

SUMMARY OF SUSTAINABLE DESIGN, CONSTRUCTION, OPERATIONS, AND MAINTENANCE MANDATES FOR BLM-OWNED AND LEASED FACILITIES

The summary of sustainable mandates is intended to provide BLM personnel with a quick reference tool on requirements related to the following topics:

- Guiding Principles for Federal Leadership in High Performance Sustainable Buildings
- Use of Recovered/Recycled Content and Biobased Products
- Energy Conservation
- Renewable Energy
- Water Conservation
- Construction and Demolition Debris
- Sustainable Operations and Maintenance

The text in brackets is a reference to the legislative, executive, Federal Acquisition Regulation (FAR), or BLM mandate that requires implementation of that specific sustainable requirement.

GUIDING PRINCIPLES FOR FEDERAL LEADERSHIP IN HIGH PERFORMANCE AND SUSTAINABLE BUILDINGS (GUIDING PRINCIPLES)

All BLM Construction including Build-to-Suit Leasing Projects, New Direct Leases, and Renovation Projects Over \$2M Must Incorporate the Guiding Principles

All construction projects initiated in FY 2008 and beyond must meet at Guiding Principle requirements. [Executive Order 13514, Section 2(g)(ii) and (iii)]

Those requirements include the following mandatory design/construction sustainable features:

- Integrated Design including Integrated Project Team (IPT), performance goals and Life Cycle Cost analysis
- Commissioning of electrical and mechanical systems
- Energy conservation and measured performance (EPA Act 2005, EO 13423, EO 13514 and EISA 2007)
- Water conservation (EO 13423, EO 13514 and EISA 2007)
- Ventilation and thermal comfort
- Moisture control
- Daylighting
- Use of low-emitting materials
- Project indoor air quality during construction
- Use of recyclable content products
- Use of biobased content products
- Divert (i.e., reuse or recycle) construction and demolition debris
- Use on non-ozone depleting compounds

The BLM Sustainable Building Implementation Plan (SBIP) issued via Washington Office Instruction Memorandum 2010-026 provides details on each of the above requirements. The SBIP and Guiding Principle requirements are a summary legislative and executive order mandates. Most mandates are

further described in this the SBIP and in this summary. A checklist of Guiding Principle mandates to be used during the planning, design, and construction of new construction projects and built-to-suit leases is provided as Appendix 2.B.1 of the BLM SBIP. [Note: A build-to-suit lease is defined in the BLM SBIP as new construction.]

Construction, Renovation, and Build-to-Suit Leasing Projects Over 5,000 Square Feet Must Achieve Third-Party Certification that they Meet the Guiding Principles

Construction, renovation, and build-to-suit leasing projects will achieve third-party certification that the project meets and/or exceeds the Guiding Principles. [BLM SBIP, Section 1.B.2.a (construction), Section 1.B.2.b. (renovation), and Section 1.B.2.c. (built-to-suit lease)]

15% of BLM's Existing Buildings and Leases Over 5,000 Square Feet Must Incorporate the Guiding Principles by FY 2015 with Annual Progress to Towards 100% Conformance

Existing buildings built prior to FY 2007 must also incorporate the Guiding Principles. The BLM's SBIP, Appendix 2.C.1 has a checklist that is to be used to determine if an existing building conforms to the Guiding Principles. A checklist to determine if a new direct lease conforms to the Guiding Principles is provided as Appendix 2.B.2 of the BLM's SBIP. Leases issued prior to FY 2008 must incorporate the Guiding Principles.

The Guiding Principle requires for existing buildings are slightly different than for new construction. The primary differences are as follows:

- Guiding Principle I - requires recommissioning of existing Federal buildings, tailored to the size and complexity of each building and its system components. Building recommissioning must have been performed within four years prior to reporting a building as meeting the Guiding Principles.
- Guiding Principle II - requires a 20% reduction in energy consumption or a minimum Energy Star rating of 75 for existing Federal buildings.
- Guiding Principle III - requires a 20% reduction in indoor water use compared to a baseline conforming to EPA 1992 fixture performance requirements. Water efficient landscape and irrigation strategies are also required (including water reuse, water recycling, xeriscaping, etc.) to reduce outdoor potable water consumption by 50% over that consumed by conventional means.

USE OF RECOVERED/RECYCLED CONTENT AND BIOBASED PRODUCTS

EPA-designated recovered/recycled content and Department of Agriculture-designated biobased products must be specified and/or purchased unless the item cannot be acquired [FAR Section 23.404(b)(1)]:

- (i) Competitively within a reasonable time frame;
- (ii) Meeting reasonable performance standards; or
- (iii) At a reasonable price.

