1.0 Purpose & Scope

The Federal government is committed to designing, locating, constructing, maintaining, and operating its facilities in an energy efficient and sustainable manner that strives to achieve a balance that will realize high standards of living, wider sharing of life's amenities, maximum attainable reuse and recycling of depletable resources, in an economically viable manner, consistent with Department and Agency missions. In doing so and where appropriate, GSA encourage the use of life cycle concepts, consensus-based standards, and performance measurement and verification methods that utilize good science, and lead to sustainable buildings in integrated design, energy performance, water conservation, indoor environmental quality, and materials aimed at helping Federal agencies and organizations. By doing so reduce the total ownership cost of facilities; improve energy efficiency and water conservation; provide safe, healthy, and productive built environments; and, promote sustainable environmental stewardship. (MOU, 2006)

Executive Order (EO) 13423, Section 2(f), Federal agencies are required to ensure that:

> *"new construction and major renovation of agency buildings comply with the Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings set forth in the Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding (2006), and 15 percent of the existing Federal capital asset building inventory of the agency as of the end of fiscal year 2015 incorporates the sustainable practices in the Guiding Principles;*
>
> *Section 3(a) mandates that the heads of each agency implement within the agency sustainable practices for high performance construction, lease, operation, and maintenance of buildings"*

This procedure was prepared to aid GSA staff and contractors comply with Sustainable New Construction, Major Renovations, and Existing Building requirements set forth in the 2006 interagency Memorandum of Understanding (MOU) for "Federal Leadership in High Performance and Sustainable Buildings", the subsequent updated 2008 Interagency Sustainability Working Group (ISWG), "High Performance and Sustainable Buildings Guidance", and the objectives set forth in Executive Orders and other legal statues.

2.0 Activities & Departments Affected

This procedure affects all GSA personnel and contractors at GSA facilities in Region 8, for GSA needs to achieve sustainability.

3.0 Exclusions

If no options exist in your geographical area, or if cost preclude an option.

4.0 Forms Used

LEED Checklists

5.0 Acronyms, Abbreviations and Definitions

Acronyms	Meaning
ANSI	American National Standards Institute
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.
CEQ	Council of Environmental Quality
CFR	Code of Federal Regulations
CO	Contracting Officer
COR	Contracting Officers Representative
DFC	Denver Federal Center
DOE	Department of Energy
EERE	Energy Efficiency and Renewable Energy, U.S. DOE
EISA	Energy Independence and Security Act
EO	Executive Order
EPA	Environmental Protection Agency
EPAct	Energy Policy Act (1992 and 2005)
FEMP	Federal Energy Management Program of U.S. DOE EERE
FSRIA	Farm Security and Rural Investment Act
GHG	Greenhouse Gas
GSA	General Service Administration
IESNA	Illuminating Engineering Society of North America
ISO	International Standards Organization
ISWG	Interagency Sustainability Working Group
LEED®	Leadership in Energy & Environmental Design
MOU	Memorandum of Understanding
NEPA	National Environmental Policy Act
O&M	Operations and Maintenance
OFEE	Office of the Federal Environmental Executive
PBS	Public Building Services
RCRA	Resource Conservation and Recovery Act
USDA	United States Department of Agriculture

Definitions:

Commissioning: insures that a building performs in accordance with the Owner's basis of design and operational needs. Commissioning is a process that ensures the design and engineering of the building run in tandem.

High performance buildings: those buildings with energy, economic, and environmental performance that pay particular attention to energy efficiency and indoor air quality, and achieve sustainability.

Green building: the practice of creating structures and using processes that is environmentally responsible and resource-efficient throughout a building's life-cycle from siting to design, construction, operation, maintenance, renovation and deconstruction. (EPA)

Leadership in Energy and Environmental Design (LEED): A Green Building Rating Program that is, "a national consensus-based, market-driven building rating system designed to accelerate the development and implementation of green building practices". (U.S. Green Building Council)

Major Renovation: Involves elements of a major HVAC renovation, significant envelope modifications, and major interior rehabilitation. For an existing building, LEED for New Construction is the appropriate rating system. (USGBC)

Sustainability: meeting the needs of the present without compromising the ability of future generations to meet their own needs. (EPA)

Sustainable: to create and maintain conditions, under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic, and other requirements of present and future generations of Americans. (EO 13423)

6.0 Procedure (Property Managers are the responsible parties)

State Specific Procedures & Requirements [refer to individual State Legal Reviews for details on Statues, Laws, and Rules]: Not Applicable.

