that shows the extent of inundation with various levels of sea level rise. That tool will be useful in longer-term planning of infrastructure investments. In addition, MARAD is part of a much larger Federal effort that is evaluating marine transportation issues increases in Arctic shipping, including environmental impacts and impacts to vessel designs and seafarer training.

2. How can your agency coordinate and collaborate with other agencies to better manage the effects of climate change?

a) Identify Federal agencies that are likely to face similar climate change impacts and management challenges to your agency. Describe how their management challenges are similar to yours.

Agency	How Climate Change Management Challenges are Similar
DOD	Maintains docks and other port infrastructure, also has ships and crews
COE	Maintains channels and shipping lanes and is involved with Arctic issues
DHS Coast Guard	Maintains facilities near the water, has ships and crews, is involved in seafarer training and certifications, as well as vessel design and inspection. Involved in Arctic issues
NOAA	Involved in fisheries management, marine mammal and fisheries protection, aquatic invasive species, current and weather forecasting, coastal protection and mapping. NOAA is also involved with Arctic Issues
DOS	Involved in Arctic issues
National Oceans Policy Task Forces	With respect to marine special planning and marine transportation
Other DOT Administrations	Through the Center for Climate Change and Environmental Forecasting. Involved in assessing impacts of climate change on transportation infrastructure and investment decisions

b) **Is your agency already collaborating with other agencies to develop strategies to adapt to climate change impacts that cut across agency mission and operations? Identify the agencies and briefly describe the collaboration or project?**

Agency	Existing Collaboration/Project
DOT Administrations	Participates through the Center for Climate Change and Environmental Forecasting. Involved in assessing impacts of climate change on transportation infrastructure and investment decisions.

c) Identify and describe opportunities for new or additional collaboration activities with other agencies to leverage resources and develop consistent adaptation strategies.

Agency	Potential Collaboration/Project
NOAA	On efforts to collect data and map potential inundation as sea levels rise.
National Oceans Policy	Ensure that climate change adaptation issues are fully considered in discussions

Saint Lawrence Seaway Development Corporation
Response to CEQ Questions For Agency Adaptation Planning

1. How is climate change likely to affect the ability of your agency to achieve its mission and strategic goals?

a) Identify Strategic Goals or Objectives

1) Maintain infrastructure and waters of the St. Lawrence Seaway.
2) Provide reliable guidance in navigable waters to domestic and international shipping.
3) Promote international marine trade to the U.S. and Canadian hinterland.
4) Ensure that all marine traffic is conducted safely, without harm to the environment.

b) Climate change impacts that may significantly impact our agency's ability to meet the goal or objective:

1) Warmer temperatures will alter the hydrologic regime, impacting water depth and cargo carrying capacity of marine vessels.
2) Flow affects currents and dynamics of navigating in confined waters. This could lead to more challenges to navigation and vessel safety.
3) Warmer temperatures will place greater demands from hydroelectric systems that depend on the same water system of the Seaway. Greater water demands may reduce available water for commercial shipping.
4) Reduced ice pack will accelerate evaporation and lower water levels.
5) Storm surges will impact safety to navigation and accelerate erosion to shoreline area.
6) Heavy silt accumulation will place greater demands for dredging.

c) Steps that your agency has taken to manage the effects of climate change on the selected goals or objectives.

The Saint Lawrence Seaway Development Corporation has been a major partner in Green Marine. The organization brings together seven associations representing more than 500 companies from Canada and the U.S. maritime industries. Green Marine's objective is to implement an environmental program in the St. Lawrence and Great Lakes to demonstrate and communicate the maritime industry's commitment to playing a leading role in environmental matters.

Over recent years, both U.S. and Canadian Seaways conducted a three year observational study to determine if winter ice and vessel activity during fall and spring had any adverse effect to the erosion of shoreline areas as the operational season includes times of the year when ice may be present. This observational study indicated that there was no adverse effect to shoreline areas due to lower accumulation of ice.

