

Green Building Certification System Review Supplemental Information

Office of Federal High-Performance Green Buildings
Office of Governmentwide Policy
U.S. General Services Administration

August 2012

Table of Contents

Introduction

Section 1: Analysis of ASHRAE Standard 189.1

<u>Section 2: Analysis of Department of Veterans Affairs' "Guiding Principles Compliance Assessment Program"</u>

<u>Section 3: Analysis of the General Services Administration's "Sustainable Operations and Maintenance Program"</u>

Green Building Certification System Review: Supplemental Information

Introduction

Analysis of ASHRAE Standard 189.1

While preparing final drafts of the Green Building Certification System Review, GSA received several questions about the recently released ASHRAE Standard 189.1, "Standard for the Design of High-Performance Green Buildings." Questions centered around whether ASHRAE Standard 189.1 could be used to define performance specifications or as a substitute for green building certification in new construction and major renovation projects. To get insight into these questions, GSA decided to review ASHRAE Standard 189.1 against the same set of "robustness" criteria used to evaluate the 3 green building certification systems in the 2012 report. These criteria are principally focused on how well the requirements and performance metrics in ASHRAE Standard 189.1 align with federal requirements for new construction contained in the "Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings (Guiding Principles)." Results of this analysis are contained in Section 1.

Analysis of the Department of Veterans Affairs' "Guiding Principles Compliance Assessment Program" and the General Services Administration's "Sustainable Operations and Maintenance Program"

During internal peer review of the 2012 Green Building Certification System report, GSA was asked whether any Federal agencies had tailored certification systems to meet Federal needs. GSA identified two agencies that have developed internal assessment tools based, in whole or in part, on existing green building certification systems.

The Department of Veterans Affairs (VA) contracted with the Green Building Initiative (GBI) to develop its "Guiding Principles Compliance Assessment Program (CAP)" for existing buildings. The objective of this program was to develop an assessment methodology that VA could use to determine how facilities are doing with respect to compliance with the 27 requirements contained in the Guiding Principles for existing buildings. There are two components in the VA CAP: a compliance survey (based on but not identical with the Energy Star Portfolio Manager Guiding Principles Checklist) and a third-party on-site assessment. VA facility staff conducts a self evaluation using the compliance survey, which is submitted to GBI. A preliminary report is generated from this information, which is reviewed by a third-party assessor. The assessor visits the site, verifies information provided by facility staff and completes a final survey that forms the foundation for the final report. Training on how to fill out the compliance survey is available through the GBI website. More information on the VA's Guiding Principles Compliance Assessment Program can be found in Section 2.

The General Services Administration developed its "Sustainable Operations and Maintenance Program" within the U.S. Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) for Existing Buildings volume certification program. The tool serves two function: provides a means to assess how buildings are performing relative to the 27 requirements contained in the Guiding Principles for existing buildings; and provides a streamlined method to certify buildings by standardizing documentation across the portfolio.

The tool uses USGBC's online database to capture information provided by facility teams; several "views" of data are built in to support analysis of performance across the portfolio. Teams are trained on each credit and how to properly document and implement credit requirements. Each credit also has a training element built in and some credits include standardized policies or program format (pre-approved by the USGBC) that facilities can download and adopt on site, reducing documentation transaction costs.

Regional subject matter experts approve the documentation developed by facility teams, and support the facility teams during the pre-performance and performance periods. Subject matter experts in GSA's headquarters conduct random checks on submissions, as does the USGBC. More information on GSA's "Sustainable Operations and Maintenance Program" can be found in <u>Section 3</u>.



Section 1:

Analysis of Relative Robustness of ASHRAE Standard 189.1

Measured, Calculated, or Evidence of Intent		Subject	Summary	Mandatory, Prescriptive, or Performance
	Section 5:			
	Section 5.3	Site Selection		
I	5.3.1.1 and 5.3.1.2	Allowable sites and activities	Building site must be on brownfield, greyfield, or greenfield with restrictions.	Mandatory
	Section 5.3			
I.	5.3.2.1	Hardscape	Requires at least 50% of site hardscape (roads, sidewalks, courtyards and parking lots of the building project) to be shaded.	Mandatory
I	5.3.2.2	Walls	Requires 30% of walls shall be shaded on east and west of building based on shade angle at 10 and 3 on summer solstice.	Mandatory
I	5.3.2.3	Roofs	Requires a minimum of 75% of the roof to be SRI of 78 for low-sloped roof or SRI of 29 for steep-sloped roofs, or to be covered by Energy Star Roof Products	Mandatory
I	5.3.2.4	SRI	SRI measure should meet existing standards	Mandatory
	Section 5.3			
I	5.3.3.1	General	Requires exterior lighting system comply with section 9 of ASHRAE Std 90.1.	Mandatory
I	5.3.3.2	Backlight and Glare	Requires compliance with specific glaring ratings	Mandatory
I	5.3.3.3	Uplight	Requires compliance with specific uplighting ratings	Mandatory
	Section 5.3			
I	5.3.4.1	Invasive Plants	Invasive plants shall be removed and not planted on the site	Mandatory
	Section 5.3			
I	5.3.5.1	Pedestrian and Transit Connectivity	Building entrance should provide walkways that extent to public ways or transit stop	Mandatory
	Section 5.4			Mandatory
	Section 5.4			
М	5.4.1.1	Effective Pervious Area for All Sites	40% of the entire site shall be planted or use permeable pavers	Prescriptive
I			For greenfield sites, 20% of the site should contain native or adapted plants	Prescriptive
	Section 5.5			
С	5.5.1	Site Development	Buildings must manage 20% to 50% of rainfall through infiltration, reuse, or evapotransporation (differs for renovation, green, or brownfield development)	Performance
	Section 6:			
	Section 6.3			

		11 1		
ı	6.3.1.1-3	Landscape Design, Irrigation, Controls	60% of the building site landscaping must be bio-diverse plants, with additional requirements for irrigation system design and controls	Mandatory
	Section 6.3	Building Water		
1	6.3.2.1-3	Plumbing, Appliances, and HVAC Systems	Places water flow requirements on plumbing fixtures; Requires Energy Star and water factor restrictions on appliances, and water metering and recovery/reuse requirements for HVAC systems.	Mandatory
I	6.3.2.4	Roofs	Potable water is prohibited for roof spray systems and the irrigation of vegetated roofs	Mandatory
	Section 6.3	Water Consump		
I	6.3.3.1	Consumption Management	Extensive metering and submetering requirements and remote reading capabilities for both potable and reclaimed water.	Mandatory
I	6.3.3.2	Consumption Data Collection	, , , , , , , , , , , , , , , , , , ,	Mandatory
I	Data Storage and Retrieval		Data collected from measurement devices in 6.3.3.1 shall be electronically stored with user reporting capabilities.	Mandatory
	Section 6.4			
I	I 6.4.1.1-3 Site Water Use Reduction		Golf courses and driving ranges have irrigation water restrictions	Prescriptive
М	6.4.2	Building Water Use Reduction	Water use reductions for cooling towers, food operations and medical facilities.	Prescriptive
I	6.4.3	Special Water Features	Water requirements for fountains, water features, pools, and spas.	Prescriptive
	Section 6.5			
М	6.5.1	Reduction	Potable water can not make up more than 35% of total water demand for landscaping	Performance
С	C 6.5.2 Building Water Use Reduction		Building project water use shall be less than or equal to what would be achieved through compliance with 6.3.2, 6.4.2, and 6.4.3.	Performance
	Section 7:			
	Section 7.3			
Total Mandatory Provisions for Energy Efficiency Requires ASHRAE Standard 90.1-2010 sections 5		Requires ASHRAE Standard 90.1-2010 sections 5.4, 6.4 7.4, 8.4, 9.4, and 10.4.	Mandatory	
1	On-site Renewable Ruilding projects must provide space and nathways for the future installation of on-		Mandatory	

