

SMITHSONIAN SUSTAINABILITY REQUIREMENTS RELATED TO DESIGN AND CONSTRUCTION* 2011-03-09

SMITHSONIAN INSTITUTION OFFICE OF ENGINEERING DESIGN AND CONSTRUCTION (OEDC)

Smithsonian Sustainable Buildings Policy

Although the Smithsonian is not an Executive Branch of the U.S. Government, the Institution is committed to constructing and managing its buildings and facilities operations consistent with related Federal environmental and energy management policies and legislative mandates to the maximum extent practical. As of March 2011, these include:

- *Energy Policy Act (EPAAct) 2005*
- *High Performance and Sustainable Buildings Memorandum of Understanding (HPSB MOU or MOU) 2006, 01/24/2006*
- *Executive Order (EO) 13423: Strengthening Federal Environmental, Energy and Transportation Management, 01/26/2007*
- *Energy Independence and Security Act (EISA) 2007*
- *Executive Order (EO) 13514: Federal Leadership in Environmental, Energy and Economic Performance, 10/08/2009*

In addition, the Smithsonian has set goals consistent with the U.S. Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) rating systems for eligible new construction, major renovation and interior renovation projects (LEED-NC OR LEED-CI), as well as selected existing buildings, (LEED EB: O&M), inclusive of the LEED points that correspond to the Federal environmental and energy management requirements in the documents listed above:

Projects with construction budgets less than \$2.5 million:

- *LEED certification*

Projects with construction budgets greater than or equal to \$2.5 million, but less than \$5 million:

- *LEED Silver certification*

Projects with construction budgets greater than or equal to \$5 million:

- *LEED Gold certification*

Where projects are not eligible for LEED certification, the LEED system may be used to select strategies that address the Federal environmental and energy management requirements that are applicable to a specific project.

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Abbreviations and Acronyms

Abbreviation	Definition
EPAAct 2005	Energy Policy Act 2005
HPSB MOU	High Performance and Sustainable Buildings Memorandum of Understanding, 2006, 01/24/2006
EO 13423	Executive Order 13423: Strengthening Federal Environmental, Energy and Transportation Management, 01/26/2007
EISA 2007	Energy Independence and Security Act, 2007
EO 13514	Executive Order 13514: Federal Leadership in Environmental, Energy and Economic Performance, 10/08/2009
LEED NCv3	LEED for New Construction version 3 rating system
LEED CIv3	LEED for Commercial Interiors version 3 rating system
LEED EB:O&M	LEED for Existing Buildings: Operations & Maintenance rating system
SS	Sustainable Sites credit category, LEED rating systems
WE	Water Efficiency credit category, LEED rating systems
EA	Energy and Atmosphere credit category, LEED rating systems
MR	Materials and Resources credit category, LEED rating systems
EQ	Indoor Environmental Quality credit category, LEED rating systems
ID	Innovation in Design credit category, LEED for New Construction rating system
IO	Innovation in Operations credit category, LEED for Existing Buildings: Operations & Maintenance rating system

Legend
V denotes voluntary standard (not mandate)

Please note that, as of March 2011, the next iteration of LEED, LEED 2012, is under public review. Citations included here indicate upcoming changes or additions to LEED scope and requirements of potential significance to the Smithsonian. For the New Construction (NC), Commercial Interiors (CI) and the Existing Buildings: Operations & Maintenance (EB: O&M) Rating Systems, LEED 2012 will contain three new, additional credit categories: Integrated Process, Location and Transportation and Performance.

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Topic Area (from LEED or Five Guiding Principles)	Sustainability requirement	Source	Citation	Notes
Site Planning and Project Management	Integrated Management	HPSB MOU; LEED 2012	I. Employ Integrated Design Principles: Integrated Design. Use a collaborative, integrated planning and design process that initiates and maintains an integrated project team 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.	LEED 2012 Integrated Process credit category
	Environmental Management Systems	EO 13423 LEED 2012	E.O. 13423, Sec. 3(b), excerpted: In implementing the policy set forth in section 1 of this order, the head of each agency shall: (b) implement, within the agency, environmental management systems (EMS) at all appropriate organizational levels to ensure (i) use of EMS as the primary management approach for addressing the environmental aspects of internal agency operations and activities, including environmental aspects of energy and transportation functions, (ii) establishment of agency objectives and targets to ensure implementation of this order and (iii) collection, analysis and reporting of information to measure performance in the implementation of this order.	Executive Level to decide scope and timing; LEED 2012 Performance credit category
	Historic Building Preservation	EO 13514	Sec.2g (vii) ensuring that rehabilitation of federally owned historic buildings utilizes best practices and technologies in retrofitting to promote long-term viability of the buildings.	
	Brownfield Redevelopment	V, LEED NCv3	SSc3 - Brownfield Redevelopment	
		V, LEED Clv3	SSc1, Option 2, Path 1 –Brownfield Redevelopment	Points for selecting or occupying a base building classified as a Brownfield
	Regional Environmental Priorities	V, LEED NCv3	USGBC Regional Priority credits spreadsheet (US only)	
	Site Selection And Sustainable Communities	EO 13514 LEED 2012	Sec.2(f): advance regional and local integrated planning by: (i) participating in regional transportation planning and recognizing existing community transportation infrastructure; (ii) aligning Federal policies to increase the effectiveness of local planning for energy choices such as locally generated renewable energy; (iii) ensuring that planning for new Federal facilities or new leases includes consideration of sites that are pedestrian friendly, near existing employment centers and accessible to public transit and emphasizes existing central cities and, in rural communities, existing or planned town centers. (Park authority projects are exempt).	Executive level to decide. Note; future LEED 2012 Location and Transportation credit category
		V,	SS c2: Development Density and Community Connectivity	