Standardized Procedure:

The core foundation of this procedure is the Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding (MOU), signed by 17 federal agencies in January 2006; GSA was the third agency to sign. Text has been added from the December 2008 Interagency Sustainability Working Group (ISWG), "High Performance and Sustainable Buildings Guidance", and from those laws and Executive Orders that set federal sustainability objectives.

I. Employ Integrated Design Principles
Integrated Design

From the 2006 MOU and:
From the 2008 ISWG: Sustainable New Construction and Major Renovations
Use a collaborative, integrated planning and design process that

- Initiates and maintains an integrated project team [*as described on the Whole Building Design Guide <http://www.wbdg.org/design/engage_process.php>* (ISWG)] in all stages of a project's planning and delivery;

- Establishes performance goals for siting, energy, water, materials, and indoor environmental quality along with other comprehensive design goals; and, ensures incorporation of these goals throughout the design and lifecycle of the building; and,
- Considers all stages of the building's lifecycle, including deconstruction.

From the 2008 ISWG, not in the MOU: Sustainable New Construction and Major Renovations

- Integrates the use of OMB's A-11, Section 7, Exhibit 300: *Capital Asset Plan and Business Case Summary*

From the 2008 ISWG: Sustainable Existing Buildings
Integrated Assessment, Operation, and Management
Use an integrated team to develop and implement policy regarding sustainable operations and maintenance.

- Incorporate sustainable operations and maintenance practices within the appropriate Environmental Management System (EMS)
- Assess existing condition and operational procedures of the building and major building systems and identify areas for improvement
- Establish operational performance goals for energy, water, material use and recycling, and indoor environmental quality, and ensure incorporation of these goals throughout the remaining lifecycle of the building
- Incorporate a building management plan to ensure that operating decisions and tenant education are carried out with regard to integrated, sustainable building operations and maintenance
- Augment building operations and maintenance as needed using occupant feedback on work space satisfaction.

Executive Orders & Laws:

EO 13514 Sustainable Buildings and Communities (DOE, FEMP website)
Federal agencies must enhance efforts towards sustainable buildings and communities. Specific requirements include:

- Implement high performance sustainable Federal building design, construction, operation and management, maintenance, and deconstruction by:
  - Ensuring all new Federal buildings, entering the design phase in 2020 or later, are designed to achieve zero net energy by 2030.
  - Ensuring all new construction, major renovations, or repair or alteration of Federal buildings comply with the Guiding Principles of Federal Leadership in High Performance and Sustainable Buildings
  - Ensuring at least 15% of existing agency buildings and leases (above 5,000 gross square feet) meet the Guiding Principles by fiscal year 2015 and that the agency makes annual progress towards 100% compliance across its building inventory.
  - Pursuing cost-effective, innovative strategies (e.g., highly-reflective and vegetated roofs) to minimize consumption of energy, water, and materials.

- Managing existing building systems to reduce the consumption of energy, water, and materials, and identifying alternatives to renovation that reduce existing asset deferred maintenance costs.
- When adding assets to agency building inventories, identifying opportunities to:
  - Consolidate and eliminate existing assets.
  - Optimize the performance of portfolio property.
  - Reduce associated environmental impacts.
- Ensuring rehabilitation of Federally-owned historic buildings utilizes best practices and technologies in retrofitting to promote long-term viability of the building.

EO 13514 Sustainable Buildings and Communities (DOE, FEMP website)

- Advance regional and local integrated planning by:
  - Participating in regional transportation planning and recognizing existing community transportation infrastructure.
  - Aligning Federal policies to increase the effectiveness of local planning for energy choices such as locally-generated renewable energy.
  - Ensuring that planning for new Federal facilities and leases consider sites that are pedestrian friendly, near existing employment centers, and accessible to public transport; and emphasize existing central cities and, in rural communities, existing or planned town centers.
  - Identify and analyze impacts from energy usage and alternative energy sources in all environmental impact statements and environmental assessments for proposals covering new or expanded Federal facilities under the amended National Environmental Policy Act (NEPA) of 1969.

Commissioning

From the 2006 MOU and:
From the 2008 ISWG: Sustainable New Construction and Major Renovations

- Employ total building commissioning practices tailored to the size and complexity of the building and its system components in order to verify performance of building components and systems and help ensure that design requirements are met.
- This should include a designated commissioning authority, inclusion of commissioning requirements in construction documents, a commissioning plan, verification of the installation and performance of systems to be commissioned, and a commissioning report.