1	7.3.3.1-3	Energy Consumption Management	Energy consumption data is recorded and managed with remote communication capabilities for electricity, gas and district heat for main systems and some subsystems. Data should be recorded hourly and stored for at least 36 months.	Mandatory
	Section 7.4	1		
1	7.4.1 Prescriptive Option		Requires all building projects to comply with ASHRAE Standard 90.1-2010	Prescriptive
С	On-site		Mandates on-site renewable energy systems with production of not less than 6.0 Kbtu/sq ft or RECs equal to 70 Kbtu/sq ft	Prescriptive
	Section 7.4	l		
С	7.4.2	Building Envelope	Comply with requirements of ASHRAE 90.1 regarding insulation, fenestration, permanent projections, vestibules, and continuous air barriers, except where noted otherwise	Prescriptive
I	I 7.4.2.5 Permanent Projection		Requires vertical fenestration on W, S and E sides be shaded by permanent projections in some climate zones	Prescriptive
С	Continuous Air		Requires continuous air barrier	Prescriptive
	Section 7.4	ļ		
I	I 7.4.3.1 Minimum Equipment Efficiencies		Requires products used in projects to comply with: Option 1: The National Appliance Energy Conservation Act (NAECA), EPAct, and EISA. OR Option 2: ENERGY STAR requirements Sec 7.4.7.3 and Tables C-1-C15 in Appendix C, and ASHRAE 90.1 with additional requirements for renewable energy and peak load energy use reductions.	Prescriptive
I	7.4.3.2	Ventilation Controls	Demand Control Ventilation should comply with ASHRAE 62.1 and supersedes ASHRAE 90.1, plus specifications regarding CO2 sensors.	Prescriptive
I	7.4.3.3	Economizers	Requires economizer usage as articulated in ASHRAE 90.1 but with additional requirements as articulated in 7.4.3.4	Prescriptive
1	7.4.3.4	Zone Control	Slightly narrows exceptions from ASHRAE 90.1 compliance	Prescriptive
I	7.4.3.5		Fan power should be limited to 10% below ASHRAE 90.1	Prescriptive
I	I 7.4.3.6 Exhaust Air Energy Recovery		Requires energy recovery systems with at least 60% energy recovery effectiveness	Prescriptive
1	Control for Commercial Kitchen Hoods		Requires variable fan controls for kitchen hoods when cooking is not occurring	Prescriptive
I	7.4.3.8	Duct Insulation	Requires specifications for duct insulation as specified in Appendix C	Prescriptive
I	7.4.3.9	Automatic controls of HVAC and Lights	Required for hotels/motels with over 50 rooms (dormitories?). Requires outlets, TV's and HVAC to be controlled when unoccupied.	Prescriptive

	Section 7.4			
I	7.4.4.1-2	Service Water Heating	Requires compliance with ASHRAE 90.1 plus additional requirements regarding system efficiency and insulation of spa pools.	Prescriptive
	Section 7.4	1		
1	Peak Load		Mandates automatic load reduction of at least 10% for all building projects during peak load times	Prescriptive
	Section 7.4	l		
1	7.4.6	Lighting	Requires compliance with ASHRAE 90.1, plus lighting power limits and occupancy sensors.	Prescriptive
1	7.4.6.1	Lighting Power Allowance	Interior lighting allowance must be in accordance with ASHRAE 90.1	Prescriptive
1	7.4.6.2-5	Lighting Sensors, Controls, and Signage	Specific requirements related to occupancy sensors, egress and security lighting, and exterior sign lighting.	Prescriptive
1	7.4.7	Other Equipment	In addition to compliance with ASHRAE 90.1 standards, requires performance standards for electric motors, heat recovery on supermarket refrigeration equipment, and an ENERGY STAR mandate for most appliances and electronics, and other specific requirements for commercial refrigerators, freezers, and washers.	Prescriptive
	Section 7.5	5		
С	7.5.2	Energy Costs	Requires that the building project has an annual energy cost less than it could under compliance with under the prescriptive options in other sections of ASHRAE 189.1	Performance
С	7.5.3	Annual CO2 equivalent	Requires that the building project has an annual carbon dioxide equivalent emissions less than it would under compliance with under the prescriptive options in other sections of ASHRAE 189.1	Performance
С	7.5.4 Factor/Peak would under compliance with under		Requires that the building project has an annual peak electricity demand less than it would under compliance with under the prescriptive options in other sections of ASHRAE 189.1	Performance
	Section 8:			
С	8.3.1	IAQ Mandatory Provisions	Mandates compliance with Sections 4-7 of ANSI/ASHRAE Standard 62.1 , plus increases filtration requirements and other air-cleaning devices	Mandatory
1	8.3.1.1	Minimum Ventilation Rates	Minimum ventilation rates should comply with ASHRAE 62.1	
ı	8.3.1.2	Outdoor Air Delivery Monitoring	Requires a outdoor airflow measurement device.	
I	8.3.1.3	Filtration and Air Cleaner Requirement	Particulate matter and ozone filtration and cleaning requirements for all facilities	Mandatory

1	8.3.1.4	Environmental Tobacco Smoke	Smoking is not allowed inside buildings, and requires designated smoking areas be to be located at least 25ft from building entrances.	Mandatory
1	8.3.1.5	Building Entrances	Requires entry mat, absorption, and finishing system at all entries	Mandatory
1	8.3.2	Thermal Environmental Conditions for Human Occupancy	Building should be designed in compliance with ASHRAE 55, Section 6.1 and 6.2.	Mandatory
С	8.3.3	Acoustical Control	Building projects should meet exterior and interior acoustical controls.	Mandatory
С	8.3.4	Day lighting by top lighting	Mandates Minimum Requirements for Minimum Daylight Zone by Toplighting and Skylights	Mandatory
1	8.3.5	Isolation of Building from Pollutants in Soil	Ground level foundations built on Brownfields or in Zone1 counties will have Soil Gas Retarding System.	
	Section 8.4			
С	8.4.1	Daylighting: Minimum Effective Aperture	Sets minimum sidelighting effective aperture area for day lighting and office space shading	Prescriptive
М	8.4.2	Materials	Places testing, documentation and formulation requirements on reported emissions or VOC contents. Materials include adhesives and sealants; paints and coatings; floor covering material; composite wood, wood structural panel, and agrifiber products; office furniture systems and seating; and ceiling and wall systems. Requirements include CA/DHS/EHLB/R-174, SCAQMD Rule 1168 or 1113, GS-36, GS-11, ANSI/BIFMA M7.1, or third-party verification through CARB.	Prescriptive
	Section 8.5	5		
С	8.5.1.1	Daylighting simulation	Demonstrate illuminance of classrooms and office spaces that 30 fc on a plane 2.5 ft above the floor within 75% of the daylight areas using the CIE Overcast Sky Model or the CIE Clear Sky Model. And the direct sunlight does not strike a work surface more than 20% of the time.	
С	8.5.1.2	Direct Sun Limitations on Worksurfaces	Direct sun shall not strike anywhere in a daylit space for more than 20% of the	
С	8.5.2	Materials	Model materials for VOC concentrations. The sum should comply with section 4.3 of CA/DHS/EHLB/R-14	
	Section 9:			
М	9.3.1.1	Diversion	50% of construction debris must be recycled or reused.	Mandatory

М	M 9.3.1.2 Total waste		Places maximum waste limits for projects where buildings and hardscapes make up less that 5% of the site landcover. Waste generation must be tracked throughout	Mandatory
			construction.	,
1	9.3.2	Extracting , Harvesting, and/or Manufacturing	Materials and products are to be manufactured according to regulations on the country of origin. Wood products shall not be from endangered species unless it conforms with CITES	Mandatory
ı	9.3.3	Refrigerants	CFC-based refrigerants in HVAC systems will not be used. Fire suppression systems shall not contain ozone depleting substances	Mandatory
I	9.3.4.1	Recyclables	Requires area serving building be dedicated to the collection and storage of materials for recycling	Mandatory
1	9.3.4.2	Reusable goods	Requires buildings projects with residential space to have an area serving the building to be dedicated to the collection and reuse of materials.	Mandatory
I	9.3.4.3	Fluorescent and HID Lamps	Requires an area serving the building to be dedicated to the collection and storage of fluorescent and HID lamps and ballasts.	Mandatory
	Section 9.4			
М	9.4.1.1 Recycled Content		Recycled materials must make up at least 10% of the cost of the building materials	Prescriptive
М	9.4.1.2	Regional Materials	At least 15% of building materials, based upon cost, must be made within 500 miles of the project site.	Prescriptive
М	9.4.1.3	Biobased Products	Biobased products must make up at least 5% of the cost of the building materials.	Prescriptive
М	9.4.1.3.1	Wood Building Components	Certified wood must make up at least 60% of total wood used in the project.	Prescriptive
	Section 9.5	5		
С	C 9.5 Performance Option		Life-Cycle Assessment be performed for a minimum of two building alternatives. Requires report and documentation of critical peer review by third party. Additional requirements specified.	Performance
	Section 10			
I	Construction 10 and Plans for Operation		Requirements for construction and plans for operation, including commissioning, acceptance testing, M&V, transportation mgt, erosion and sediment control, and IAQ during construction	Mandatory
1	Bldg		Requires acceptance testing by the authority having jurisdiction (AHJ)	Mandatory
1	10.3.1.2	Building Requires building commissioning for all buildings over 5000 sq ft, including		Mandatory
I	10.3.1.3	Erosion and Sediment Control	Develop and implement an erosion control plan for all construction activities.	Mandatory