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		LEED NCv3	SSc4.1: Public Transportation Access	
		V, LEED Civ3	SSc2: Development Density and Community Connectivity SSc3.1: Alternative Transportation – Public Transportation Access	
	Leasing and Renovations to Leased Space	EISA 2007	SEC. 435. LEASING. (a) IN GENERAL — Except as provided in subsection (b), effective beginning on the date that is 3 years after the date of enactment of this Act, no Federal agency shall enter into a contract to lease space in a building that has not earned the Energy Star label in the most recent year. (b) EXCEPTION — (1) APPLICATION — This subsection applies if — (A) no space is available in a building described in subsection (a) that meets the functional requirements of an agency, including locational needs; (B) the agency proposes to remain in a building that the agency has occupied previously; (C) the agency proposes to lease a building of historical, architectural, or cultural significance (as defined in section 3306(a)(4) of title 40, United States Code) or space in such a building; or (D) the lease is for not more than 10,000 gross square feet of space. (2) BUILDINGS WITHOUT ENERGY STAR LABEL — If one of the conditions described in paragraph (2) is met, the agency may enter into a contract to lease space in a building that has not earned the Energy Star label in the most recent year if the lease contract includes provisions requiring that, prior to occupancy or, in the case of a contract described in paragraph (1)(B), not later than 1 year after signing the contract, the space will be renovated for all energy efficiency and conservation improvements that would be cost effective over the life of the lease, including improvements in lighting, windows and heating, ventilation and air conditioning systems.	
	Innovative Green Building Strategies	V, HPSB MOU, EOs 13423 + 13514	EO 13514: . . . the Presidential leadership awards program, established under subsection 4(c) of Executive Order 13423, to recognize exceptional and outstanding agency performance with respect to achieving the goals of this order and to recognize extraordinary innovation, technologies and practices employed to achieve the goals of this order.	
		V, LEED EB: O&M	IO: Credits 1-4 – Innovation in Operations	
		V, LEED NCv3	ID: Credits 1-5 – Innovation in Design	
		V, LEED Civ3	ID: Credits 1-5 – Innovation in Design	
	Light Pollution Reduction	LEED EB: O&M	SSc8 – Light Pollution Reduction	

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		V, LEED NCv3	SSc8 - Light Pollution Reduction	
		V, LEED Civ3	SSc1, Option 2, Path 6: Light Pollution Reduction	Points for selecting or occupying a base building that reduces light pollution
	Stormwater Quality	HPSB MOU	HPSB MOU: III. Protect and Conserve Water. Outdoor Water. Use water efficient landscape and irrigation strategies, including water reuse and recycling, 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 polluted site water runoff.	
		V, LEED NCv3	SSc6.2: Stormwater Design - Quality Control	
	Stormwater Quantity	EISA 2007	EISA 2007, TITLE IV, SUBTITLE C, SEC. 438. STORM WATER RUNOFF REQUIREMENTS FOR FEDERAL DEVELOPMENT PROJECTS. The sponsor of any development or redevelopment project involving a Federal facility with a footprint that exceeds 5,000 square feet shall use site planning, design, construction and maintenance strategies for the property to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume and duration of flow.	
		V, LEED NCv3	SSc6.1: Stormwater Design - Quantity Control	
		V, LEED EB: O&M	SSc6: Stormwater Quantity Control	
	Vegetated Roofs	V, EO 13514	Section 2, (G), (g) implement high performance sustainable Federal building design, construction, operation and management, maintenance and deconstruction including by: (iv) pursuing cost-effective, innovative strategies, such as highly reflective and vegetated roofs, to minimize consumption of energy, water and materials;	
		V, LEED NCv3	SSc7.2 - Heat Island Effect — Roof	
		V, LEED Civ3	SSc1, Option 2, Path 5 – Heat Island Effect – Roof	Points for selecting or occupying a base building with a vegetated roof
		V, EB: O&M	SS c7.2 - Heat Island Reduction — Roof	
	Community Connectivity	EO 13514	Sec.2(f): advance regional and local integrated planning by: (i) participating in regional transportation planning and	