2. How can your agency coordinate and collaborate with other agencies to better manage the effects of climate change?

b) Identify Federal agencies that are likely to face similar climate change impacts and management challenges to your agency. Describe how their management challenges are similar to yours.

Agency	How Climate Change Management Challenges are Similar
St. Lawrence	This Canadian agency performs Seaway virtually all the same operational

Seaway Management Corporation	functions as does the SLSDC in a Corporation unified effort to provide contiguous operational services to the international maritime trade for the Great Lakes and St. Lawrence Seaway.
New York Power Canadian Hydro	Both hydroelectric producers are Authority and significantly in tune with aspects of water flow quantities and the ability to meet seasonal demands from the power grid and all that impacts the availability of this resource.
International Joint Commission	The Commission is comprised of Canadian and U.S. members that are responsible for the water levels that are maintained throughout the year in order to provide the delicate balance between commercial navigation, power generation, communities that are impacted by seasonal or climatic changes in water levels on Lake Ontario, and the St. Lawrence River.
NOAA	NOAA deals with all aspects of weather and atmospheric analyses and hydrographic research and mapping. This agency will continue to be the leading source of accurate data needed to formulate the strategy required to operate in changing climatic environment. Weather information along with hydrographic survey work will be of the greatest importance in order to monitor changing patterns of increased silting affecting depth of navigable waterways and the need to accurately forecast weather fronts to shipping entities.
U.S. Army Corps of Engineers(COE)	The COE provides maintenance dredging to waterways within the Great Lakes. Climate change could directly affect water levels to both extremes. The safety of navigation through this inland waterway is very dependent on maintaining water depth and to ensure that erosion to shoreline areas is minimized.

b) Is your agency already collaborating with other agencies to develop strategies to adapt to climate change impacts that cut across agency mission and operations? If so, identify the agencies and briefly describe the collaboration or project?

Agency	Existing Collaboration/Project
St. Lawrence Seaway Management Corporation	The Saint Lawrence Seaway Development Corporation is currently developing strategies to adapt to climate change with our Canadian counterpart (SLSMC). Both Seaways currently collaborate with U.S. and Canadian Coast Guards, DOT, Transport Canada as well as NOAA to carry out the mission of moving marine transportation through the hinterlands of the U.S. and Canada. At this time, we have just initiated the discussions on the aspects of climate change, and how it will affect operations and management of the waterway, and how we need to adapt, in order to sustain services to our stakeholders.
Green Marine	The SLSDC is collaborating with a multitude of agencies to promote Green Marine, an organization comprised of stakeholders representing all facets of the maritime trade industry operating in our system. Its focus is to draw awareness to the energy efficiency of marine transportation and environmental awareness of operating in a unique freshwater system.

c) Identify and describe opportunities for new or additional collaboration activities with other agencies to leverage resources and develop consistent adaptation strategies.

The SLSDC operates within the largest fresh water resource on earth. The five Great Lakes and St. Lawrence River provide fresh water to millions of people that reside in the communities that border this extensive waterway; any fluctuation in the amount and quality of the water will have resounding impact to not only the population around its shore but also to the fish, wildlife and plants that are nurtured by its water. Climate change may bring about deviations that may be far greater than any experienced thus far. Other agencies that the Saint Lawrence Seaway Development Corporation will need to collaborate with on a greater level are:

Agency	Potential Collaboration/Project
Department of Commerce	This agency would be a significant partner in leveraging their expertise of meteorology through NOAA, with their ability to promote international and domestic trade. They would also be a very strong component in providing scientific, engineering, and technological development in understanding the transitions that the world's climate is going through, and how this change could alter consumable products worldwide.
Department of Agriculture	The Department of Agriculture will have a prominent stake in how climate change will alter the landscape of the food processing areas within the United States. The St. Lawrence Seaway is a major conduit for exporting grain to both domestic and world markets. A collaborative effort could focus on developing consistent strategies in preparing for the climatic influence of the future.
Transport/ Environment Canada	The close relationship and the integral union of our bi-national system makes it imperative that efforts to address the issues of climate change include the Canadian agencies of Transport Canada and Environment Canada. The U.S. and Canadian Seaways have worked diligently to unify all aspects of our operations. That partnership can be extended to a collaborative effort to address climatic changes that would affect both Seaways equally.
EPA/ NOAA	These agencies will be overseeing actions that may be undertaken involving the water, shoreline, fish and wildlife. Collaboration can ensure that adaptation strategies are consistent and approved for implementation.