ı	10.3.1.4	Indoor Air Quality Construction Management	Develop and implement an indoor air quality construction management plan for all construction activities. Specific requirements for the plan are included.	Mandatory
I	10.3.1.5	Moisture Control	Installed and onsite materials should be protected from moisture damage and construction materials that show evidence of biological growth due to moisture shall not be installed on the project.	Mandatory
ı		Construction Activity Pollution Prevention: No Idling of Construction Vehicles	Vehicle staging area shall be located 100 ft from outdoor air intakes, openings, and hospitals, schools, residences, hotels, daycares, elderly housing, and convalescent facilities.	Mandatory
1	10.3.2.1.1-	High Performance Building Operation Plans	Requires specific plans related to site sustainability, water use efficiency (including M&V and water tracking), energy efficiency (including M&V and energy tracking), indoor air quality (including specifics on outdoor airflow and indoor air quality M&V, and a green cleaning plan)	Mandatory
- 1	10.3.2.2	Maintenance Plan	Mandates maintenance plan for mechanical, electrical, plumbing, and fire protection systems in accordance with ASHRAE Standard 180	Mandatory
1	10.3.2.3	Service Life Plan	Mandates Service Life Plan for structural, building envelope, and hardscape materials.	Mandatory
ı		Transportation Management Plan	Mandates a Transportation Management Plan, with varying mandates based upon ownership/leasing arrangements.	Mandatory
	There are r			

Guiding P	r	ASHRAE 189	GG	LEED	LBC
Site					
1	Reduce stormwater runoff	1	- 1	I	I
Water					
С	Indoor water use reduction	1	С	С	М
1	Installation of water meters is encouraged for indoor w	I			
I	Consider use of harvested rainwater		С	С	М
С	Outdoor water use reduction	I	T.	С	М
1	Installation of water meters is encouraged for outdoor	1			
I	Reduce process water when life cycle cost effective	1	С		
I	Specify WaterSense products	I	T.	I	
I I	Use certified irrigation system installers when available				
Energy					
С	Energy use reduction	l l	С	С	М
1	Use EnergyStar or FEMP products when available	1			
С	Solar hot water system, when cost effective		С	С	М
1	Renewable energy	С	С	С	М
1	Install meters	1	I I	1	М
М	Benchmark energy performance	M			
1	Commissioning	1	I	I	
Indoor En	v				
1	Meet ASHRAE 55	1	С	С	1
I	Meet ASHRAE 62.1	1	С	С	- 1
1	Moisture Control	1	1	1	1
С	Daylighting	С	С	С	
С	Lighting controls	1	С	С	
1	Specify low emitting materials	1		1	1
М	Indoor air quality and construction		М	М	
1	No smoking policy	I		I	I
Resources					
I	Specify recycled content materials	M	М	М	С
I	Specify biobased content materials	M	М	М	М
I	Specify environmentally preferable materials	M	М	М	I
I	Design-in recycling container space	I	I	I	М
С	Construction waste management	M	М	М	М
М	Eliminate use of ozone depleting substances	М	М	М	М

	Review Questions	Guiding Principles NC	ASHRAE Standard 189.1
Robustness			
Integrated Design	building meet a current Federal requirement?	Integrates the use of OMB's A-11, Section 7, Exhibit300: Capital Asset Plan and Business Case Summary 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 Considers all stages of the building lifecycle, including deconstruction.	
	Does the certification system help users achieve cost saving through integrated design?	Integrated Design. 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 in all stages of a project's planning and delivery.	n/a
		Employ 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 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.	Yes. Comply with Section 10.3.1.2 requires building commissioning for all buildings over 5000 sq ft, including commissioning plan. Commissioning must include HVAC&R systems, building envelope, irrigation, plumbing, water pumping and mixing, water heating, renewable energy, and measurement devices.
	What standards or tools are required for the metric?	n/a	n/a
vvalei			

	Review Questions	Guiding Principles NC	ASHRAE Standard 189.1
	building meet a current Federal requirement?	requirements. 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	Given the required measures, potable water use reduction measures meet the GP. There is no specific reduction requirement for indoor water use; however, flush and flow rates included in this section are calculated to be 20% less than the UPC and IPC, which is equivalent to WaterSense criteria. Evidence of intent is present due to water metering and plumbing fixture requirements. 6.3.2.1 Plumbing fixture and fittings- specifies flush and flow rates. 6.3.2.3 HVAC Systems and Equipment - prohibits one-through cooling and requires condensate recovery 6.3.3 Water Consumption Measurement - calls for potable and reclaimed water to be monitored or metered.
Indoor Water			To meet the Performance Option 6.5.2 Building Water Use Reduction Comply with section 6.3.2, 6.4.2, 6.4.3.
	What is the baseline or point of comparison?	EPAct 1992 and 2005, UPC/IPC 2006	ASME A112, WaterSense
	What is the range of requirements to achieve the metric?		If the performance option is pursued, building water use should be equal to or greater than calculated water use reductions that would result from compliance with Sections 6.3.2, 6.4.2, and 6.4.3.
	What standards or tools are required for the metric?	EPAct 1992 and 2005, UPC/IPC 2006	n/a

	Review Questions	Guiding Principles NC	ASHRAE Standard 189.1
Process Water	Does the metric help a building meet a current Federal requirement?	Per the Energy Policy Act of 2005 Section 109, when potable water is used to improve a building's energy efficiency, deploy lifecycle cost effective water conservation measures.	Given the required measures, lifecycle cost effective water conservation measures may meet the GP. 6.3.2.3 HVAC System Equipment Once-through cooling with potable water is prohibited. Potable water use as roof spray or green roof irrigation is prohibited. 6.3.3 Also requires water consumption data collection. If the prescriptive option is pursued 6.4.1 Site water reduction - focus on municipally reclaimed water and/or alternate onsite sources of water. 6.4.2 Building Water Use reduction 6.4.2.1 Cooling Towers - regulates amount of water discharged 6.4.2.2 Commercial Food Service Operations 6.4.2.3 Medical Laboratory Facilities
	Federal requirement?	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). The installation of water meters for locations with significant outdoor water use is encouraged.	Given the required measures, outdoor water usage reduction measures may meet the GP. 6.3.1 Site Water Use Reduction. 6.3.1.1 A minimum of 60% of the area of the improved landscape shall be in biodiverse planting of native plants and adapted plants other than turfgrass. 6.3.1.2 Irrigation System Design. Hydrozoning automatic irrigation systems. 6.3.1.3 Irrigation system shall be controlled by a smart controller.
	What is the baseline or point of comparison? What is the range of requirements to achieve the metric?	Water use by conventional means (turfgrass, types of irrigation equipment) Reduce water consumption by 50% from conventional site design	Native/adaptive plants; water efficient irrigation systems 6.3.1.1 60% of area of improved landscape in bio-diverse planted in native or adaptive plants 6.3.1.2 Use hydrozoning with automatic sprinkler systems 6.3.1.3 Use smart irrigation controllers 35% of total water use devoted to landscaping.
	What standards or tools are required for the metric?	n/a	n/a

	Review Questions	Guiding Principles NC	ASHRAE Standard 189.1
Storm water		Employ design and construction strategies that reduce storm water runoff and discharge polluted water offsite. Per EISA Section 438, 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.	Given the required measures, storm water management and erosion control measures may meet the GP. Conform to the erosion and sedimentation control requirements of the most current version of the USEPA NPDES General Permit for Storm water Discharges From Construction Activities or local erosion and sedimentation control standards and codes whichever is more stringent and regardless of size of project. 10.3.2.1.2 Water Efficiency Plan for Operation
	What is the baseline or point of comparison?	n/a	n/a
	What is the range of requirements to achieve the metric?	n/a	n/a
	What standards or tools are required for the metric?	EISA Section 438	USEPA NPDES General Permit for Storm water Discharges
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.	No. Specifies requirements for Plumbing Fixtures and Fittings (6.3.2.1) WaterSense required in water closets and residential bathroom sinks. Water Sense not mentioned in conjunction with irrigation. Appliances have water use maximum (6.3.2.2).
	What standards or tools are required for the metric?	EPA WaterSense	n/a

	Review Questions	Guiding Principles NC	ASHRAE Standard 189.1
Energy Efficiency	Does the metric help a building meet a current Federal requirement?	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 use by 30 percent compared to the baseline building performance rating per the ANSI/ASHRAE/IESNA Standard 90.1-2007. For major renovations, reduce the energy use by 20 percent below pre-renovations 2003 baseline. Laboratory spaces may use the Labs21 Laboratory Modeling Guidelines. Use ENERGY STAR® and FEMP-designated Energy Efficient Products, where available.	Given the required measures, whole building performance targets may meet the GP. Both the prescriptive option and performance options are more stringent in areas of energy efficiency than the requirements of ANSI/ASHRAE/IES Standard 90.1-2010. This includes: 7.3.2 On-Site Renewable Energy Systems. 7.3.3 Energy Consumption Management. And all components of 7.4 and 7.5 Appendices A-C Prescriptive building envelope, continuous air barrier and equipment efficiency tables for 90.1 calculations Appendix D Performance option: modification of the 90.1 Energy Cost Budget method Note: The goal of Standard 189.1 was to achieve a 30% reduction in energy use over Standard 90.1-2007. Modeling by DOE labs confirmed the energy reductions in various building types and climate zones.
	What is the baseline or point of comparison?	ASHRAE 90.1-2007; Energy use in 2003	ANSI/ASHRAE/IES Standard 90.1-2010, modified for greater stringency
	What is the range of requirements to achieve the metric?	30%; 20%	n/a
	What standards or tools are required for the metric?	ASHRAE 90.1-2007	ANSI/ASHRAE/IES Standard 90.1-2010 modified for greater stringency
On-Site Renewable		Per the Energy Independence and Security Act (EISA) Section 523, meet at least 30% of the hot water demand through the installation of solar hot water heaters, when lifecycle cost effective. Per Executive Order 13423, implement renewable energy generation projects on agency property for agency use, when lifecycle cost effective.	Given the required measures, any renewable energy projects associated with the project would contribute to the GP; however, solar hot water is not specified in ASHRAE 189.1 so may not be considered. 7.3.2 Addressed On-Site Renewable Energy Systems. Building project design shall show allocated space and pathways for future installation of on-site renewable energy systems and associated infrastructure.
Energy	What is the baseline or point of comparison?	Total hot water demand	Annual energy production equivalent of not less than 6.0 kBtu/ft2 (20 kWh/m2) for single-story buildings and not less than 10.0 kBtu/ft2 (32 kWh/m2) multiplied by the total roof area in ft2 (m2) for all other buildings.
	What is the range of requirements to achieve the metric?	30%	n/a