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			recognizing existing community transportation infrastructure; (ii) aligning Federal policies to increase the effectiveness of local planning for energy choices such as locally generated renewable energy; (iii) ensuring that planning for new Federal facilities or new leases includes consideration of sites that are pedestrian friendly, near existing employment centers and accessible to public transit and emphasizes existing central cities and, in rural communities, existing or planned town centers.	
	Alternative Commuting	EO 13514 LEED 2012	Sec.2 (b) (ii) In establishing the target, the agency head shall consider reductions associated with . . . implementing strategies and accommodations for transit, travel, training and conferencing that actively support lower-carbon commuting and travel by agency staff.	LEED 2012 credit category "Location and Transportation"
Water Use	Drought-Resistant Plants	V, HPSB MOU	III. Protect and Conserve Water. Outdoor Water. Use water efficient landscape and irrigation strategies such as water reuse, recycling and the use of harvested rainwater, to reduce outdoor potable water consumption by a minimum of 50 percent over that consumed by conventional means (plant species and plant densities).	
		V, LEED NCv3	WEc1 - Water Use Reduction	
		V, LEED Civ3	SSc1, Option 2, Path 7 – Water Efficient Landscaping – Reduce by 50% SSc1, Option 2, Path 8 – Water Efficient Landscaping – No Potable Water Use or No Irrigation	Points for selecting or occupying a base building with water efficient landscaping
	Efficient Irrigation	HPSB MOU	HPSB MOU Section III. Protect and Conserve Water. Outdoor Water. Use water efficient landscape and irrigation strategies, including water reuse and recycling, 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 polluted site water runoff.	
		LEED NCv3	WEp1- Water Use Reduction – 20% Reduction WEc1 - Water Efficient Landscaping	
		LEED Civ3	SSc1, Option 2, Path 7 – Water Efficient Landscaping – Reduce by 50% SSc1, Option 2, Path 8 – Water Efficient Landscaping – No Potable Water Use or No Irrigation	Points for selecting or occupying a base building with water efficient landscaping
		LEED EB: O&M	WEc3: Water Efficient Landscaping	
Indoor Fixture Efficiency	HPSB MOU	Water-Efficient Products. Specify EPA's WaterSense-labeled products or other water conserving products, where available. Choose irrigation contractors who are certified through a WaterSense labeled program.		

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		LEED NCv3	WEp1, c3: Water Use Reduction	
		LEED CIv3	WE p1, c1: Water Use Reduction	
		LEED EB: O&M	WEp1: Minimum Indoor Plumbing Fixture and Fitting Efficiency WEc3: Additional Indoor Plumbing Fixture and Fitting Efficiency	
	Non-Potable Water Use, Reuse	V, EO 13514	Sec. 2, (d) improve water use efficiency and management by: (iii) consistent with State law, identifying, promoting and implementing water reuse strategies that reduce potable water consumption.	
		V, LEED NCv3	WEc2 - Innovative Wastewater Technologies	LEED 2012 NC, CI, EB: Sustain-able Waste-water Mgmt
	Water Metering	LEED EB: O&M	WEc1.1 - Water Performance Measurement	LEED NC 2012 WEp3
		V, HPSB MOU	Indoor Water. The installation of water meters is encouraged to allow for the management of water use during occupancy. Outdoor Water. The installation of water meters for locations with significant outdoor water use is encouraged.	
	Cooling Tower Management	V, EO 13514 LEED 2012	Sec.2, (d) improve water use efficiency and management by: (i) reducing potable water consumption intensity by 2 percent annually through fiscal year 2020 or 26 percent by the end of fiscal year 2020, relative to a baseline of the agency's water consumption in fiscal year 2007, by implementing water management strategies including water-efficient and low-flow fixtures and efficient cooling towers.	LEED 2012 WE c4
		LEED EB: O&M	WEc4: Cooling Tower Water Management	LEED 2012 WE c4
	Energy and Atmosphere	Basic Commissioning	EISA 2007	Title IV, Subtitle C, Section 432 “(B) RECOMMISSIONING AND RETROCOMMISSIONING — As part of the evaluation under subparagraph (A), the energy manager shall identify and assess recommissioning measures (or, if the facility has never been commissioned, retrocommissioning measures) for each such facility.
LEED NCv3			EAp1: Fundamental Commissioning	
LEED CIv3			EAp1: Fundamental Commissioning of Building Energy Systems	
Enhanced Commissioning		V, EISA	HPSB MOU: Commissioning. Employ commissioning practices tailored to	

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		2007, HPSB MOU	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 an experienced commissioning provider, 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.	
		LEED NCv3	EAc3: Enhanced Commissioning	
		LEED Civ3	EAc2: Enhanced Commissioning	
		V, LEED EB: O&M	EA Credit 2.1: Existing Building Commissioning — Investigation and Analysis EA Credit 2.2: Existing Building Commissioning — Implementation EA Credit 2.3: Existing Building Commissioning — Ongoing Commissioning	
	Refrigerant Management	LEED NCv3	EAp3: Fundamental Refrigerant Management	
		LEED Civ3	EAp3: Fundamental Refrigerant Management	
		LEED EB: O&M	EA p3: Fundamental Refrigerant Management	
	Energy Meters	EPAct 2005, LEED 2012	EPAct 2005: SEC. 103. ENERGY USE MEASUREMENT AND ACCOUNTABILITY. Section 543 of the National Energy Conservation Policy Act (42 U.S.C. 8253) is further amended by adding at the end the following: “(e) METERING OF ENERGY USE — “(1) DEADLINE —By October 1, 2012, in accordance with guidelines established by the Secretary under paragraph (2), all Federal buildings shall, for the purposes of efficient use of energy and reduction in the cost of electricity used in such buildings, be metered. Each agency shall use, to the maximum extent practicable, advanced meters or advanced metering devices that provide data at least daily and that measure at least hourly consumption of electricity in the Federal buildings of the agency. Such data shall be incorporated into existing Federal energy tracking systems and made available to Federal facility managers. “(2) GUIDELINES — “(A) IN GENERAL — Not later than 180 days after the date of enactment of this subsection, the Secretary, in consultation with the Department of Defense, the General Services Administration, representatives from the metering industry, utility industry, energy services industry, energy efficiency industry, energy efficiency advocacy organizations, national laboratories, universities and Federal facility managers, shall	LEED 2012 p1, Performance credit category