Federal Motor Carrier Safety Administration
Response to Guiding Questions for Agency Adaptation Planning

1) How is climate change likely to affect the ability of your agency to achieve its mission and strategic goals?
a) Identify Strategic Goals:

1. Goal 1: Develop and deliver programs focused on identifying and addressing CMV safety deficiencies and assigning management or operational accountability and responsibility.

2. Goal 2: Establish effective enforcement strategies and sanctions that result in the formation and continuation of strong safety-management practices and systems by regulated entities or ensure their removal from the CMV transportation system.

3. Goal 3: Develop, enhance, and promote safe driving programs and policies that address driver behaviors to reduce CMV-related crashes, injuries, and fatalities.

b) For each goal above, identify major climate change impacts that may significantly impact your agency's ability to meet the goal or objective.

Goal 1: Changes in climate affect weather patterns. Increased severe and inclement weather may heighten the risk of CMV crashes, placing an even greater importance on properly maintained vehicles – large trucks and buses. Increases in weather events that have significant impacts on people, goods, and/or services can lead to a declared state of emergency, allowing States to suspend Federal Motor Carrier Safety Regulations.

Goal 2: Increased adverse weather will impact the ability of Safety Inspectors and State partners to perform CMV safety inspections. Weather-related emergencies may re-route traffic through areas of poor infrastructure and areas without an inspection presence. Vehicle inspection stations may need additional structures to account for increased adverse weather and increased risk of power failure, including high temperatures along the southern border.

Goal 3: Adverse weather may affect driver/operator performance and decision-making skills. Driving in adverse weather conditions may increase driver fatigue and other safety risk factors.

c) What steps, if any, has your agency taken to manage the effects of climate change on the selected goals or objectives?

FMCSA released a report titled "Weather and Climate Impacts on Commercial Motor Vehicle Safety" (http://www.fmcsa.dot.gov/facts-research/research-technology/report/Weather-Impacts-on-CMV-Safety-report.pdf), which is a preliminary investigation into the effects of weather on CMV crashes and offers recommendations for further research.

Other research initiatives have been submitted to FMCSA's Research Executive Board for consideration in the near term. In addition, FMCSA hosted a staff brown-bag luncheon on May 18, 2011 to educate and solicit ideas for climate change impacts to FMCSA's mission. The ideas generated from this meeting are reflected in this document.

2) How can your agency coordinate and collaborate with other agencies to better manage the effects of climate change?

a) Identify Federal agencies that are likely to face similar climate change impacts and management challenges to your agency. Describe how their management challenges are similar to yours.

Agency	How Climate Change Management Challenges are Similar
NHTSA, FHWA, RITA	Impacts of increased severe weather on roadway safety (behavioral, vehicular, and infrastructure-based).
FHWA, FAA, FTA, FRA, MARAD	Infrastructure threats, based on severe weather and sea level rise, on roads bridges, roadside inspection and rest facilities, and intermodal facilities.
State Partners	Impacts of severe weather on ability for roadway inspections and other safety initiatives to be performed/conducted.

b) Is your agency already collaborating with other agencies to develop strategies to adapt to climate change impacts that cut across agency mission and operations? If so, identify the agencies and briefly describe the collaboration or project? If your agency is engaged in many collaboration activities, select a few of the most significant.

Agency	Existing Collaboration/Project
All DOT Modes	Participation in the multi-modal Center for Climate Change and Environmental Forecasting. FMCSA provides funds to the Center for research such as the Gulf Coast study, which continues to focus on analyzed impacts to transportation infrastructure.

c) Identify and describe opportunities for new or additional collaboration activities with other agencies to leverage resources and develop consistent adaptation strategies.