From the 2008 ISWG: Sustainable Existing Buildings

- Employ recommissioning, tailored to the size and complexity of the building and its system components, in order to optimize and verify performance of fundamental building systems.
- Commissioning must be performed by an experienced commissioning provider. When

building commissioning has been performed, the commissioning report, summary of actions taken, and schedule for recommissioning must be documented.
- Building recommissioning must have been performed within four years prior to reporting a building as meeting the *Guiding Principles*.
- In addition, meet the requirements of EISA 2007, Section 432 and associated FEMP guidance.

II. Optimize Energy Performance
Energy Efficiency

From the 2006 MOU and:
From the 2008 ISWG: Sustainable New Construction and Major Renovations
- 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 where applicable.
- For new construction, reduce the energy cost budget [*use* (ISWG)] by 30 percent compared to the baseline building performance rating per the [*American National Standards Institute (ANSI)* (ISWG)] / American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., (ASHRAE) and the Illuminating Engineering Society of North America (IESNA) Standard 90.1-~~2004~~ [*2007* (ISWG)], Energy Standard for Buildings Except Low-Rise Residential.
- For major renovations, reduce the energy cost budget [*use* (ISWG)] by 20 percent below pre-renovations 2003 baseline.

From the 2008 ISWG, not in the MOU: Sustainable New Construction and Major Renovations
- Laboratory spaces may use the Labs21 Laboratory Modeling Guidelines. Use ENERGY STAR® and FEMP-designated Energy Efficient Products, where available.

From the 2008 ISWG: Sustainable Existing Buildings
Three options can be used to measure energy efficiency performance:
- Option 1: Receive an ENERGY STAR® rating of 75 or higher or an equivalent Labs21 Benchmarking Tool score for laboratory buildings,
- Option 2: Reduce measured building energy use by 20% compared to building energy use in 2003 or a year thereafter with quality energy use data, or
- Option 3: Reduce energy use by 20% compared to the ASHRAE 90.1-2007 baseline building design if design information is available.
- Use ENERGY STAR® and FEMP-designated Energy Efficient Products, where available.

On-Site Renewable Energy

From the 2006 MOU:

- **No independent category or subsection defined.**

From the 2008 ISWG: Sustainable New Construction and Major Renovations

- Meet at least 30% of the hot water demand through the installation of solar hot water heaters, when lifecycle cost effective; per the Energy Independence and Security Act (EISA) Section 523.

From the 2008 ISWG: Sustainable Existing Buildings

- Implement renewable energy generation projects on agency property for agency use, when lifecycle cost effective; per Executive Order 13423.

Executive Orders & Laws:

EPAct 2005: (DOE, FEMP website)

- Defines "renewable energy" as electric energy generated from solar, wind, biomass, landfill gas, ocean (including tidal, wave, current, and thermal), geothermal, municipal solid waste, or new hydroelectric generation capacity achieved from increased efficiency or additions of new capacity at an existing hydroelectric project.
- Requires the Secretary of Energy to ensure that, to the extent economically feasible and technically practicable, the following amounts of the total electricity consumed by the Federal Government come from renewable energy:
  - Not less than 3% in fiscal years 2007-2009
  - Not less than 5% in fiscal years 2010-2012
  - Not less than 7.5% in fiscal year 2013 and thereafter
- Provides a bonus to Federal agencies by allowing them to double count renewable energy if it is produced on-site and used at a Federal facility, produced on Federal lands and used at a Federal facility, or produced on Native American land and used at a Federal facility.

EISA 2007 (DOE, FEMP website):

- Requires 30% of the hot water demand in new Federal buildings (and major renovations) be met with solar hot water equipment provided it is life-cycle cost-effective.
- Requires new buildings and major renovations of Federal buildings to reduce fossil fuel consumption relative to 2003 by:
  - 55% by 2010
  - 65% by 2015
  - 80% by 2020
  - 100% by 2030
- Makes it easier for Federal agencies to finance renewable energy projects through energy savings performance contracts (ESPCs) through the following:
  - Project funding flexibility is increased by allowing agencies to

combine appropriated funds and private financing.
    - Contract length limitations to less than 25 years are also restricted, as are total obligation amount limitations.
- The definition of ESPC is expanded to include the use of excess electrical or thermal energy generated from on-site renewable sources.

E.O. 13423 (DOE, FEMP website) reinforces the legislative renewable goals. Specifically, the order mandates that at least half of renewable energy used by the Federal Government must come from new renewable sources (in service after January 1, 1999). Non-electric renewable resources (e.g., solar water heating) can be used to meet this requirement, but all of the EPAct 2005 goal must be met with renewable electricity.

Benchmarking

From the 2006 MOU:

- Compare actual performance data from the first year of operation with the energy design target.