The above criteria describing when an EPA or Department of Agriculture environmentally preferable product must be purchased is taken from the FAR Section 23.404(b). The FAR does not define what a "reasonable time frame", "reasonable performance standard", or "reasonable price" means.

FAR Section 23.400(a) states that EPA-designated recovered/recycled content products and Department of Agriculture-designated biobased products must be specified and/or purchased, if \$10,000

or more of the designated product is purchased by the agency (i.e., the Department of the Interior). This means that since the entire Department of the Interior's purchases exceeds the threshold, the BLM is required to purchase the EPA and the Department of Agriculture designated products.

Contractors Can be Required to Provide Recovered/Recycled Content and Biobased Products

The FAR has clauses that when inserted into a contract require offers to certify that the biobased or recovered materials products delivered or used in the contract meet the minimum percentages set by Department of Agriculture or EPA for those products. There are also clauses directing the contractor to make maximum use of biobased and EPA recovered/recycled content products. [FAR Subparts 52.223-1, 52.223-2, 52.223-4, 52.223-17 – "Contract Clauses for Biobased and CPG Products"]

Written Justification Must be Prepared if EPA Recovered/Recycled Content Product is Not Specified or Purchased

A written justification must be prepared when an EPA-designated recovered/recycled content product is not purchased. [FAR Section 23.405(c) and BLM Green Purchasing Plan Sections 7.1, 7.2, and 9.4.2] The form on which the justification is to be documented is provided in Appendix 2 of the BLM's Green Purchasing Plan.

BLM contracting officers, requisitioners, or credit card holders are required to fill complete the written justification depending on the type of purchase or acquisition. Section 7.1 of the Green Purchasing Plan addresses the acquisition staff's responsibilities in regards to preparation of the written justification. Section 7.2 of the plan addresses the requisitioners' and credit card holders' responsibilities.

What Types of Recovered/Recycled Content, Biobased Products, Energy Star, and WaterSense Products Must I Purchase or Specify?

A compilation of green products has been prepared by the Office of the Federal Environmental Executive. This compilation can be downloaded by using the following hyperlink: <http://www.fedcenter.gov/programs/buygreen/> and clicking on the Excel spreadsheet icon titled "Green Products Compilation" or emailing the BLM's CASHE Program Lead and asking for a copy.

The compilation is organized by where the product is used not by whether it is a recovered/recycled content, biobased, Energy Star, or WaterSense designated product. There are 18 general categories including, but not limited to the following:

- Building Construction
- Building Finishes
- Building Interior
- Non-paper Office Products
- Office Electronics
- Parks and Recreation
- Roadway Construction
- Traffic Design

The BLM's Green Purchasing Guide also has a summary of the BLM's most commonly used environmentally preferable products which is provided as Appendix 1 of the plan. The appendix has numerous hyperlinks that provide specifics on the mandated recovered/recycled or biobased content or how much energy or water is saved by the product to meet the designation. The plan also provides

information on where to purchase these environmentally preferable products. [BLM Green Purchasing Plan, Appendix 1 issued via Washington Office Instruction Memorandum 2009-166]

ENERGY CONSERVATION

Existing Buildings Energy Use Intensity Must be Reduced by 30% From the FY 2003 Baseline

Each Federal agency is required to apply energy conservation measures to new and existing Federal buildings so that the energy consumption per gross square foot of floor area in fiscal years 2006-2015 is reduced by 3% each fiscal year starting in 2006 through 2016 for a total reduction of 30%, based on energy consumption for fiscal year 2003. [Energy Independence and Security Act of 2007, Section 431] The BLM will achieve compliance with this requirement with the completion of the third phase of the Energy Savings Performance Contract issued by the NOC.

BLM Buildings Built After FY 2007 Must Consume 30% Less Energy

Federal buildings (commercial or residential) must be designed so they consume 30% less energy (20% less for renovations) than buildings that meet the requirements of ASHRAE 90.1-2004 or the 2004 IECC (International Energy Conservation Code), where life-cycle cost effective. [Energy Policy Act of 2005, Section 109, Building Performance Standards]

Energy Star Products Must Be Purchased and Specified Regardless of Cost

Energy-consuming products that are Energy Star rated (e.g., office equipment, home electronics, heating and cooling equipment, building construction products, appliances, and lighting) must be always be specified and/or purchased regardless of their cost. [FAR Section 23.203 and Executive Order 13514, Section 2(i)(iv)]

A list of Energy Star designated products commonly purchased by the BLM is provided in Appendix 1 of the BLM Green Purchasing Plan issued by Washington Office Instruction Memorandum 2009-166.