Agency	Potential Collaboration/Project
FHWA	Researching severe weather impacts on CMV traffic.

Research and Innovative Technologies Administration
Response to Guiding Questions for Agency Adaptation Planning

1) How is climate change likely to affect the ability of your agency to achieve its mission and strategic goals?
a) Identify Strategic Goals:

1. Safety
2. State of Good Repair
3. Livable Communities
4. Environmental Sustainability
5. Economic Development

b) For each goal above, identify major climate change impacts that may significantly impact your agency's ability to meet the goal or objective.

1. Safety: Design of roadways for safety under increased precipitation, storms, and/or drought (e.g., more durable pavement markings, drainage, skid-resistant road surfaces)
2. State of Good Repair: Additional stresses on materials and design of transportation infrastructure and the need to potentially consider repairing existing infrastructure to withstand new threats (using innovative materials/technology) and to consider relocation of some infrastructure
3. Livable Communities: Ensuring that livable communities are resilient and are located and/or designed in anticipation of climate change impacts.
4. Environmental Sustainability: Planning for future growth of communities that will be resilient and/or avoid impacts and protecting ecosystems that may serve to reduce climate change impacts. Like sustainability, climate change adaptation consideration should be integrated into all transportation projects, whether planning, design, asset management, or other.
5. Economic Growth: Ensuring continued access for residents, employees, and visitors to coastal tourism communities/destinations and other communities that may be impacted by climate change impacts in order to support economies.

c) What steps, if any, has your agency taken to manage the effects of climate change on the selected goals or objectives? Climate change adaptation holds planning, facility management, and technological challenges requiring interdisciplinary coordination, innovative problem solving, and sharing of resources across Federal agencies. RITA's Volpe Center is already working on several of these challenges. For example:

Agency	Existing Collaboration/Project
Federal Land Management Agencies (FLMAs)	The Volpe Center supports FLMAs, which face climate change impacts that may result in infrastructure, facility, and land damage and loss. The Volpe Center is working with FLMAs to identify alternative parking facilities inland from coastal units and planning for transit and ferry systems to ensure continued access to resources and destinations.
	Supports the FHWA- led Interagency Transportation, Land Use, and Climate Change Pilot Project focusing on Cape Cod Pilot Project's site to raise awareness and begin to plan future development with adaptation in mind.

DRAFT SUSTAINABILITY/ENERGY SCORECARD
LEADERSHIP IN ENVIRONMENTAL, ENERGY & ECONOMIC PERFORMANCE
Department of Transportation: Kathryn B. Thomson, Counselor to the Secretary