From the 2008 ISWG: Sustainable New Construction and Major Renovations

- 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®.
- Verify that the building performance meets or exceeds the design target, or that actual energy use is within 10% of the design energy budget for all other building types.
- For other building and space types, use an equivalent benchmarking tool such as the Labs21 benchmarking tool for laboratory buildings.

From the 2008 ISWG: Sustainable Existing Buildings

- Compare annual performance data with previous years' performance data, preferably by entering annual performance data into the ENERGY STAR® Portfolio Manager.
- For building and space types not available in ENERGY STAR®, use an equivalent benchmarking tool such as the Labs21 benchmarking tool for laboratory buildings.

Measurement and Verification

From the 2006 MOU:

- In accordance with DOE guidelines issued under section 103 of the Energy Policy Act of 2005 (EPAct), install building level utility meters in new major construction and renovation projects to track and continuously optimize performance.
- After one year of occupancy, measure all new major installations using the Energy Star7 Benchmarking Tool for building and space types covered by Energy Star7.

- Enter data and lessons learned from sustainable buildings into the High Performance Buildings Database. (www.eere.energy.gov/femp/highperformance/index.cfm)

From the 2008 ISWG: Sustainable New Construction and Major Renovations

- Install building level electricity meters in new major construction and renovation projects to track and continuously optimize performance; per the Energy Policy Act of 2005 (EPAct), Section 103.
- Include equivalent meters for natural gas and steam, where natural gas and steam are used; per EISA Section 434.

From the 2008 ISWG: Sustainable Existing Buildings

- Install building level electricity meters to track and continuously optimize performance; per the Energy Policy Act of 2005 (EPAct), Section 103.
- The utility meters must also include natural gas and steam, where natural gas and steam are used; per the Energy Independence and Security Act (EISA) 2007.

III. Protect and Conserve Water
Indoor Water

From the 2006 MOU and:
From the 2008 ISWG: Sustainable New Construction and Major Renovations

- Employ strategies that in aggregate use a minimum of 20 percent less potable water than the indoor water use baseline calculated for the building, after meeting the Energy Policy Act of 1992, [*Uniform Plumbing Codes 2006, and the International Plumbing Codes 2006* (ISWG)] fixture performance requirements.

From the 2008 ISWG, not in the MOU: Sustainable New Construction and Major Renovations

- The installation of water meters is encouraged to allow for the management of water use during occupancy. The use of harvested rainwater, treated wastewater, and air conditioner condensate should also be considered and used where feasible for nonpotable use and potable use where allowed

From the 2008 ISWG: Sustainable Existing Buildings

Two options can be used to measure indoor potable water use performance:

- Option 1: Reduce potable water use by 20% compared to a water baseline calculated for the building. The water baseline, for buildings with plumbing fixtures installed in 1994 or later, is 120% of the Uniform Plumbing Codes 2006 or the International Plumbing Codes 2006 fixture performance requirements. The water baseline for plumbing fixtures older than 1994 is 160% of the Uniform Plumbing Codes 2006 or the International Plumbing Codes 2006 fixture performance requirements, or
- Option 2: Reduce building measured potable water use by 20% compared to building water use in 2003 or a year thereafter with quality water data.

Outdoor Water

From the 2006 MOU and:
From the 2008 ISWG: Sustainable New Construction and Major Renovations

- Use water efficient landscape and irrigation strategies, including water reuse, recycling, [*and the use of harvested rainwater,* (ISWG)] to reduce outdoor potable water consumption by a minimum of 50 percent over that consumed by conventional means (plant species and plant densities).
- Employ design and construction strategies that reduce storm water runoff and [*discharges of* (ISWG)] polluted site water runoff.

From the 2008 ISWG, not in the MOU: Sustainable New Construction and Major Renovations

- The installation of water meters for locations with significant outdoor water use is encouraged.
- To the maximum extent technically feasible, maintain or restore the predevelopment hydrology of the site with regard to temperature, rate, volume, and duration of flow using site planning, design, construction, and maintenance strategies, per EISA Section 438.

From the 2008 ISWG: Sustainable Existing Buildings
Three options can be used to measure outdoor potable water use performance:

- Option 1: Reduce potable irrigation water use by 50% compared to conventional methods, or
- Option 2: Reduce building related potable irrigation water use by 50% compared to measured irrigation water use in 2003 or a year thereafter with quality water data, or
- Option 3: Use no potable irrigation water.

Process Water

From the 2006 MOU:

- **No independent category or subsection defined.**

From the 2008 ISWG: Sustainable New Construction and Major Renovations

- When potable water is used to improve a building's energy efficiency, deploy lifecycle cost effective water conservation measures, per the Energy Policy Act of 2005 Section 109.