	Review Questions	Guiding Principles NC	ASHRAE Standard 189.1
	Is on-site generation and purchases of green power treated differently?	Green power is not mentioned.	Yes. On-site renewable energy projects are required, except in instances where the site has low solar radiation (as defined in section 7.4.1.1). All exceptions require the purchase of RECs.
Measurements and Verification	building meet a current Federal requirement?	Per the Energy Policy Act of 2005 (EPAct) Section 103, install building level electricity meters in new major construction and renovation projects to track and continuously optimize performance. Per EISA Section 434, include equivalent meters for natural gas and steam, where natural gas and steam are used.	Yes. 7.3.3.1 Consumption Management. Measurement devices with remote communication capability shall be provided to collect energy consumption data for each energy supply source to the building, including gas, electricity, and district energy, that exceeds the thresholds
	What standards or tools are required for the metric?	EPAct 2005 Section 103; EISA Section 434	n/a
	Federal requirement?	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.	Yes. Section 10.3.2.1.3.2 Track and Access Energy Consumption requires for the development of a plan to track energy usage and performance.
	What standards or tools are required for the metric?	ENERGY STAR	ENERGY STAR Portfolio Manager

	Review Questions	Guiding Principles NC	ASHRAE Standard 189.1
Recycled Content	Does the metric help a building meet a current Federal requirement?	Per Section 6002 of the Resource Conservation and Recovery Act (RCRA), for EPA-designated products, specify products meeting or exceeding EPA's recycled content recommendations. For other products, specify materials with recycled content when practicable. 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="">.</www.epa.gov>	Given the required measures, the recycled content measures may meet the GP if the Prescriptive Option is chosen. 9.4.1.1 Recycled Content. The sum of post-consumer recycled content plus one-half of the pre-consumer recycled content shall constitute a minimum of 10%, based on cost, of the total materials in the building project. With other measures for steel and concrete.
	What is the baseline or point of comparison? What is the range of requirements to achieve the metric?	n/a n/a	Total cost of project materials. Minimum of 10%.
	What standards or tools are required for the metric?	EPA's Comprehensive Procurement Guideline	n/a
Biobased Content		products, specify products with the highest content level per USDA's biobased content recommendations. 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	Given the required measures, the biobased product measures may meet the GP if the Prescriptive Option is chosen. 9.4.1.3 Biobased Products. A minimum of 5% of building materials used, based on cost, shall be biobased products. Biobased products shall comply with the minimum biobased contents of the USDA's Designation of Biobased Items for Federal Procurement, contain the "USDA Certified Biobased Product" label, or be composed of solid wood, engineered wood, bamboo, wool, cotton, cork, agricultural fibers, or other biobased materials with at least 50% biobased content.
	What is the baseline or point of comparison?	n/a	Total cost of building materials.

	Review Questions	Guiding Principles NC	ASHRAE Standard 189.1
	What is the range of requirements to achieve the metric?	n/a	Minimum of 5%.
	What standards or tools are required for the metric?	USDA's Bio Preferred website	USDA's Designation of Biobased Items for Federal Procurement
Environmentally		specifiers in making environmentally preferable	No. The standard does not specifically call out Environmentally Preferable Products but does have some requirements that could work towards the GP. GP can partially be met through the Mandatory requirements, Prescriptive option 9.4 and/or the Performance option 9.5 if the human health impact category is chosen. 9.3.2 Extracting, Harvesting, and/or Manufacturing. 9.4.1.2 Regional Materials. 9.4.1.3 Biobased Products. 9.4.1.3 Wood Building Components.
Preferable Products	What is the baseline or point of comparison?	n/a	n/a
	What is the range of requirements to achieve the metric?	n/a	n/a
	What standards or tools are required for the metric?	Federal Green Construction Guide for Specifies	Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), USDA Certified Biobased Product" label, ISO/IEC Guide 59, or the WTO Technical Barriers to Trade (Wood Building Components)

	Review Questions	Guiding Principles NC	ASHRAE Standard 189.1
	Does the metric help a building meet a current Federal requirement?	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,	Yes. If requirements in the Mandatory Provisions of 9.3.1 Construction Waste Management are met the GP will be met. 9.3.1.1 Diversion. A minimum of 50% of nonhazardous construction and demolition waste material generated prior to the issuance of the final certificate of occupancy shall be diverted from disposal in landfills and incinerators by recycling and/or reuse. 9.3.4.1 Recyclables. There shall be an area that serves the entire building and is dedicated to the collection and storage of non-hazardous materials for recycling, including paper, corrugated cardboard, glass, plastics, and metals. The size and functionality of the recycling areas shall be coordinated with the anticipated collection services to maximize the effectiveness of the dedicated areas.
	What is the baseline or point of comparison? What is the range of requirements to achieve the metric?	Total non-hazardous construction, demolition and land clearing materials. n/a	Total nonhazardous construction and demolition waste material generated. n/a
Ozone Depleting Compounds		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 lifecycle impacts.	
	What is the baseline or point of comparison?		n/a
	What is the range of requirements to achieve the metric?	n/a	n/a

	Review Questions	Guiding Principles NC	ASHRAE Standard 189.1
		Montreal Protocol and Title VI of the Clean Air Act Amendments of 1990	n/a
Low-Emitting Materials	building meet a current Federal requirement?	Low-Emitting Materials. Specify materials and products with low pollutant emissions, including composite wood products, adhesives, sealants, interior paints and finishes, carpet systems, and furnishings.	Yes. The GP can be met through 8.4.2 Prescriptive Option or 8.5.2 Performance Option. 8.4.2 Materials. Reported emissions or VOC contents specified below shall be from a representative product sample and conducted with each product reformulation or at a minimum of every three years. Products certified under third-party certification programs as meeting the specific emission or VOC content requirements listed below are exempted from this three-year testing requirement but shall meet all the other requirements as listed below. 8.5.2 Materials. The emissions of all the materials listed below and used within the building (defined as inside of the weatherproofing system and applied onsite) shall be modeled for individual VOC concentrations. The sum of each individual VOC concentration from the materials listed below shall be shown to be in compliance with the limits as listed in Section 4.3 of the CDPH/EHLB/Standard Method V1.1 (commonly referred to as California Section 01350) and shall be compared to 100% of its corresponding listed limit. In addition, the modeling for the building shall include at a minimum the criteria listed in Normative Appendix F. Emissions of materials used for modeling VOC concentrations shall be obtained in accordance with the testing procedures of CDPH/EHLB/Standard Method V1.1 (commonly referred to as California Section 01350) unless otherwise noted below.
	What is the baseline or point of comparison?	n/a	CDPH/EHLB/Standard Method V1.1; SCAQMD Rules 1168, 1113; Green Seal Standards GS-36, GS-11; CARB Airborne Toxic Control Measure to Reduce Formaldehyde Emissions
	requirements to achieve the metric?	n/a	n/a
Indoor Environme			
Ventilation	building meet a current Federal requirement?	Meet ASHRAE Standard 55-2004, Thermal Environmental Conditions for Human Occupancy, including continuous humidity control within established ranges per climate zone, and ASHRAE Standard 62.1-2007, Ventilation for Acceptable Indoor Air Quality.	Yes. the GP will be met through Mandatory Requirement 8.3.1. 8.3.1 Indoor Air Quality. The building shall comply with Sections 4 through 7 of ANSI/ASHRAE Standard 62.1 with the following modifications and additions. When a requirement is provided below, this supersedes the requirements in ANSI/ASHRAE Standard 62.1. 8.3.1.1 Minimum Ventilation Rates. The Ventilation Rate Procedure of ANSI/ASHRAE Standard 62.1 shall be used.