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			<p>establish guidelines for agencies to carry out paragraph (1). “(B) REQUIREMENTS FOR GUIDELINES — The guidelines shall — “(i) take into consideration — “(I) the cost of metering and the reduced cost of operation and maintenance expected to result from metering; “(II) the extent to which metering is expected to result in increased potential for energy management, increased potential for energy savings and energy efficiency improvement and cost and energy savings due to utility contract aggregation; and “(III) the measurement and verification protocols of the Department of Energy; “(ii) include recommendations concerning the amount of funds and the number of trained personnel necessary to gather and use the metering information to track and reduce energy use; “(iii) establish priorities for types and locations of buildings to be metered based on cost-effectiveness and a schedule of one or more dates, not later than 1 year after the date of issuance of the guidelines, on which the requirements specified in paragraph (1) shall take effect; and “(iv) establish exclusions from the requirements specified in paragraph (1) based on the de minimis quantity of energy use of a Federal building, industrial process or structure. “(3) PLAN — Not later than 6 months after the date guidelines are established under paragraph (2), in a report submitted by the agency under section 548(a), each agency shall submit to the Secretary a plan describing how the agency will implement the requirements of paragraph (1), including (A) how the agency will designate personnel primarily responsible for achieving the requirements and (B) demonstration by the agency, complete with documentation, of any finding that advanced meters or advanced metering devices, as defined in paragraph (1), are not practicable.”</p>	
		V, LEED EB: O&M	EA Credit 3.2: Performance Measurement — System-Level Metering	LEED 2012 p1, Performance credit category
	Minimum Energy Performance	EPAAct 2005	SEC. 109. FEDERAL BUILDING PERFORMANCE STANDARDS. “(3)(A) Not later than 1 year after the date of enactment of this paragraph, the Secretary shall establish, by rule, revised Federal building energy efficiency performance standards that require that - “(i) if lifecycle cost-effective for new Federal buildings - “(I) the buildings be designed to achieve energy consumption levels that are at least 30 percent below the levels established in the version of the ASHRAE Standard or the International Energy Conservation Code, as appropriate, that is in effect as of the date of enactment of this paragraph; and “(II) sustainable design principles are applied to the siting, design and construction of all new and replacement buildings; and “(ii) if water is used to achieve energy efficiency, water conservation technologies shall be applied to the extent that the technologies are lifecycle cost-effective.	

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		EISA 2007	<p>Sec. 433 (a) (D) “(i) For new Federal buildings and Federal buildings undergoing major renovations, with respect to which the Administrator of General Services is required to transmit a prospectus to Congress under section 3307 of title 40, United States Code,</p> <p>in the case of public buildings (as defined in section 3301 of title 40, United States Code), or of at least \$2,500,000 in costs adjusted annually for inflation for other buildings:</p> <p>“(I) The buildings shall be designed so that the fossil fuel-generated energy consumption of the buildings is reduced, as compared with such energy consumption by a similar building in fiscal year 2003 (as measured by Commercial Buildings Energy Consumption Survey or Residential Energy Consumption Survey data from the Energy Information Agency), by the percentage specified in the following table:</p> <table border="1"> <thead> <tr> <th>Fiscal Year</th> <th>Percentage Reduction</th> </tr> </thead> <tbody> <tr> <td>2010.....</td> <td>55</td> </tr> <tr> <td>2015.....</td> <td>65</td> </tr> <tr> <td>2020.....</td> <td>80</td> </tr> <tr> <td>2025.....</td> <td>90</td> </tr> <tr> <td>2030.....</td> <td>100“</td> </tr> </tbody> </table> <p>(II) Upon petition by an agency subject to this subparagraph, the Secretary may adjust the applicable numeric requirement under subclause (I) downward with respect to a specific building, if the head of the agency designing the building certifies in writing that meeting such requirement would be technically impracticable in light of the agency’s specified functional needs for that building and the Secretary concurs with the agency’s conclusion.</p>	Fiscal Year	Percentage Reduction	2010.....	55	2015.....	65	2020.....	80	2025.....	90	2030.....	100“	
	Fiscal Year	Percentage Reduction														
	2010.....	55														
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Renewable Energy Use	EPAct 2005	<p>EPAct 2005: SEC. 203. FEDERAL PURCHASE REQUIREMENT.</p> <p>(a) REQUIREMENT — The President, acting through the Secretary, shall seek to ensure that, to the extent economically feasible and technically practicable, of the total amount of electric energy the Federal Government consumes during any fiscal year, the following amounts shall be renewable energy:</p> <p>(1) Not less than 3 percent in fiscal years 2007 through 2009.</p> <p>(2) Not less than 5 percent in fiscal years 2010 through 2012.</p> <p>(3) Not less than 7.5 percent in fiscal year 2013 and each fiscal year thereafter.</p>														
	V, LEED NCv3	EAc6: Green Power														
	V, LEED	EAc4: Green Power														