From the 2008 ISWG: Sustainable Existing Buildings

- When potable water is used to improve a building's energy efficiency, deploy lifecycle cost effective water conservation measures, per EPAct 2005 Section 109.

Water-Efficient Products

From the 2006 MOU:
- **No independent category or subsection defined.**

From the 2008 ISWG: Sustainable New Construction and Major Renovations
- Specify EPA's WaterSense-labeled products or other water conserving products, where available. Choose irrigation contractors who are certified through a WaterSense labeled program.

From the 2008 ISWG: Sustainable Existing Buildings
- Where available, use EPA's WaterSense-labeled products or other water conserving products. Choose irrigation contractors who are certified through a WaterSense-labeled program.

Measurement of Water Use

From the 2006 MOU and:
From the 2008 ISWG: Sustainable New Construction and Major Renovations
- **No independent category or subsection defined.**

From the 2008 ISWG: Sustainable Existing Buildings
- The installation of water meters for building sites with significant indoor and outdoor water use is encouraged. If only one meter is installed, reduce potable water use (indoor and outdoor combined) by at least 20% compared to building water use in 2003 or a year thereafter with quality water data.
- Employ strategies that reduce storm water runoff and discharges of polluted water offsite. Per EISA Section 438, where redevelopment affects site hydrology, use site planning, design, construction, and maintenance strategies to maintain hydrologic conditions during development, or to restore hydrologic conditions following development, to the maximum extent that is technically feasible.

Executive Orders & Laws:

EO 13514: Water Efficiency (DOE, FEMP website)
Federal agencies must improve water efficiency and management by:
- Reducing potable water consumption intensity 2% annually through fiscal year 2020, or 26% by the end of fiscal year 2020, relative to a fiscal year 2007 baseline.
- Reducing agency industrial, landscaping, and agricultural water consumption 2% annually, or 20% by the end of fiscal year 2020, relative to a fiscal year 2010 baseline.
- Identifying, promoting, and implementing water reuse strategies consistent with state law that reduce potable water consumption.

IV. Enhance Indoor Environmental Quality

Ventilation and Thermal Comfort

From the 2006 MOU:
From the 2008 ISWG: Sustainable New Construction and Major Renovations, and
From the 2008 ISWG: Sustainable Existing Buildings

- Meet the current ASHRAE Standard 55-2004, Thermal Environmental Conditions for Human Occupancy, including continuous humidity control within established ranges per climate zone, and ASHRAE Standard 62.1-~~2004~~ [*2007* (ISWG)], Ventilation for Acceptable Indoor Air Quality.

Moisture Control

From the 2006 MOU and:
From the 2008 ISWG: Sustainable New Construction and Major Renovations

- Establish and implement a moisture control strategy for controlling moisture flows and condensation to prevent building damage and mold contamination, [*and reduce health risks related to moisture* (ISWG)].

From the 2008 ISWG: Sustainable Existing Buildings

- Provide policy and illustrate the use of an appropriate moisture control strategy to prevent building damage, minimize mold contamination, and reduce health risks related to moisture.
- For facade renovations, Dew Point analysis and a plan for cleanup or infiltration of moisture into building materials are required.

Daylighting and Lighting Controls

From the 2006 MOU and:
From the 2008 ISWG: Sustainable New Construction and Major Renovations

- Achieve a minimum of daylight factor of 2 percent (excluding all direct sunlight penetration) in 75 percent of all space occupied for critical visual tasks.
- Provide automatic dimming controls or accessible manual lighting controls, and appropriate glare control.

From the 2008 ISWG: Sustainable Existing Buildings
Automated lighting controls (occupancy/vacancy sensors with manual-off capability) are provided for appropriate spaces including restrooms, conference and meeting rooms, employee lunch and break rooms, training classrooms, and offices. Two options can be used to meet additional daylighting and lighting controls performance expectations:

- Option 1: Achieve a minimum daylight factor of 2 percent (excluding all direct sunlight penetration) in 50 percent of all space occupied for critical visual tasks, or
- Option 2: Provide occupant controlled lighting, allowing adjustments to suit individual task needs, for 50% of regularly occupied spaces.

Low-Emitting Materials

From the 2006 MOU and:
From the 2008 ISWG: Sustainable New Construction and Major Renovations

- Specify materials and products with low pollutant emissions, including adhesives, sealants, interior paints, carpet systems, and furnishings, [composite wood products, sealants, finishes (ISWG)].

From the 2008 ISWG, not in the MOU: Sustainable New Construction and Major Renovations

- Specify materials and products with low pollutant emissions, including composite wood products, adhesives, sealants, interior paints and finishes, carpet systems, and furnishings.