	Review Questions	Guiding Principles NC	ASHRAE Standard 189.1	
	What standards or tools are required for the metric?	ASHRAE Standard 62.1-2007	ANSI/ASHRAE Standard 62.1-2010, modified for greater stringency.	
	building meet a current	Meet ASHRAE Standard 55-2004, Thermal Environmental Conditions for Human Occupancy, including continuous humidity control within established ranges per climate zone, and ASHRAE Standard 62.1-2007, Ventilation for Acceptable Indoor Air Quality.	Yes, the GP will be met through Mandatory Requirement 8.3.2 8.3.2 Thermal Environmental Conditions for Human Occupancy. The building shall be designed in compliance with ANSI/ASHRAE Standard 55-2010, Sections 6.1, "Design," and 6.2, "Documentation."	
Thermal Comfort	What is the baseline or point of comparison?		n/a	
	What is the range of requirements to achieve the metric?	n/a	n/a	
	What standards or tools are required for the metric?	ASHRAE Standard 55-2004	ANSI/ASHRAE Standard 55-2010	
Daylighting	building meet a current	Achieve a minimum 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.	The GP may be met based upon the requirement. Daylighting and sidelighting are addressed, just without mention of daylight factors. ASHRAE 189.1 metric will meet the lighting control requirements.	
Daynghang	point of comparison?	All space occupied for critical visual tasks	n/a	
	What is the range of requirements to achieve the metric?	75%	n/a	
Environmental Tobacco	Federal requirement?	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	Yes. ASHRAE 189.1 requirements meet the GP. 8.3.1.4 Environmental Tobacco Smoke a. Smoking shall not be allowed inside the building. Signage stating such shall be posted within 10 ft (3 m) of each building entrance. b. Any exterior designated smoking areas shall be located a minimum of 25 ft (7.5 m) away from building entrances, outdoor air intakes, and operable windows.	

	Review Questions	Guiding Principles NC	ASHRAE Standard 189.1
Moisture Control	building meet a current	Establish and implement a moisture control strategy for controlling moisture flows and condensation to prevent building damage, minimize mold contamination, and reduce health risks related to moisture.	Given the required measures, moisture control measures may meet the GP. The standard does not require a moisture control strategy, though its requirements may be enough to meet the intent. 10.3.1.5 Moisture Control. The following items to control moisture shall be implemented during construction: a. Materials stored onsite or materials installed that are absorptive shall be protected from moisture damage. b. Building construction materials that show visual evidence of biological growth due to the presence of moisture shall not be installed on the building project. 10.3.1.4 After construction ends, prior to occupancy and with all interior finishes installed, a post-construction, pre-occupancy building flush-out, or post-construction, pre-occupancy baseline IAQ monitoring shall be performedrelative humidity no higher than 60%.
Protect Indoor Air Quality During Construction	building meet a current	Follow the recommended approach of the Sheet Metal and Air Conditioning Contractor's National Association Indoor Air Quality Guidelines for Occupied Buildings under Construction, 2007. 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.	Given the required measures, air quality measures may meet the GP. Flushout may meet the 72 hours - though no specific length of time is mentioned. It does meet humidity requirements. No mention of guidelines for occupied buildings under construction. 10.3.1.4 After construction ends, prior to occupancy and with all interior finishes installed, a post-construction, pre-occupancy building flush-out, or post-construction, pre-occupancy baseline IAQ monitoring shall be performedrelative humidity no higher than 60%.
	What standards or tools are required for the metric?	n/a	For Post-Construction, Pre-Occupancy Baseline IAQ: Testing shall be done using protocols consistent with the USEPA Compendium of Methods for the Determination of Toxic Organic Pollutants in Ambient Air, TO-1, TO-11, TO-17 and ASTM Standard Method D 5197.
Not in Guiding Pr			
Acoustic	Does the metric help a building meet a current Federal requirement?	'	8.3.3 Acoustical Control 8.3.3.1 Exterior Sound 8.3.3.2 Interior Sound 8.3.3.3 Outdoor-Indoor Transmission Class and Sound Transmission Class.

	Review Questions	Guiding Principles NC	ASHRAE Standard 189.1
Building System Controls	Does the metric help a building meet a current Federal requirement?	No requirements in the GP.	6.3.1.3 Controls - irrigation 7.4.3.2 Ventilation Controls for Densely Occupied Spaces. 7.4.3.4 Zone Controls. 7.4.3.7 Variable-Speed Fan Control for Commercial Kitchen Hoods. Automatic Control of HVAC and Lights in Hotel/Motel Guest Rooms. 7.4.6.2 Occupancy Sensor Controls with Multi-Level Switching or Dimming 7.4.6.3 Automatic Controls for Egress and Security Lighting. 7.4.6.4 Occupancy Sensors 7.4.6.5 Controls for Exterior Sign Lighting. 10.3.1.1.3 Systems. The following systems, if included in the building project, shall have acceptance testing: a. Mechanical systems: heating, ventilating, air conditioning, IAQ, and refrigeration systems (mechanical and/or passive) and associated controls. b. Lighting systems: automatic daylighting controls, manual daylighting controls, occupancy sensing devices, and, automatic shut-off controls c. Fenestration Control Systems: Automatic controls for shading devices and dynamic glazing. 10.3.1.2.4 Systems. The following systems, if included in the building project, shall be commissioned: a. Heating, ventilating, air-conditioning, IAQ, and refrigeration systems (mechanical and/or passive) and associated controls. Control sequences to be verified for compliance with construction documentation as part of verification. b. Building envelope systems, components, and assemblies to verify the thermal and moisture integrity. c. Building envelope pressurization to confirm air-tightness if included in BOD requirements. d. Lighting systems. e. Fenestration control systems: Automatic controls for shading devices and dynamic glazing. f. Irrigation. g. Plumbing. h. Domestic and process water pumping and mixing systems. l. Service water heating systems. l. Service water heating systems. l. Service water heating systems. l. Energy measurement devices, as required in Section 6.3.3. l. Energy measurement devices, as required in Section 7.3.3.
Siting	Does the metric help a building meet a current Federal requirement?	No requirements in the GP.	5.3.1 Site Selection 5.3.2 Mitigation of Heat Island Effect 5.3.3 Reduction of Light Pollution (Note that this requirement is more stringent than the ASHRAE 90.1-2010 Standard) 5.3.4 Plants 5.3.5 Mitigation of Transportation Impacts

	Review Questions	Guiding Principles NC	ASHRAE Standard 189.1
			9.5 Performance Option - The LCI shall account for GHG emissions
Greenhouse Gas	building meet a current		
	Federal requirement?		

	Assumptions	In instances where a compliances requirement refers to other existing standards (e.g. ASHRAE 90.1 and 55), we assume that buildings comply with those standards and that the requirement for compliance is met by evidence of intent.
М	Measured	Measuring data is preferable, and something the Federal sector is already doing. Metered performance data is most common in energy and water; however, quantities of recycled materials, waste generation, and indoor air quality are also examples of measured performance. "Measured" is assigned to a metric if there is a way to measure actual performance post installation/occupancy and the documentation required that those measured numbers be provided to demonstrate conformance.
С	Calculation	Calculated performance serves as a proxy for measurements, and rely on industry standards and assumptions to estimate or project how a building or system will perform. In the absence of measured data, calculated performance provides useful, comparative valued that can be used to support design or operational decisions. "Calculated" is assigned when calculations or modeling are performed, but those calculations do not rely wholly upon measured numbers.
		Evidence of Intent is a useful proxy for documenting frameworks to support decision-making. When measurements and calculated estimates are unavailable, other existing evidence may be used as an indicator for a building's design or operation. For example, the presence of an Environmental Management System is a positive indicator that building operations will address commonly identified impacts. "Intent" occurs when the
I	Evidence of Intent	nature of the documentation requires only an assertion that the credit was performed.



Section 2:

Analysis of the Department of Veterans Affairs' Guiding Principles Compliance Assessment Program



MEMORANDUM

TO: Joni Teter, OFHPGB/GSA

CC: Judi Heerwagen, OFHPGB/GSA; Patrick Dale, OFHPGB/GSA;

Dan Jackson, LMI

From: Karen Hagberg, LMI

Date: July 11, 2012

Regarding: Evaluation of U.S. Department of Veterans Affairs Compliance Assessment

Tool

Introduction

The Green Building Initiative (GBI) is a nonprofit organization that offers "Green Globes" environmental assessment and certification programs for commercial buildings. In 2011, GBI developed a Guiding Principles (GPs) Compliance Assessment Program (CAP) for the Department of Veterans Affairs (VA) designed to help assess compliance with the federal Interagency Sustainability Working Group's GPs for sustainable existing buildings. The two major elements of the GP CAP are a compliance survey (PDF document)¹ and a third-party onsite assessment. GSA asked LMI to complete an evaluation of GBI's GP CAP to determine its effectiveness in helping to assess a building's compliance with the 27 green building federal requirements. LMI utilized the following to complete this evaluation:

- background information provided by GSA and on GBI's website;
- the GBI GP CAP survey;
- a phone conversation and e-mail correspondence with Messrs. Mark Lesher and Micah Thomas of GBI; and
- a phone conversation with Mr. John Park of the VA.