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		Clv3		
		V, LEED EB: O&M	EAc4: On-site and Off-site Renewable Energy	
	Renewable Energy Generation	EO 13423	E.O. 13423, sec. 2 (b): In implementing the policy set forth in section 1 of this order, the head of each agency shall: (b) ensure that (i) at least half of the statutorily required renewable energy consumed by the agency in a fiscal year comes from new renewable sources and (ii) to the extent feasible, the agency implements renewable energy generation projects on agency property for agency use.	
		V, LEED NCv3	EA Credit 2: On-site Renewable Energy	
		V, LEED EB: O&M	EA Credit 4: On-site and Off-site Renewable Energy	
	GHG Emissions: Scopes 1 and 2	EO 13423	E.O. 13423, sec. 2(a), (b) and (c): In implementing the policy set forth in section 1 of this order, the head of each agency shall: (a) improve energy efficiency and reduce greenhouse gas emissions of the agency, through reduction of energy intensity by (i) 3 percent annually through the end of FY 2015 or (ii) 30 percent by the end of FY 2015, relative to the baseline of the agency's energy use in FY 2003; (b) ensure that (i) at least half of the statutorily required renewable energy consumed by the agency in a fiscal year comes from new renewable sources and (ii) to the extent feasible, the agency implements renewable energy generation projects on agency property for agency use; (c) beginning in FY 2008, reduce water consumption intensity, relative to the baseline of the agency's water consumption in FY 2007, through lifecycle cost-effective measures by 2 percent annually through the end of FY 2015 or 16 percent by the end of FY 2015.	
	GHG Emissions: Scope 3	EO 13514	Sec.2 (b) within 240 days of the date of this order and concurrent with submission of the Strategic Sustainability Performance Plan as described in section 8 of this order, establish and report to the CEQ Chair and the OMB Director a percentage reduction target for reducing agency-wide scope 3 greenhouse gas emissions in absolute terms by fiscal year 2020, relative to a fiscal year 2008 baseline of agency scope 3 emissions. This target shall be subject to review and approval by the CEQ Chair in consultation with the OMB Director under section 5 of this order. In establishing the target, the agency head shall consider reductions associated with: (i) pursuing opportunities with vendors and contractors to address and incorporate incentives to reduce greenhouse gas emissions (such as changes to manufacturing, utility or delivery services, modes of transportation used or other changes in supply chain activities); (ii) implementing strategies and accommodations for transit,	

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			travel, training and conferencing that actively support lower-carbon commuting and travel by agency staff; (iii) greenhouse gas emission reductions associated with pursuing other relevant goals in this section; and (iv) developing and implementing innovative policies and practices to address scope 3 greenhouse gas emissions unique to agency operations.	
	Net-Zero Buildings	EO 13514	Sec.2g (1): (i) beginning in 2020 and thereafter, ensuring that all new Federal buildings that enter the planning process are designed to achieve zero-net-energy by 2030.	Federal net-zero goals assist with LEED achievement Federal net-zero goals assist with LEED achievement
		LEED NCv3	EAp2 - Minimum Energy Efficiency Performance EAc1 – Optimize Energy Performance	
		LEED Civ3	EAp2 - Minimum Energy Efficiency Performance EAc1 – Optimize Energy Performance	
		LEED EB: O&M	EAp2/c1 – Minimum Energy Efficiency Performance	
Energy Efficient Lighting	EISA 2007	<p>“§ 3313. Use of energy efficient lighting fixtures and bulbs</p> <p>“(a) CONSTRUCTION, ALTERATION AND ACQUISITION OF PUBLIC BUILDINGS — Each public building constructed, altered or acquired by the Administrator of General Services shall be equipped, to the maximum extent feasible as determined by the Administrator, with lighting fixtures and bulbs that are energy efficient.</p> <p>“(b) MAINTENANCE OF PUBLIC BUILDINGS — Each lighting fixture or bulb that is replaced by the Administrator in the normal course of maintenance of public buildings shall be replaced, to the maximum extent feasible, with a lighting fixture or bulb that is energy efficient.</p> <p>“(c) CONSIDERATIONS — In making a determination under this section concerning the feasibility of installing a lighting fixture or bulb that is energy efficient, the Administrator shall consider –</p> <p>“(1) the lifecycle cost effectiveness of the fixture or bulb;</p> <p>“(2) the compatibility of the fixture or bulb with existing equipment;</p> <p>“(3) whether use of the fixture or bulb could result in interference with productivity;</p> <p>“(4) the aesthetics relating to use of the fixture or bulb; and</p> <p>“(5) such other factors as the Administrator determines appropriate.</p> <p>“(d) ENERGY STAR — A lighting fixture or bulb shall be treated as being energy efficient for purposes of this section if –</p> <p>“(1) the fixture or bulb is certified under the Energy Star program established by section 324A of the Energy Policy and Conservation Act (42 U.S.C. 6294a);</p> <p>“(2) in the case of all light-emitting diode (LED) luminaires, lamps and systems whose efficacy (lumens per watt) and Color Rendering Index (CRI) meet the Department of Energy requirements for minimum luminaire efficacy and CRI for the</p>		