From the 2008 ISWG: Sustainable Existing Buildings

- Use low emitting materials for building modifications, maintenance, and cleaning.
- In particular, specify the following materials and products to have low pollutant emissions: composite wood products, adhesives, sealants, interior paints and finishes, solvents, carpet systems, janitorial supplies, and furnishings.

Protect Indoor Air Quality during Construction

From the 2006 MOU and:
From the 2008 ISWG: Sustainable New Construction and Major Renovations

- Follow the recommended approach of the Sheet Metal and Air Conditioning Contractor's National Association Indoor Air Quality Guidelines for Occupied Buildings under Construction, ~~1995~~ [*2007* (ISWG)].
- After construction and prior to occupancy, conduct a minimum 72-hour flush-out with maximum outdoor air consistent with achieving relative humidity no greater than 60 percent.
- After occupancy, continue flush-out as necessary to minimize exposure to contaminants from new building materials.

From the 2008 ISWG: Sustainable Existing Buildings

- **No independent category or subsection defined.**

Integrated Pest Management

From the 2006 MOU and:
From the 2008 ISWG: Sustainable New Construction and Major Renovations

- **No independent category or subsection defined.**

From the 2008 ISWG: Sustainable Existing Buildings

- Use integrated pest management techniques as appropriate to minimize pesticide usage.

- Use EPA-registered pesticides only when needed.

Environmental Tobacco Smoke (ETS) Control

From the 2006 MOU:
- **No independent category or subsection defined.**

From the 2008 ISWG: Sustainable New Construction and Major Renovations
- Implement a policy and post signage indicating that smoking is prohibited within the building and within 25 feet of all building entrances, operable windows, and building ventilation intakes during building occupancy.

From the 2008 ISWG: Sustainable Existing Buildings
- Prohibit smoking within the building and within 25 feet of all building entrances, operable windows, and building ventilation intakes.

V. Reduce Environmental Impact of Materials
Recycled Content

From the 2006 MOU:
- For EPA-designated products, use products meeting or exceeding EPA's recycled content recommendations.
- For other products, use materials with recycled content such that the sum of post-consumer recycled content plus one-half of the pre-consumer content constitutes at least 10% (based on cost) of the total value of the materials in the project.

From the 2008 ISWG: Sustainable New Construction and Major Renovations, and From the 2008 ISWG: Sustainable Existing Buildings
- For EPA-designated products, specify products meeting or exceeding EPA's recycled content recommendations, per Section 6002 of the Resource Conservation and Recovery Act (RCRA).
- If EPA-designated products meet performance requirements and are available at a reasonable cost, a preference for purchasing them shall be included in all solicitations relevant to construction, operation, maintenance of or use in the building. EPA's recycled content product designations and recycled content recommendations are available on EPA's Comprehensive Procurement Guideline web site at <www.epa.gov/cpg>.

In addition from the 2008 ISWG: Sustainable New Construction and Major Renovations
- For other products, specify materials with recycled content when practicable.

In addition from the 2008 ISWG: Sustainable Existing Buildings

- For other products, use materials with recycled content such that the sum of postconsumer recycled content plus one-half of the pre-consumer content constitutes at least 10% (based on cost or weight) of the total value of the materials in the project.

Biobased Content

From the 2006 MOU:

- For USDA-designated products, use products meeting or exceeding USDA's biobased content recommendations.
- For other products, use biobased products made from rapidly renewable resources and certified sustainable wood products.

From the 2008 ISWG: Sustainable New Construction and Major Renovations, and From the 2008 ISWG: Sustainable Existing Buildings

- For USDA-designated products, specify products with the highest content level per USDA's biobased content recommendations, per Section 9002 of the Farm Security and Rural Investment Act (FSRIA).
- For other products, specify biobased products made from rapidly renewable resources and certified sustainable wood products.
- If these designated products meet performance requirements and are available at a reasonable cost, a preference for purchasing them shall be included in all solicitations relevant to construction, operation, maintenance of or use in the building. USDA's biobased product designations and biobased content recommendations are available on USDA's BioPreferred web site at <www.usda.gov/biopreferred>.

Environmentally Preferable Products

From the 2006 MOU:

- **No independent category or subsection defined.**

From the 2008 ISWG: Sustainable New Construction and Major Renovations, and From the 2008 ISWG: Sustainable Existing Buildings

- Use products that have a lesser or reduced effect on human health and the environment over their lifecycle when compared with competing products or services that serve the same purpose. A number of standards and ecolabels are available in the marketplace to assist specifiers in making environmentally preferable decisions. For recommendations, consult the Federal Green Construction Guide for Specifiers at <www.wbdg.org/design/greenspec.php>.