FAR Section 23.204 – “Procurement Exemption” does provide two exemptions under which a BLM office would not have to purchase Energy Star products, but it is highly unlikely that the facility would qualify for either of them. The FAR states that the Secretary of the Interior must determine in writing that there is no Energy Star product that is reasonably available that meets the functional requirements of the agency or that no Energy Star product is cost effective over the life of the product. Therefore, this plan simply states that Energy Star products must be specified and/or purchased because it is highly unlikely that the BLM would pursue having an exemption determination made by the Secretary.

Energy Star Products Must Be Provided by Contractors

Construction contractors are to ensure that energy consuming products specified in the contract be Energy Star rated if those products are listed in the Energy Star Program if the appropriate FAR clauses are inserted into the contract. [FAR Section 52.223.15, Energy Efficiency in Energy-Consuming Products]

Energy Conservation Audits Must be Completed Every 4 Years

Comprehensive energy audits at facilities that comprise 75% of the BLM's energy usage must be performed every four years. The NOC Architecture and Engineering Branch plans to perform these energy audits through the use of an Energy Management Information System that will be in operation by

FY 2012 and through the CASHE Program. [Energy Independence and Security Act of 2007, Section 432, paragraph 3(A)]

Reduce Fossil Fuel Consumption

New Federal buildings and Federal buildings undergoing major renovations be designed such that fossil fuel-generated energy consumption is reduced (as compared with such energy consumption by a similar building in fiscal year 2003) by the percentages shown in the following table: [Energy Independence and Security Act of 2007, Section 433]

Fiscal Year	Percent Reduction in Fossil Fuel Consumption
2010	55
2015	65
2020	80
2025	90
2030	100

Advanced Metering Required on all BLM-owned Facilities that Use More than \$20,000 of Electricity Annually

Electrical energy use in Federal buildings be metered with advanced meters "...for the purposes of efficient energy use and reduction in the cost of electricity used in such buildings..." by October 1, 2012. Advanced meters or metering devices must upload stored data at least daily and measure the consumption of electricity at least hourly. Current BLM policy is to install advanced meters on all BLM-owned facilities that use more than \$20,000 of electricity per year. [Energy Policy Act of 2005 Section 103] Advance meters have been installed at all BLM-owned buildings that were in operation by 2010 by the Energy Savings Performance Contracts awarded by the NOC.

Data Centers Must Implement Best Practices

Federal agencies are required to implement best management practices for the energy-efficient management of data servers and Federal data centers (this includes server virtualization and energy-efficient HVAC system implementation). Virtualization consists of a software solution that allows a single server processor to act as if it were multiple server processors. Typical processor utilization is in the range of 5% to 15% - virtualization enables processor utilization to be raised into the 85% to 90% range. This allows fewer physical processors to do the same work, reducing overall energy consumption – ratios of reductions in physical servers can be from 7:1 to as much as 30:1 - see http://www.bchydro.com/powersmart/commercial/data_centre_and_server.html for more information. [Executive Order 13514, Section 2(i)(v)]

RENEWABLE ENERGY

Renewable Energy Must Provide at Least 7.5% of the BLM's Energy Requirements by FY 2013

The Federal Government's renewable electricity production must meet or exceed 3% of total electrical energy consumption for fiscal years 2007-2009, with increases to at least 5% in fiscal years 2010-2012 and 7.5% in 2013 and thereafter. This legislation also establishes a double credit bonus for Federal agencies if the renewable electricity is produced on-site at a Federal facility, on Federal lands, or on Native American lands. [Energy Policy Action of 2005, Section 203] The BLM will exceed this requirement with the completion of the renewable energy projects constructed by the Energy Savings Performance Contract awarded by the NOC in FY 2010.