Overview of GBI's GP CAP Process

According to GBI's website,² the GP CAP process generally can be completed in 8 to 12 weeks and follows the steps below:

- 1. Complete a self-evaluation using GBI's GP's Compliance Assessment Survey³.
- 2. After returning the survey to GBI, a report is provided that outlines the self-evaluated results and preliminary compliance score.

¹ The GBI GP Compliance Assessment survey is currently a PDF document. However, it is our understanding that GBI plans to eventually make the survey an online tool.

² See http://www.thegbi.org/guiding-principles-compliance/guiding-principles-compliance.shtml.

³ This survey is proprietary to GBI. After a GP Compliance Assessment is ordered, GBI will provide the survey to the user.



- 3. GBI schedules an on-site assessment date for the third-party assessor⁴ to meet with all necessary agency personnel, review the compliance documentation, and inspect building characteristics.
- 4. The third-party assessor reviews the self-evaluated survey and preliminary report prior to the site visit.
- 5. An on-site assessment takes place with the assessor and pertinent building personnel. The assessment normally takes 4 to 6 hours depending on the number of buildings being assessed, the size of the building(s), and the availability of all required documentation.
- 6. The third-party assessor completes a GP's Compliance Assessment Survey based on the site assessment.
- 7. Within 2 to 4 weeks, the third-party assessor provides a finalized report. This report contains the final compliance score, rating, building designation, details of the on-site assessment, and recommendations for future improvement with the GP's.
- 8. A certificate of achievement is provided for the building(s) meeting the minimum compliance rating threshold. In addition, an all-weather plaque may be purchased with the corresponding rating logo depicting the building's accomplishment.⁵

The GBI website also provides a link to user instructions for the GP compliance assessment process, which guides the user through each step of the process. There are also example reports on GBI's website.

Evaluation of GBI's Guiding Principles Compliance Assessment Program

The GP CAP survey is broken down into five topic areas that match the GPs for existing buildings' main topic areas:

- 1. Employ Integrated Assessment, Operation, and Management Principles
- 2. Optimize Energy Performance
- 3. Protect and Conserve Water
- 4. Enhance Indoor Environmental Quality
- 5. Reduce Environmental Impact of Materials.

The survey has criteria within each topic area that match the GP text and metrics, with the exception of the GP topic regarding process water, which is not included in GBI's survey. According to Mr. Thomas of GBI, process water is not included because (1) it does not apply to a significant number of facilities and buildings; and (2) as currently written in the guidance document, this criterion is not measurable.

GBI's metrics align with the compliance methods identified for the GPs in Table ES. 7 within the Green Building Certification System Review (GBCSR) report. The GBI GP CAP survey criteria also appear to match the Energy Star Portfolio Manager (PM) Federal High Performance Sustainable Buildings Checklist. The verification documentation that is part of the GBI survey does not exactly match the verification documentation needed in the Energy Star PM Checklist, but they are similar. The GP requirement regarding process water also is not included in the Energy Star PM Checklist. A crosswalk of GP text mapped to survey criteria, as well as

⁴ GBI informed LMI that third-party assessors are contractors trained by GBI to complete these assessments.

⁵ See http://www.thegbi.org/guiding-principles-compliance/guiding-principles-compliance.shtml.



associated criteria from the Energy Star PM Checklist, is provided as Attachment A.

No new construction GPs or federal requirements outside of the existing building GPs are included in GBI's survey. For example, acoustics, building system controls, siting, and greenhouse gas are not covered. According to Mr. Thomas, GBI developed this CAP specifically for the existing building GPs because it saw a need and because of the VA's scope of work. The availability of the Energy Star PM Checklist was not a factor for developing the existing buildings program versus one for new construction. Mr. Thomas stated that GBI has the flexibility to revise the CAP in the future to conform to new GPs guidance or to include other federal requirements. He also stated that GBI is potentially interested in developing a new and separate GP program for new construction, which would require additional features and product infrastructure beyond the existing building version due to the duration and nature of new construction projects.

Single and Multiple Buildings

The GBI survey is currently a PDF document that allows data to be saved. Therefore, once data have been entered for one building, it can be used for other buildings as well. GBI informed LMI that it plans to eventually make this survey an online tool, but it is unsure of the timing. So in the future, there might be better options to upload data for multiple buildings. GBI also informed LMI that currently, only individual buildings can be certified. Multiple buildings on a campus can be evaluated during one assessment, but GBI currently does not have a campus-wide certification program.

Point Allocation

Each of the five GP topic areas has 20 available points for a total of 100. Each question within the five GP topic areas has different points available. Attachment A shows the points available for each GBI survey question. Questions can be answered *yes*, *no*, *in process*, or *not assessed*. Partial credit is awarded based on the answer and the verification documentation provided (e.g., partial credit is awarded if the answer is *in process*). According to Mr. Thomas, a technical committee developed the proprietary scoring methodology, so it is not publically available. The technical committee based the point allocation on the level of effort required to complete the requirement. For example, Commissioning is a larger effort worth five points, relative to Tobacco Smoke Control, which is worth two points.

Verification Documentation

For each GBI survey criterion, the user must "select the verification documentation and/or action that supports the claimed compliance status" from a pre-populated drop-down menu. Each criterion has different options for compliance verification. For example, for the criterion "Use a collaborative, integrated design and planning process with a dedicated, integrated team to develop and implement policy regarding sustainable operations and maintenance in all stages of a project," documentation options within the drop-down menu to verify the compliance status include the following:

- 1. A documented, integrated design and planning process (4 points)
- 2. A written policy in development (2 points).



Each question also provides a place to write in other compliance verification documentation not listed in the pre-populated drop-down menu. Guidance on compliance verification documentation needed for each question is provided in both a Pre-Assessment Checklist and Supplemental Guide, which can be obtained from GBI.

Scoring and Certification

Each building assessed for GP compliance receives a compliance score from 0 to 100 percent, based on points assigned against the 100-point scale. Each building meeting the minimum score of 40 percent receives a certified compliance rating from 2 to 5. The number earned corresponds to a range within the 100-point compliance rating scale (see Figure 1). Buildings scoring below 40 percent are issued a Certificate of Completion that designates the building as "Assessed." According to Mr. Thomas, 40 percent was chosen as the minimum threshold for a certified compliance rating because GBI wanted similarities with the Green Globes rating (which sets a minimum of 35 percent for compliance) and because a score below 40 percent indicates a lack of compliance with most GPs. Also, a rating gives agencies a gauge of their overall compliance level and allows them to compare themselves to other agencies using the program.

Figure 1. GBI's GP Compliance Rating Scale⁶

Figure 1. GBI's GP Compliance Rating Scale				
	Guiding Principles Compliance Rating Scale			
Compliance Score (%)	Compliance Logo & Rating	Building Attributes		
100%	GPC GPC	Meets total compliance to the Guiding Principles for Existing Buildings. A model for sustainable operations and the reduction of environmental impacts among federal government buildings.		
80% - 99%	GPC GPC	Achieves compliance to most Guiding Principles criteria, and serves as a leader in the sustainable operation of federal government buildings.		
60% - 79%	GPC GPC GINING	Demonstrates progress in reducing environmental impacts of the facility, but additional work is required to begin meeting compliance to the Guiding Principles.		
40% - 59%	GPC CERTIFIC 2 GPC	Demonstrates a basic level of awareness of the environmental impacts of the facility. Significant improvement opportunities remain for this building.		
0% - 39%	GPC ASSISTED	Assessed for sustainability; fails to meet minimum requirements to be Certified for Guiding Principles Compliance.		
	Not Certified			

⁶ Green Building Initiative, "Guiding Principles Compliance Rating System," http://www.thegbi.org/guiding-principles-compliance/order-guiding-principles-assessment.shtml.

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Resources Needed

GBI's website contains a price list that covers the different costs for the GP CAP (see Attachment B). The price includes one flat fee of \$500 for obtaining access to the survey and separate fees for the third-party assessment and assessor travel. As shown in Attachment B, prices for the third-party assessment are per building based on square footage. GBI's website has a place to "request a quote" for the assessment of individual or multiple buildings. Not included in GBI's fees are the costs for users to complete the survey and to prepare for and attend the on-site evaluation required for a rating. According to Mr. Park of the VA, if an agency is already using the Energy Star PM Checklist for existing buildings, no significant staff time is needed to complete this survey (VA conducts annual sustainable building surveys using the PM checklist). However, if an agency is not using the PM checklist, it will require hours to compile/enter the necessary information into the survey. Mr. Park stated that the first time he requested that individuals complete the survey, 70 percent of them completed it within three weeks. However, when the same individuals completed the survey for the second time, the turnaround was much quicker.