From LEED:

- If possible use local resources from within 500 miles of the job site. (LEED®)

EO 13514 Electronic Products and Services (DOE, FEMP website)

Includes product efficiency and stewardship. Federal agencies must:

- Ensure 95% of new contract actions, task orders, and delivery orders for products and services (excluding weapon systems) are energy efficient (ENERGY STAR® or FEMP-designated), water efficient, bio-based, environmentally preferable (Electronic Product Environmental Assessment Tool (EPEAT) certified), non-ozone depleting, contain recycled content, or are non-toxic or less-toxic alternatives where such products and services meet agency performance requirements.
- Implement best management practices for the energy-efficient management of servers and Federal data centers.

Construction Waste and Materials Management

From the 2006 MOU:

- During a project's planning stage, identify local recycling and salvage operations that could process site related waste. Program the design to recycle or salvage at least 50 percent construction, demolition and land clearing waste, excluding soil, where markets or on-site recycling opportunities exist.

From the 2008 ISWG: Sustainable New Construction and Major Renovations

- Incorporate adequate space, equipment, and transport accommodations for recycling in the building design.
- During a project's planning stage, identify local recycling and salvage operations that could process site-related construction and demolition materials.
- During construction, recycle or salvage at least 50 percent of the non-hazardous construction, demolition and land clearing materials, excluding soil, where markets or onsite recycling opportunities exist.
- Provide salvage, reuse and recycling services for waste generated from major renovations, where markets or onsite recycling opportunities exist.

From the 2008 ISWG: Sustainable Existing Buildings

- Provide reuse and recycling services for building occupants, where markets or on-site recycling exist.
- Provide salvage, reuse and recycling services for waste generated from building operations, maintenance, repair and minor renovations, and discarded furnishings, equipment and property. This could include such things as beverage containers and paper from building occupants, batteries, toner cartridges, outdated computers from an equipment update, and construction materials from a minor renovation.

Executive Orders & Laws:

EO 13514 Pollution Prevention and Waste Reduction (DOE, FEMP website)
Requirements for Federal agencies:

- Minimize the generation of waste and pollutants through source reduction.
- Decrease agency use of chemicals where such decrease will assist the agency

in achieving greenhouse gas reduction targets.
- Divert at least 50% of non-hazardous solid waste by the end of fiscal year 2015.
- Reduce printing paper use and acquiring uncoated printing and writing paper containing at least 30% post-consumer fiber.
- Increase the diversion of compostable and organic material from the waste stream.

Ozone Depleting Compounds

From the 2006 MOU:
From the 2008 ISWG: Sustainable New Construction and Major Renovations, and
From the 2008 ISWG: Sustainable Existing Buildings

- Eliminate the use of ozone depleting compounds during and after construction 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 life cycle impacts.

Greenhouse Gas Management

From the 2006 MOU and:
From the 2008 ISWG: Sustainable New Construction and Major Renovations
From the 2008 ISWG: Sustainable Existing Buildings

- **No independent category or subsection defined.**

Executive Orders & Laws:

EO 13514 Greenhouse Gas Management (DOE, FEMP website)

Each Federal agency establishes a fiscal year 2020 percentage reduction agency-wide target for GHG emissions in absolute terms relative to a fiscal year 2008 baseline:

- Scope 1: All direct Greenhouse Gas (GHG) emissions from sources that are owned or controlled by the agency, including: stationary and mobile combustion of fossil fuels; and "fugitive" emissions from intentional or unintentional releases of GHGs, including the leakage of HFCs from refrigeration and air conditioning equipment.
- Scope 2: Indirect GHG emissions from consumption of purchased electricity, heat or steam.
- Scope 3: All other indirect emissions that are a consequence of the activities of the agency, occurring from sources not owned or controlled by the agency

On January 29, 2010, President Obama, Sets Greenhouse Gas Emissions Reduction Target for Federal Operations by 28% by 2020.