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			<p>Energy Star certification, as verified by an independent third-party testing laboratory that the Administrator and the Secretary H. R. 6 — 100 of Energy determine conducts its tests according to the procedures and recommendations of the Illuminating Engineering Society of North America, even if the luminaires, lamps and systems have not received such certification; or</p> <p>“(3) the Administrator and the Secretary of Energy have otherwise determined that the fixture or bulb is energy efficient.</p> <p>“(e) ADDITIONAL ENERGY EFFICIENT LIGHTING DESIGNATIONS — The Administrator of the Environmental Protection Agency and the Secretary of Energy shall give priority to establishing Energy Star performance criteria or Federal Energy Management Program designations for additional lighting product categories that are appropriate for use in public buildings.</p> <p>“(f) GUIDELINES — The Administrator shall develop guidelines for the use of energy efficient lighting technologies that contain mercury in child care centers in public buildings.</p> <p>“(g) APPLICABILITY OF BUY AMERICAN ACT — Acquisitions carried out pursuant to this section shall be subject to the requirements of the Buy American Act (41 U.S.C. 10c et seq.).</p>																			
			EAc1.1: Optimize Energy Performance – Lighting Power																			
	Progressive Energy Use Reduction	EPAct 2005	<p>(a) ENERGY REDUCTION GOALS — (1) AMENDMENT — Section 543(a)(1) of the National Energy Conservation Policy Act (42 U.S.C. 8253(a)(1)) is amended by striking “its Federal buildings so that” and all that follows through the end and inserting “the Federal buildings of the agency (including each industrial or laboratory facility) so that the energy consumption per gross square foot of the Federal buildings of the agency in fiscal years 2006 through 2015 is reduced, as compared with the energy consumption per gross square foot of the Federal buildings of the agency in fiscal year 2003, by the percentage specified in the following table:</p> <table border="0"> <thead> <tr> <th>“Fiscal Year</th> <th>Percentage reduction</th> </tr> </thead> <tbody> <tr> <td>2006</td> <td>2</td> </tr> <tr> <td>2007</td> <td>4</td> </tr> <tr> <td>2008</td> <td>6</td> </tr> <tr> <td>2009</td> <td>8</td> </tr> <tr> <td>2010</td> <td>10</td> </tr> <tr> <td>2011</td> <td>12</td> </tr> <tr> <td>2012</td> <td>14</td> </tr> <tr> <td>2013</td> <td>16</td> </tr> </tbody> </table>	“Fiscal Year	Percentage reduction	2006	2	2007	4	2008	6	2009	8	2010	10	2011	12	2012	14	2013	16	
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			<p>2014 18 2015 20”</p> <p>(c) EXCLUSIONS — Section 543(c)(1) of the National Energy Conservation Policy Act (42 U.S.C. 8253(c)(1)) is amended by striking “An agency may exclude” and all that follows through the end and inserting “(A) An agency may exclude, from the energy performance requirement for a fiscal year established under subsection (a) and the energy management requirement established under subsection (b), any Federal building or collection of Federal buildings, if the head of the agency finds that —</p> <p>“(i) compliance with those requirements would be impracticable;</p> <p>“(ii) the agency has completed and submitted all federally required energy management reports;</p> <p>“(iii) the agency has achieved compliance with the energy efficiency requirements of this Act, the Energy Policy Act of 1992, Executive orders and other Federal law; and</p> <p>“(iv) the agency has implemented all practicable, lifecycle cost-effective projects with respect to the Federal building or collection of Federal buildings to be excluded.</p> <p>“(B) A finding of impracticability under subparagraph (A)(i) shall be based on —</p> <p>“(i) the energy intensiveness of activities carried out in the Federal building or collection of Federal buildings; or</p> <p>“(ii) the fact that the Federal building or collection of Federal buildings is used in the performance of a national security function.”</p>	
	Benchmark Energy Use	HPSB MOU	<p>II. Optimize Energy Performance</p> <p>Energy Efficiency. 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 Star7 targets for new construction and major renovation where applicable. For new construction, reduce the energy cost budget by 30 percent compared to the baseline building performance rating per the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., (ASHRAE) and the Illuminating Engineering Society of North America (IESNA) Standard 90.1-2004, Energy Standard for Buildings Except Low-Rise Residential. For major renovations, reduce the energy cost budget by 20 percent below pre-renovations 2003 baseline.</p>	LEED 2012 NC, CI, EB Performance credit category

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Indoor Environment and Materials Management	Low-Emitting Materials	HPSB MOU	HPSB Section IV. Enhance Indoor Environmental Quality. Low-Emitting Materials. Specify materials and products with low pollutant emissions, including adhesives, sealants, paints, carpet systems and furnishings.	
		V, LEED NCv3	EQc4.1: Low-Emitting Materials —Adhesives and Sealants EQc4.2: Low-Emitting Materials — Paints and Coatings EQc4.3: Low-Emitting Materials —Flooring Systems EQc4.4: Low-Emitting Materials – Composite Wood and Agrifiber Products	
		V, LEED Civ3	EQ c4.1: Low-Emitting Materials —Adhesives and Sealants EQ c4.2: Low-Emitting Materials — Paints and Coatings EQ c4.3: Low-Emitting Materials —Flooring Systems EQ c4.4: Low-Emitting Materials – Composite Wood and Agrifiber Products EQ c4.5: Low-Emitting Materials – Systems Furniture and Seating	
	Construction Waste Diversion	HPSB MOU	HPSB Section V. Reduce Environmental Impact of Materials Construction Waste. 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.	
		V, LEED NCv3	MRc2: Construction Waste Management	
		V, LEED Civ3	MRc2: Construction Waste Management	
		V, LEED EB: O&M	MRc9: Solid Waste Management – Facility Alterations and Additions	
	Ventilation Performance	HPSB MOU	HPSB Section IV. Enhance Indoor Environmental Quality Ventilation and Thermal Comfort. 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, Ventilation for Acceptable Indoor Air Quality.	
		LEED NCv3	EQc7.1: Thermal Comfort — Design	
		LEED Civ3	EQc7.1: Thermal Comfort – Design	
	Thermal Comfort	HPSB MOU	HPSB Section IV. Enhance Indoor Environmental Quality Ventilation and Thermal Comfort. 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	