Mr. Thomas indicated that the amount of time needed to complete the survey is highly variable depending on several factors including the size and number of buildings and the availability of information and data, but estimated that it could take anywhere from a few hours to several days. He also stated that, on average, the on-site assessment takes approximately six hours per building. If the assessor is looking at multiple buildings on a campus, it might be quicker if there are policies applicable to an entire campus, but the assessor is still required to walk each individual building.

As previously mentioned, the GBI survey is currently a PDF document, so in terms of equipment and technology, only an Internet connection and Adobe Reader are required to complete this program.

Feedback from VA

The VA awarded a contract to GBI through a competitive procurement process to develop the GP CAP to specifically address buildings within the VA portfolio and the GPs. Because LEED and Green Globes do not align closely with the GPs, the VA needed a certification system for GP assessment. Mr. Park indicated that the VA used GBI's GP CAP last year to assess 100 VA buildings and it has awarded GBI 40 more buildings. The VA will award a new GP certification contract through a competitive procurement process for 60 additional buildings.

Mr. Park confirmed that the GBI GP CAP survey uses the Energy Star PM Checklist questions. He believes this is a major strength because completing the GBI survey does not require additional time if the user is already completing the Energy Star PM Checklist. Mr. Park sees other strengths as well: (1) it takes less time to obtain certification compared to other certification systems, (2) it is less expensive than other certification systems, and (3) it directly matches with the GPs.



One major weakness Mr. Park noted is that this program is only for existing buildings - there is no survey for new construction. However, he noted that VA is planning to hire a contractor to develop a similar checklist for new construction.

Conclusions

Based on our evaluation of GBI's GP CAP, it appears that this process is relatively useful and easy to use to gauge compliance with the GPs for existing buildings. The text and metrics within the survey match closely with the GPs and allow for a third-party assessor to verify compliance levels. In addition, this program is very easy to use and efficient when using the Energy Star PM Checklist, as questions and verification documentation are very similar, so staff resources spent completing the survey are minimal.

However, this program does not gauge compliance with the GPs for new construction. In addition, it does not allow one to show compliance with other federal requirements for both new construction and existing buildings such as acoustics, building system controls, siting, and greenhouse gas. However, Mr. Thomas stated that GBI has the flexibility to revise the CAP in the future, whether to conform to a new GPs guidance document or to include other federal requirements. He also stated that GBI is interested in potentially offering such a program for the GPs for new construction, which, if developed, would be a separate program.

Also, the GP requirement regarding process water is not included in GBI's GP CAP survey. According to Mr. Thomas, the GP CAP does not include process water because (1) it does not apply to a significant number of facilities and buildings; and (2) as currently written in the guidance document, this criterion is not measurable. He noted that if an update were made to the GPs for existing buildings, GBI would update and revise the GP CAP survey and methodology accordingly.



ATTACHMENT A

						Guiding Principle
Guiding Principles for Existing Buildings Topic	Guiding Principle Language for Existing Buildings	Associated Criteria in GBI Survey	Does representation of GPs in GBI survey meet language of current GPs?	Points Available in GBI Survey	Associated Criteria in Energy Star Portfolio Manager Federal High Performance Sustainable Buildings Checklist	Verification Method (As defined in Table ES.7 o the GBCSR report)
 Employ Integrated Assessment, Operation, a 	nd Management Principles (Guiding Principles)	Integrated 1. Use a collaborative, integrated design and				
Employ Integrated Assessment, Operation.	Use an integrated team to develop and implement policy	planning process with a dedicated, integrated team to develop and implement policy regarding sustainable operations and			Integrated 1. Use an integrated team to develop and implement policy regarding sustainable operations and	
and Management Principles	regarding sustainable operations and maintenance.	maintenance in all stages of a project.	Yes	4	maintenance.	Evidence of Intent
Employ Integrated Assessment, Operation,	Incorporate sustainable operations and maintenance practices within the appropriate Environmental Management System					
and Management Principles	(EMS) Assess existing condition and operational procedures of the	Included in Integrated 2.	Yes, included in Integrated 2.	N/A	Included in Integrated 2.	Evidence of Intent
Employ Integrated Assessment, Operation,	building and major building systems and identify areas for					
and Management Principles	improvement	Included in Commission 1.	Yes, included in Commission 1.	N/A	Included in Commission 1.	Evidence of Intent
		Integrated 2. Establish operational performance goals for			Integrated 2. Establish operational performance goals for	
	Establish operational performance goals for energy, water,	energy, water, material use and recycling, and indoor environmental quality. Ensure incorporation of these goals			energy, water, material use and recycling, and indoor environmental quality, and ensure incorporation of these goals	
Employ Integrated Assessment, Operation,	material use and recycling, and indoor environmental quality, and ensure incorporation of these goals throughout the	throughout the remaining life cycle of the building. Incorporate			throughout the remaining lifecycle of the building. Incorporate sustainable operations and maintenance practices within the	
and Management Principles	remaining lifecycle of the building	appropriate Environmental Management System (EMS).	Yes	4	appropriate Environmental Management System (EMS).	Evidence of Intent
	Incorporate a building management plan to ensure that operating decisions and tenant education are carried out with	Integrated 3. Incorporate a building management plan to ensure that operating decisions and tenant education are			Integrated 3. Incorporate a building management plan to ensure that operating decisions and tenant education are	
Employ Integrated Assessment, Operation,	regard to integrated, sustainable building operations and	carried out with regard to the integrated, sustainable building			carried out with regard to integrated, sustainable building	
and Management Principles	maintenance	operations and maintenance policies. Integrated 4. Augment building operations and maintenance	Yes	4	operations and maintenance. Integrated 4. Augment building operations and maintenance	Evidence of Intent
Employ Integrated Assessment, Operation, and Management Principles	Augment building operations and maintenance as needed using occupant feedback on work space satisfaction.	policies and procedures as needed using occupant feedback on work space satisfaction.	V		as needed using occupant feedback on work space satisfaction.	Evidence of Intent
and management i megaco		Commission 1. Assess existing condition and operational procedures of the building systems and identify areas for improvement. Employ recommissioning tallored to the size	100		Commission 1. Assess existing condition and operational procedures of the building and major building systems and identify areas for improvement. Employ recommissioning, tailored to the size and complexity of the building and its system components in order to ontimize and verify	E-rootioe of mon
	Employ recommissioning, tailored to the size and complexity of	and complexity of the building and its system components, in order to optimize and verify performance of fundamental			performance of fundamental building systems. Commissioning must be performed by an experienced	
	the building and its system components, in order to optimize and verify performance of fundamental building systems.	building systems. Commissioning must be performed by an			commissioning provider. When building commissioning has	
	Commissioning must be performed by an experienced commissioning provider. When building commissioning has	experienced commissioning provider. When building commissioning has been performed, the commissioning			been performed, the commissioning report, summary of actions taken, and schedule for recommissioning must be	
	been performed, the commissioning report, summary of actions taken, and schedule for recommissioning must be	report, summary of actions taken, and schedule for recommissioning must have been performed within four years			documented. Building recommissioning must have been	
	documented. In addition, meet the requirements of EISA 2007,	prior to reporting a building as meeting the Guiding Principles	Yes, but does not mention FEMP		performed within four years prior to reporting a building as meeting the Guiding Principles. Meet the requirements of	
Commissioning	Section 432 and associated FEMP guidance. Building recommissioning must have been performed within	and meet the requirements of EISA 2007, Section 432	guidance.	5	EISA 2007, Section 432.	Evidence of Intent
	four years prior to reporting a building as meeting the Guiding				Included in Commission 1.	Evidence of Intent
Commissioning I. Optimize Energy Performance	Principles.	Included in Commission 1.	Yes, included in Commission 1.	N/A	Included in Commission 1.	Evidence of Intent
	Energy Efficiency. 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%	Energy Efficiency 1. Use one of the following three options to measure energy efficiency performance. Comply with either Option 1, Option 2 or Option 3. - Option 1: Receive an ENERGY STAR® rating of 75 or higher. - Option 2: Reduce measured building energy use by 20%			Energy Efficiency 1. Use one of the following three options to measure energy efficiency performance. Comply with either Option 1, Option 2 or Option 3. - Option 1: Receive an ENERGY STAR® rating of 75 or higher. - 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	compared to building energy use in 2003 with quality energy use data.			compared to building energy use in 2003 or a year thereafter with quality energy use data	
	Option 3: Reduce energy use by 20% compared to the ASHRAE 90.1-2007 baseline building design if design	Option 3: Reduce energy use by 20% compared to the ASHRAE 90.1 2007 baseline building design if design	Yes, but does not mention		Option 3: Reduce energy use by 20% compared to the ASHRAE 90.1 2007 baseline building design if design	
Energy Efficiency	information is available	information is available	Labs21 Benchmarking tool.	5	information is available	Measurement
Energy Efficiency	Use ENERGY STAR® and FEMP-designated Energy Efficient	Energy Efficiency 2. Use ENERGY STAR and FEMP- designated Energy Efficient Products, where available.	Von		Energy Efficiency 2. Use ENERGY STAR and FEMP- designated Energy Efficient Products, where available.	Evidence of Intent
Energy Eniciency	Products, where available. Per Executive Order 13423, implement renewable energy	Renewable 1. Implement renewable energy generation	165	-	Renewable 1. Implement renewable energy generation	Lyiderice of litterit
On-Site Renewable Energy	generation projects on agency property for agency use, when lifecycle cost effective.	projects on agency property for agency use, when lifecycle cost effective.	Yes	4	projects on agency property for agency use, when lifecycle cost effective.	Evidence of Intent
Measurement and Verification	Per the Energy Policy Act of 2005 (EPAct2005) Section 103, install building level electricity meters to track and continuously optimize performance. Per the Energy Independence and Security Act (EISA) 2007, the utility meters must also include natural gas and steam, where natural gas and steam are used.	Measurement 1. Per the Energy Policy Act of 2005 (EPAct2005) Section 103, install building level electricity meters to track and continuously optimize performance. Per the Energy Independence and Security Act (EISA) 2007, the utility meters must also include natural gas and steam, where natural gas and steam are used.	Yes	3	cost effective. Measurement 1. Per the Energy Policy Act of 2005 (EPAct2005) Section 103, install building level electricity meters to track and continuously optimize performance. Per the Energy independence and Security Act (ESA) 2007, the utility meters must also include natural gas and steam, where natural gas and steam are used.	Evidence of Intent
Benchmarking	Compare annual performance data with previous years' performance data, preferably by entering annual performance data into the ENERGY STARSP portiolio Manager. For building and space types not available in ENERGY STARSP, use an equivalent benchmarking tool such as the Labs21 benchmarking tool for laboratory buildings.	Benchmarking 1. Compare annual performance data with previous years' performance data, preferably by entering annual performance data into the RENERGY STAR Portfolio Manager and/or Labs 21 for laboratories.	Yes	4	Benchmark 1. Compare annual performance data with previous years' performance data, preferably by entering annual performance data into the ENERGY STAR Portfolio Manager and/or Labs 21 for laboratories.	Measurement
n. Protect and Conserve Water					Indoor Water 1. Two options can be used to measure indoor	
Indoor Water	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, and the second potable water baseline calculated for the building. The water baseline flow 120% of the building. The water baseline flow Plumbing Codes 2006 or the international Plumbing Codes 2006 or the international Plumbing Codes 2006 from 1948 in 1861 of the United Plumbing Codes 2006 from the performance requirements. Or Plumbing Codes 2006 for the International Plumbing Codes 2006 for the International Plumbing Codes 2006 for the International Plumbing Codes 2006 for the performance requirements, or young compared to building water use in 2003 or a year.	Indoor Water 1. Use one of the following two options to measure indoor potable water use performance. Comply with either Option 1 for Option 1. 2000 potable water use optionation of Option 1. Reduce potable water use by 20% compared to a water baseline. Calculated for the building. The water baseline is 120% of the United provided in the state of the 150 potable in 150 pot	Yes	5	potable water use performance. Comply with either Option 1 or Option 2. - Option 1: Reduce potable water use by 20% compared to a water baseline. Calculated for the building. The water baseline is possible to be used to	Measurement
Outdoor Water	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, on the potable in the potable irrigation water use by 50% compared to measured implicit water data, or Coltino 3: Use no potable irrigation water.	outdoor. Water 1. Use or no of the following three sprions to measure audior possible water use performance. Comply with either Option 1, Option 2, or Option 3. Option 17. Beduce option between the Option 1, Option 2, or Option 3. Option 17. Reduce option legislation water use by 50% compared to conventional methods. Option 2. Reduce building related potable irrigation water use in 2005 or a year thereafter with quality water data. If orly one metic installed for the site, reduce the potable water use (indoor and water use in 2005 or a year thereafter buyer or a year thereafter or a year of the option option of the option of the option of the option op	Yes	5	Outdoor Water 1. Use one of the following three sprions to measure audion's profible water use performance: Comply with either Option 1, Option 2 or Option 3. Option 1: Reduce potable irrigation water use by 60%, compared to conventional methods. Option 2: Reduce building related potable irrigation water use by 60% compared to conventional methods. 9 year thereafter with qualify water data. If only one meter is a year thereafter with qualify water data. If only one meter is outdoor combined by at least 20% compared to building water use in 2003 or a year thereafter. Option 3: Use no publie irrigation water.	Calculation
Measurement of Water Use	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 qualify water data.	Included in Indoor Water 1 and Outdoor Water 1.	Included in Indoor Water 1 and Outdoor Water 1.	B****	Included in Indoor Water 1 and Outdoor Water 1.	Evidence of Intent
ACCOUNT HEIR OF TYGIC! USE	SOC III EOOS OF A YEAR CHEREAGER WITH QUALITY WATER DATA.	INCOMES AT ITHOUGH VY BIEF I BIND CHILDREN WAREI I.	OULOUI WATER 1.	n/A	moreocci il muoori vi ateri i anu Outdoor vivater 1.	Enderice or litterit