7.0 Records Management

LEED Checklists and all supporting documentation for LEED accreditation

8.0 References

American Society for Testing and Materials (ASTM) E2114-08 Standard Terminology for Sustainability Relative to the Performance of Buildings

ASTM E2432-05 Standard Guide for General Principles of Sustainability Relative to Buildings

H.R. 6--109th Congress [Public Law 109-58]: Energy Policy Act (EPAct) of 2005, Aug. 8, 2005

H.R. 6--110th Congress [Public Law 110–140]: Energy Independence and Security Act (EISA) of 2007, Dec. 19, 2007

H.R. 776--102nd Congress [Public Law 102-486]: Energy Policy Act (EPAct) of 1992, October 24, 1992

Executive Order 13423 (Federal Register, Vol. 72, No. 17): "Strengthening Federal Environmental, Energy, and Transportation Management", signed by President George W. Bush on 24 January 2007

Executive Order 13514 (Federal Register, Vol. 74, No. 194): "Federal Leadership in Environmental, Energy, and Economic Performance", signed by President Barack Obama on 5 October 2009

Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding, January 2006; signed by 17 federal agencies.

Interagency Sustainability Working Group (ISWG), as a subcommittee of the Steering Committee established by EO 13423, "High Performance and Sustainable Buildings Guidance", Final (12/1/08)

Pacific Northwest National Laboratory, Green Building Certification System (PNNL-20966), Prepared for the U.S. General Services Administration under U.S. Department of Energy Contract DE-AC05-76RL01830, March 2012

U.S. Green Building Council, 2009 Edition, LEED Reference Guide for Green Building Design and Construction

U.S. Green Building Council, 2009 Edition, LEED Reference Guide for Green Building Operations & Maintenance

9.0 Appendices

Attachment A: *Comparison of High Performance Green Buildings (HPGB), Leadership in Energy and Environmental Design (LEED), and Green Globes categories*

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06/21/2012	Include Green Globes	Robert Melvin

ATTACHMENT A: *Comparison of High Performance Green Buildings (HPGB), Leadership in Energy and Environmental Design (LEED), and Green Globes categories*

Guiding Principles			LEED EB Credits	GB-CIEB
GP I	Employ Integrated Assessment, Operations & Management	Commissioning	EAc2.1 - EAc2.3	Energy
		Integrated 1 - Team Roster	PIF2	EMS
		Integrated 2 - Purchasing, Recycle, IEQ, Water and Energy	MRp1, MRp2, EQc1.1, WEp1 & WEc2, EAp1	EMS
		Integrated 3 - Tenant Education	IOc1.1, EAp1	EMS
		Integrated 4 - Occupant Feedback	EQc2.1	Indoor Environment, EMS
GP II	Optimize Energy Performance	Benchmarking	EAp2, EAc1 & EAc6	Energy
		Energy Efficiency 1 - 4 Points Minimum	EAp2, EAc1 & EAc6	Energy
		Energy Efficiency 2 - ENERGY STAR & FEMP Products	MRp1	Energy, EMS
		Measurement & Verification	EAp2, EAc1 & EAc6	Energy
		Onsite Renewable Energy	EAc4	Energy
GP III	Protect and Conserve Water	Indoor Water 1 - 20% Reduction	WEp1 & WEc2	Water
		Outdoor Water 2 - 20% Reduction	WEc3	Water
		Storm Water (Option One)	SSc6	Emissions, Effluents and Pollution Controls
		Storm Water (Option Two)	SSc3, SSc6	Emissions, Effluents and Pollution Controls
		Water Efficient Products 1 - Water Sense	WEp1 & WEc2	Water, EMS
GP IV	Enhance Indoor Environmental Quality	Daylighting and Controls, Lighting 1 - Partial Lighting Control	EAc3.1	Energy, Indoor Environment
		Daylighting and Controls, Lighting 2 - Occupant Control	EQc2.2	Energy, Indoor Environment
		Integrated Pest Management - Interior & Exterior	EQc3.6, SSc3	Emissions, Effluents and Pollution Controls
		Low-Emitting Materials	EQc1.1	Emissions, Effluents and Pollution Controls
		Moisture Control	EQc1.1	Indoor Environment
		Tobacco Smoke Control	EQp2	Indoor Environment
		Ventilation & Thermal Comfort	EQp1 & EQc1.3, EQc1.1	Indoor Environment, Energy
GP V	Reduce Environmental Impact of Materials	Ozone Depleting Compounds	EAp3 & EAc5	Emissions, Effluents and Pollution Controls, Energy
		Recycled Content	MRp1	EMS, Resources
		Waste and Materials Management	MRp2	EMS

GB-CIEB: Continual Improvement of Existing Buildings
EMS: Environmental Management System
GP: Guiding Principles
LEED EB: Leadership in Energy and Environmental Design Existing Buildings by the US Green Building Council

c: credit	EQ: [Indoor] Environmental Quality	PIF: Project Information Form
p: prerequisite	IO: Innovative Operations	SS: Sustainable Sites
EA: Energy & Atmosphere	MR: Materials & Resources	WE: Water Efficiency