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			Standard 62.1-2004, Ventilation for Acceptable Indoor Air Quality. See above: LEED NCv3 and Clv3, EQc7.1: Thermal Comfort — Design	
	Construction Indoor Air Quality	HPSB MOU	HPSB MOU section IV. Enhance Indoor Environmental Quality Protect Indoor Air Quality during Construction. 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. 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.	
		V, LEED NCv3	EQc3.1: Construction Indoor Air Quality Management Plan — During Construction EQc3.2: Construction Indoor Air Quality Management Plan — Before Occupancy	
		V, LEED Clv3	EQc3.1: Construction Indoor Air Quality Management Plan — During Construction EQc3.2: Construction Indoor Air Quality Management Plan — Before Occupancy	
		V, LEED EB: O&M	EQc1.5: Construction Indoor Air Quality Management Plan — IAQ Management for Facility Alterations and Additions	
	Daylighting and Views	HPSB MOU	HPSB Section IV. Enhance Indoor Environmental Quality Daylighting. 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.	
		V, LEED NCv3	EQc8.1:Daylight and Views — Daylight	
		V, LEED Clv3	EQc8.1: Daylight and Views — Daylight	
		V, LEED EB: O&M	EB:O&M EQc2.4: Daylight and Views —Daylight	
	Air Delivery Monitoring	V, LEED NCv3	EQc1: Outdoor Air Delivery Monitoring	
		V, LEED Clv3	EQc1: Outdoor Air Delivery Monitoring	

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		V, LEED EB: O&M	EQc1.2: Indoor Air Quality Best Management Practices — Outdoor Air Delivery Monitoring	
	Electronic Stewardship and Purchasing	EPAct 2005	SEC. 104. PROCUREMENT OF ENERGY EFFICIENT PRODUCTS. “(b) PROCUREMENT OF ENERGY EFFICIENT PRODUCTS — “(1) REQUIREMENT — To meet the requirements of an agency for an energy consuming product, the head of the agency shall, except as provided in paragraph (2), procure — “(A) an Energy Star product; or “(B) a FEMP designated product. “(2) EXCEPTIONS — The head of an agency is not required to procure an Energy Star product or FEMP designated product under paragraph (1) if the head of the agency finds in writing that — “(A) an Energy Star product or FEMP designated product is not cost-effective over the life of the product taking energy cost savings into account; or “(B) no Energy Star product or FEMP designated product is reasonably available that meets the functional requirements of the agency. “(3) PROCUREMENT PLANNING — The head of an agency shall incorporate into the specifications for all procurements involving energy consuming products and systems, including guide specifications, project specifications and construction, renovation and services contracts that include provision of energy consuming products and systems and into the factors for the evaluation of offers received for the procurement, criteria for energy efficiency that are consistent with the criteria used for rating Energy Star products and for rating FEMP designated products.	
	Green Purchasing	EPAct 2005	EPAct 2005: SEC. 104. PROCUREMENT OF ENERGY EFFICIENT PRODUCTS. “(b) PROCUREMENT OF ENERGY EFFICIENT PRODUCTS — “(1) REQUIREMENT — To meet the requirements of an agency for an energy consuming product, the head of the agency shall, except as provided in paragraph (2), procure — “(A) an Energy Star product; or “(B) a FEMP designated product. “(2) EXCEPTIONS — The head of an agency is not required to procure an Energy Star product or FEMP designated product under paragraph (1) if the head of the agency finds in writing that — “(A) an Energy Star product or FEMP designated product is not cost-effective over the life of the product taking energy cost savings into account; or “(B) no Energy Star product or FEMP designated product is reasonably available that meets the functional requirements of the agency. “(3) PROCUREMENT PLANNING — The head of an agency shall incorporate into the specifications for all procurements	

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			involving energy consuming products and systems, including guide specifications, project specifications and construction, renovation and services contracts that include provision of energy consuming products and systems and into the factors for the evaluation of offers received for the procurement, criteria for energy efficiency that are consistent with the criteria used for rating Energy Star products and for rating FEMP designated products. “(d) SPECIFIC PRODUCTS — (1) In the case of electric motors of 1 to 500 horsepower, agencies shall select only premium efficient motors that meet a standard designated by the Secretary. The Secretary shall designate such a standard not later than 120 days after the date of the enactment of this section, after considering the recommendations of associated electric motor manufacturers and energy efficiency groups.	
		LEED Civ3	EAc1.4: Optimize Energy Performance – Equipment and Appliances	
		LEED EB: O&M	MR Prerequisite 1: Sustainable Purchasing Policy MR Credit 2: Sustainable Purchasing —Durable Goods MR Credit 3: Sustainable Purchasing —Facility Alterations and Additions MR Credit 4: Sustainable Purchasing —Reduced Mercury in Lamps	
	Green Cleaning (Green Purchasing)	V, LEED EB: O&M	EQc3.1: Green Cleaning — High Performance Cleaning Program EQc3.2: Green Cleaning — Custodial Effectiveness Assessment EQc3.3: Green Cleaning — Purchase of Sustainable Cleaning Products and Materials EQc3.4: Green Cleaning — Sustainable Cleaning Equipment EQc3.5: Green Cleaning — Indoor Chemical and Pollutant Source Control	
	Integrated Pest Management	EO 13514	EO 13514 (e) promote pollution prevention and eliminate waste by: (vii) implementing integrated pest management and other appropriate landscape management practices.	
		V, LEED EB: O&M	SSc3: Integrated Pest Management, Erosion Control and Landscape Management Plan EQc3.6: Green Cleaning — Indoor Integrated Pest Management	
	Chemical Use Reduction	EO 13423	Sec.2 (e) promote pollution prevention and eliminate waste by: (i) minimizing the generation of waste and pollutants through source reduction... CL6B1PROD with MISCELLANEOUS (v) reducing and minimizing the quantity of toxic and hazardous chemicals and materials acquired, used or	