FY 2010 STATUS (As of July 1, 2011)		**PLANNED ACTIONS**		
Color	• For Scope 1&2 GHG Reduction Target of __% by 2020: ___ On track, X% reduction in 2010 (G) ___ ≥ half of planned reduction (Y)	Color	Actions taken since January 1, 2010: • Developed SSPPs and action plans for each operating administration (OA) and issued policy guidance to achieve goals • Updated FY10-12 budget data by 2/11/11. • Submitted final Sustainability Plan by 6/2/11. • Completed EISA 432 evaluations on 75% of appropriate facilities by 6/30/11. • Established mandatory transportation metrics for individual OA fleets & reported progress monthly to senior leadership. • DOT is 80% power management enabled for eligible PCs and on track for 100% by 12/31/11. • Reviewed ≥5% applicable FY11 Q2 contract actions and met 100% sustainable acquisition goal. • Met with CEQ/OMB to discuss strategy and path forward for meeting petroleum, water and buildings goals. • DOT instituted a Sustainability Scorecard into its quarterly 'regulatory review' process—individual accountability meetings between the Deputy Secretary and the Administrator of each of DOT's OAs. Targets for employee commuting, water efficiency, renewable energy and petroleum are among the metrics on this scorecard.	• DOT has leadersh at the hig sustaina Sustaina quarterly Secretar OA Adm for progr focuses for the g improver immedia mobilizin sustaina OAs. DO Sustaina accounta for the fe • DOT has to serve DOT SS provide l across D • Each OA individua SSPP. • In partne impleme to meet t energy, v in a sing • DOT is 8 Continui PM by D • An Actio Administ energy p FY11. D
Color	• Reduction in energy intensity in goal-subject facilities compared with 2003: ___ at least 15 percent and on track for 30 percent by 2015 (G) ___ at least 12 percent (Y)			
Color	• For Scope 3 GHG Reduction Target of __% by 2020: ___ On track, X% reduction in 2010 (G) ___ X% increase/reduction; behind schedule (Y)			
Color	• Use of renewable energy as a percent of facility electricity use: ___ Total of 5% from renewable <u>electricity</u> sources including 2.5% from <u>new</u> sources (thermal, mechanical, or electric) (G) ___ 5 percent from any renewable electricity source (Y)			
Color	• Reduction in potable water intensity compared with 2007 is at least: ___ 6 percent and on track for 26% in 2020 (G) ___ 4 percent (Y)			
Color	• Reduction in fleet petroleum use compared to 2005 is at least: __ ≥10 percent and on track for 20% by 2015 (G) __ ≥8 percent (Y)		<u>Planned actions for next six months</u>: • Initiate an ESPC-based Building upgrade program to meet 5 of the 7 scorecard goals in partnership with DOE/FEMP. • Establish a Sustainable Buildings Infrastructure Team (SBIT) that will consist of a cross-functional group of trained experts to prioritize and execute a building upgrade program to meet the EOs and HPSB goals across the Department.	
Color	• Sustainable green buildings: __at least 5% of buildings sustainable & on track for 15% by 2015 (G) __5% GSF of inventory sustainable (Y)			

FY 2010 STATUS (As of July 1, 2011)		PLANNED ACTIONS		
			• Add three (3) HPSB buildings to data element #25 to be submitted in the FRPP which total 5 HPSB for DOT. • Identify non-GSA leases expiring in the next 2 to 3 years to replace with new leases meeting the HPSB guiding principles. • Institute Energy Star Portfolio Manager to manage and track energy consumption and reduction and HPSB progress. • New policy requiring OAs to report water intensity performance quarterly to the Deputy Secretary. • DOT will purchase at least 5% renewable energy by the end of FY11. • 527 new low-GHG/alternative fuel vehicles will replace less efficient vehicles in the DOT fleet. • Institute new targets and methods for measuring commuting days avoided using reporting ability within the current time keeping information system. • Issue commuting survey on annual or bi-annual basis as mandated by OMB/CEQ	the 5% g • Fleet – F is focuse monitorin Quarterly Review r Secretar Administ reduction determin method f alternativ DOT did ”Evaluati near 20 f • DOT will inventory the pipel • DOT put commun requirem reviewed awarded compliar • DOT red 10.8% fr • Issued a administ copiers a sided as other pa contracte • Recomm recalibra account MTCO2E