Solar Domestic Hot Water

Domestic hot water heating energy use in new Federal buildings and Federal buildings undergoing major renovations are to be offset with solar water heating equipment, where life-cycle cost effective. [Energy Independence and Security Act of 2007, Section 523]

Net Zero Energy Use for New Buildings by FY 2030

Federal agencies must ensure that all new Federal buildings entering the design phase in 2020 or later are designed to achieve zero net energy by 2030. [Executive Order 13514 Section 2(d)(i)]

WATER CONSERVATION

Reduce Building Water Use Intensity by 26% by FY 2020

Reduce water use intensity (gallons per gross square foot of floor area) by 2% each year through fiscal year 2020 for a total of 26%, based on water consumption for fiscal year 2007 (this is an extension of the E.O. 13423 requirements for reducing potable water use from 2015 to 2020). [Executive Order 13514 Section 2(d)(i)]

Reduce Industrial, Landscaping, and Agricultural Water Consumption by 20% by FY 2020

Reduce by 2 percent annually or 20 percent by the end of fiscal year 2020 relative to a baseline of the agency's industrial, landscaping, and agricultural water consumption in fiscal year 2010 [Executive Order 13514 Section 2(d)(ii)]

WaterSense Plumbing Fixtures and Irrigation Control Systems Must be Purchased and Specified

Plumbing fixtures (e.g., sink faucets, toilets, urinals, shower heads) and irrigation control systems must be WaterSense rated products that comply with the EPA's standards for water-efficient products and must always be specified and purchased. [Executive Order 13423, Section 2(d) states the head of each agency shall require that water-efficient products be specified and purchased in agency acquisitions of goods and services.]

Water Conservation Audits Must be Completed Every 4 Years

Comprehensive water audits at facilities that comprise 75% of the BLM's water usage must be performed every four years. The NOC Architecture and Engineering Branch plans to perform these energy audits through the use of an Energy Management Information System that will be in operation by FY 2012 and through the CASHE Program. [Energy Independence and Security Act of 2007, Section 432, paragraph 3(A)]

CONSTRUCTION AND DEMOLITION DEBRIS

Construction and Demolition Debris, at least 50% of it, Must be Recycled By FY 2015

Construction and demolition materials and debris means materials and debris generated during construction, renovation, demolition, or dismantling of all structures and buildings and associated infrastructure. At least 50% of construction and demolition materials and debris must be recycled by the end of FY 2015. [Executive Order 13514, Section 2(e)(ii)] The NOC Architecture and Engineering Group has already revised MasterSpec and incorporated this requirement into Section 01524 - Construction Waste Management specification.

SUSTAINABLE OPERATIONS AND MAINTENANCE

Green Janitorial and Lighting Maintenance

Green preferable janitorial services and lighting maintenance must be specified. The requirements in this specification are to be used by all organizational units in leased or owned space when a new contract is awarded or when an option is picked up, whichever occurs first. [BLM Green Purchasing Plan, Section 9.2.3. issued via Washington Office Instruction Memorandum 2009-166] These requirements have already been incorporated into the BLM's standard space leasing contract. A sample specification for green janitorial services and lighting maintenance is provided in Appendix 4 of the BLM's Green Purchasing Plan. The specification has the following green requirements:

- Use of green cleaning products;
- Stocking and use of paper products and trash can liners that are compliant with EPA's CPG requirements for recovered/recycled content;
- Use of energy efficient low mercury fluorescent lamps and compact fluorescent bulbs; and
- Recycling of spent and broken fluorescent lamps and compact fluorescent bulbs.

Sustainable Building Operations and Maintenance

The BLM will have invested over \$25M in energy conservation measures and renewable energy generation at BLM-owned facilities when the third phase of the Energy Savings Performance Contract is completed in FY 2011. Executive Order 13514 and the BLM Sustainable Building Implementation Plan (SBIP) requires that the BLM manage the new and previously installed building systems to reduce the consumption of energy, water, and materials, and identifying alternatives to renovation that reduce existing assets' deferred maintenance costs. [Executive Order 13514, Section 2(g)(v) and the BLM Sustainable Building Implementation Plan, Section 3A.]

Among the sustainable operations and maintenance practices that BLM facilities are required to implement include, but are not limited to the following: [BLM Sustainable Building Implementation Plan, Appendix 3.A.1]

- Use of integrated design principles
- Commissioning

- Optimize energy performance
- Energy audits
- Protect and conserve water
- Enhance indoor air quality
- Use of recycled and biobased products

Appendix 3.A.1 of the SBIP is a checklist that identifies dozens of sustainable practices related to the operation and maintenance of BLM-owned and leased facilities.

Greenhouse Gas Management

Federal agencies must establish a fiscal year 2020 target for greenhouse gas (GHG) reduction percentage relative to a fiscal year 2008 baseline, and must establish a comprehensive inventory of GHG's for fiscal year 2010. Since GHG emissions are intimately tied to building energy use efficient it is essentially that BLM owned and leased facilities be efficiently operated and maintained.