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			<p>disposed of...</p> <p>(viii) increasing agency use of acceptable alternative chemicals and processes in keeping with the agency's procurement policies;</p> <p>(ix) decreasing agency use of chemicals where such decrease will assist the agency in achieving greenhouse gas emission reduction targets under section 2(a) and (b) of this order.</p>	
	Ongoing Waste Stream Management	EO 13423	<p>E.O. 13423, Sec. 2(e): In implementing the policy set forth in section 1 of this order, the head of each agency shall:</p> <p>(e) ensure that the agency... (ii) increases diversion of solid waste as appropriate and (iii) maintains cost-effective waste prevention and recycling programs in its facilities.</p> <p>Sec. 3(a), excerpted, (e), and (f): In implementing the policy set forth in section 1 of this order, the head of each agency shall: (a) implement within the agency sustainable practices for... (v) pollution and waste prevention and recycling... (e) ensure that contracts entered into after the date of this order for contractor operation of government-owned facilities or vehicles require the contractor to comply with the provisions of this order with respect to such facilities or vehicles to the same extent as the agency would be required to comply if the agency operated the facilities or vehicles;</p> <p>(f) ensure that agreements, permits, leases, licenses or other legally-binding obligations between the agency and a tenant or concessionaire entered into after the date of this order require, to the extent the head of the agency determines appropriate, that the tenant or concessionaire take actions relating to matters within the scope of the contract that facilitate the agency's compliance with this order.</p>	
		LEED EB: O&M	<p>MR Prerequisite 2: Solid Waste Management Policy</p> <p>MR Credit 7: Solid Waste Management — Ongoing Consumables</p> <p>MR Credit 8: Solid Waste Management — Durable Goods</p> <p>MR Credit 9: Solid Waste Management — Facility Alterations and Additions</p>	
	Environmental Tobacco Smoke	LEED NCv3	EQp2: Environmental Tobacco Smoke (ETS) Control	
		LEED Clv3	EQp2: Environmental Tobacco Smoke (ETS) Control	
		LEED EB: O&M	EQp2: Environmental Tobacco Smoke (ETS) Control	
	Low-Emitting Vehicle Purchasing and Infrastructure	EISA 2007	<p>Subtitle C — Federal Vehicle Fleets</p> <p>SEC. 141. FEDERAL VEHICLE FLEETS. "(A) IN GENERAL — Except as provided in subparagraph (B), no Federal agency shall acquire a light duty motor vehicle or medium duty passenger vehicle that is not a low greenhouse gas emitting vehicle. . .</p> <p>"SEC. 400FF. FEDERAL FLEET CONSERVATION REQUIREMENTS.</p>	

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			<p>“(a) MANDATORY REDUCTION IN PETROLEUM CONSUMPTION —</p> <p>“(1) IN GENERAL — Not later than 18 months after the date of enactment of this section, the Secretary shall issue regulations for Federal fleets subject to section 400AA to require that, beginning in fiscal year 2010, each Federal agency shall reduce petroleum consumption and increase alternative fuel consumption each year by an amount necessary to meet the goals described in paragraph (2).</p> <p>“(2) GOALS — The goals of the requirements under paragraph (1) are that not later than October 1, 2015 and for each year thereafter, each Federal agency shall achieve at least a 20 percent reduction in annual petroleum consumption and a 10 percent increase in annual alternative fuel consumption, as calculated from the baseline established by the Secretary for fiscal year 2005.</p> <p>“(3) MILESTONES — The Secretary shall include in the regulations described in paragraph (1) —</p> <p>“(A) interim numeric milestones to assess annual agency progress towards accomplishing the goals described in that paragraph; and</p> <p>“(B) a requirement that agencies annually report on progress towards meeting each of the milestones and the 2015 goals.</p> <p>“(b) PLAN —</p> <p>“(1) REQUIREMENT —</p> <p>“(A) IN GENERAL —The regulations under subsection (a) shall require each Federal agency to develop a plan and implement the measures specified in the plan by dates specified in the plan, to meet the required petroleum reduction levels and the alternative fuel consumption increases, including the milestones specified by the Secretary.</p> <p>“(B) INCLUSIONS — The plan shall —</p> <p>“(i) identify the specific measures the agency will use to meet the requirements of subsection (a)(2); and</p> <p>“(ii) quantify the reductions in petroleum consumption or increases in alternative fuel consumption projected to be achieved by each measure each year.</p> <p>“(2) MEASURES — The plan may allow an agency to meet the required petroleum reduction level through —</p> <p>“(A) the use of alternative fuels;</p> <p>“(B) the acquisition of vehicles with higher fuel economy, including hybrid vehicles, neighborhood electric vehicles, electric vehicles and plug-in hybrid vehicles if the vehicles are commercially available;</p> <p>“(C) the substitution of cars for light trucks;</p> <p>“(D) an increase in vehicle load factors;</p> <p>“(E) a decrease in vehicle miles traveled;</p> <p>“(F) a decrease in fleet size; and</p> <p>“(G) other measures.”</p> <p>SEC. 246. FEDERAL FLEET FUELING CENTERS.</p> <p>(a) IN GENERAL — Not later than January 1, 2010 the head of each Federal agency shall install at least 1 renewable fuel pump at each Federal fleet fueling center in the United States under the jurisdiction of the head of the Federal agency.</p>	

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