		
Agency: • Achieved its 2010 Sustainability Plan proposed reduction for GHG Scopes 1&2 and is on track to achieve agency's 2020 target. • Achieved its 2010 Sustainability Plan proposed reduction for GHG Scope 3 and is on track to achieve its 2020 target. • Reduced energy intensity (Btu/GSF*) in EISA goal-subject facilities by at least 15 percent compared with 2003 and is on track for 30 percent reduction by 2015. • Uses at least 5 percent electricity from renewable sources as a percentage of facility electricity use & at least 2.5 percent of facility electricity use comes from new sources (post-1999). *(Thermal and mechanical renewable can be included in the 2.5% new requirement, but not the 5% goal; i.e., an agency meets all new sources requirement with thermal or mechanical energy (2.5 percent) but would still need an additional 5 percent from renewable electricity sources.)* • Reduced water intensity by at least 6 percent from final approved 2007 baseline and is on track for 20 percent reduction by 2015. • Achieved a 10 percent reduction in petroleum use in its entire vehicle fleet compared to 2005 and/or is on track for 20 percent reduction by 2015. • Demonstrates implementation of *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings* (GP) for new, existing and leased buildings; and is on track to meet 15% goal by 2015 by reporting that at least 5% of buildings >5,000 GSF meet GP as reported in the Federal Real Property Profile (FRPP).	Agency: • Achieved at least half of its Sustainability Plan proposed target in FY 2010 for GHG Scopes 1&2. • Did not achieve its Sustainability Plan proposed reduction for 2010 GHG Scope 3 but developed base year and 2010 Scope 3 inventory. • Reduced energy intensity (Btu/GSF) in EISA goal-subject facilities by at least 12 percent compared with 2003. • Uses at least 5 percent renewable energy from electric, thermal or mechanical sources to power facilities and equipment; but less than half was obtained from new sources (post-1999) or part of the requirement was met with thermal and mechanical renewable energy. • Reduced water intensity by at least 4 percent from final approved 2007 baseline. • Achieved at least 8 percent reduction in petroleum use in the entire vehicle fleet compared to 2005. • Incorporates Guiding Principles into all *new* design contracts for construction, major renovations and leases and at least 5 percent of GSF of its building inventory over 5,000 GSF meets GP as reported in FRPP. *GSF= Gross Square Footage	Agency: • Did not achieve Sustainability P in FY 2010 for • Did not develop GHG inventory provide planne • Did not reduce (Btu/GSF) in E facilities by at l compared with • Did not use at l renewable ene thermal or mec power facilities • Did not reduce least 4 percent 2007 baseline. • Did not achieve reduction in pe entire vehicle fl • Cannot demon with GP on new renovations, or than 5% of buil by number of b 5,000 GSF me FRPP.

Appendix 5: Acronyms and Abbreviations

Abbreviation or Acronym	Full Name
AFV	Alternative Fuel Vehicle
ARRA	American Recovery and Reinvestment Act of 2009
BTU or Btu	British Thermal Unit
C&D	Construction and Demolition
CEQ	Council on Environmental Quality
CFL	Computer for Learning
CIO	Chief Information Officer
CPU	Central Processing Unit
DOT	U.S. Department of Transportation
EISA	Energy Independence and Security Act
EMS	Environmental Management System
EO	Executive Order
EPA	Environmental Protection Agency
EPAct	Energy Policy Act
EPCRA	Emergency Planning and Community Right-to-Know Act
EPEAT	Electronic Product Environmental Assessment Tool
EPP	Environmentally Preferable Purchasing
ESPC	Energy Services Performance Contract
EUL	Enhanced Use Lease
FAA	Federal Aviation Administration
FEMP	Federal Energy Management Program
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
FTE	Full Time Employee
FY	Fiscal Year
gal	gallon
GHG	Greenhouse Gas
GPRA	Government Performance and Results Act
GSA	General Services Administration
GSF	Gross Square Feet
HPSB	high performance sustainable buildings
IT	Information Technology
MARAD	Maritime Administration
MILCON	Military Construction
mtCO2e	Metric tons of Carbon Dioxide Equivalent
NEPA	National Environmental Policy Act
NHTSA	National Highway Traffic Safety Administration
O&M	Operations and Maintenance
OA	Operating Administration

Abbreviation or Acronym	Full Name
OIG	Office of the Inspector General
OMB	Office of Management and Budget
OST	Office of the Secretary of Transportation
PHMSA	Pipeline and Hazardous Materials Safety Administration
PPA	Power Purchase Agreement
PUE	Power Usage Efficiency
R2	Responsible Recyclers
RIA	Regulatory Impact Analysis
RITA	Research and Innovative Technology Administration
ROI	Return on Investment
SF	Square Feet or Square Footage
SLSDC	Saint Lawrence Seaway Development Corporation
SNAP	Significant New Alternatives Policy
SRPO	Senior Real Property Officer
SSO	Senior Sustainability Officer
TRI	Toxics Release Inventory
UESC	Utility Energy Services Contract
USC	United States Code