	Employ strategies that reduce storm water runoff and	Storm Water 1. Employ strategies that reduce storm water runoff and discharges of polluted water offsite. Per EISA		Storm Water 1. Employ strategies that reduce storm water runoff and discharges of polluted water offsite. Per EISA	
	discharges of polluted water offsite. Per EISA Section 438,	Section 438, where redevelopment affects site hydrology, use		Section 438, where redevelopment affects site hydrology, use	
	where redevelopment affects site hydrology, use site planning,	site planning, design, construction, and maintenance		site planning, design, construction, and maintenance	
	design, construction, and maintenance strategies to maintain	strategies to maintain hydrologic conditions during		strategies to maintain hydrologic conditions during	
	hydrologic conditions during development, or to restore	development, or to restore hydrologic conditions following		development, or to restore hydrologic conditions following	
Storm Water	hydrologic conditions following development, to the maximum extent that is technically feasible.	development, to the maximum extent that is technically feasible.	Yes	development, to the maximum extent that is technically 5 feasible.	Evidence of Intent
	Per EPAct 2005 Section 109, when potable water is used to				
Process Water	improve a building's energy efficiency, deploy lifecycle cost effective water conservation measures	No accorded accorded	No.	N/A No associated question.	Evidence of Intent
Process water		Water Products 1. Where available, use EPA's WaterSense	NO	Water Products 1. Where available, use EPA's WaterSense	Evidence of Intent
	Where available, use EPA's WaterSense-labeled products or	® labeled products or other water conserving products.		@ labeled products or other water conserving products.	
Water-Efficient Products	other water conserving products. Choose irrigation contractors	Choose irrigation contractors who are certified through a		Choose irrigation contractors who are certified through a	F
Water-Efficient Products W Enhance Indoor Environmental Quality	who are certified through a WaterSense-labeled program.	WaterSense-labeled program.	res	5 WaterSense-labeled program.	Evidence of Intent
Tr. Elitario ridor Elimonitaria addity		Ventilation 1. Meet ASHRAE Standard 55-2004 Thermal		Ventilation 1. Meet ASHRAE Standard 55-2004 Thermal	
	Meet ASHRAE Standard 55-2004 Thermal Environmental	Environmental Conditions for Human Occupancy and ASHRAE Standard 62.1-2007: Ventilation for Acceptable		Environmental Conditions for Human Occupancy and	
Ventilation and Thermal Comfort	Conditions for Human Occupancy and ASHRAE Standard 62.1- 2007: Ventilation for Acceptable Indoor Air Quality.	Indoor Air Quality.	Yes	ASHRAE Standard 62.1-2007: Ventilation for Acceptable 4 Indoor Air Quality.	Evidence of Intent
	·	Moisture 1. Provide policy and illustrate the use of an		Moisture 1. Provide policy and illustrate the use of an	
	Provide policy and illustrate the use of an appropriate moisture	appropriate moisture control strategy to prevent building		appropriate moisture control strategy to prevent building	
	control strategy to prevent building damage, minimize mold	damage, minimize mold contamination, and reduce health		damage, minimize mold contamination, and reduce health risks related to moisture. For facade repoyations. Dew Point	
	façade renovations, Dew Point analysis and a plan for cleanup	analysis and a plan for cleanup or infiltration of moisture into		analysis and a plan for cleanup or infiltration of moisture into	
Moisture Control	or infiltration of moisture into building materials are required.	building materials are required.	Yes	2 building materials are required.	Evidence of Intent
	Automated lighting controls (occupancy/vacancy sensors with	Lighting 1. Provide automated lighting controls (occupancy/vacancy sensors with manual-off capability) for		Lighting 1. Provide automated lighting controls (occupancy/vacancy sensors with manual-off capability) for	
	manual-off capability) are provided for appropriate spaces	appropriate spaces including restrooms, conference and		appropriate spaces including restrooms, conference and	
	including restrooms, conference and meeting rooms, employee	meeting rooms, employee lunch and break rooms, training		meeting rooms, employee lunch and break rooms, training	
Daylighting and Lighting Controls	lunch and break rooms, training classrooms, and offices.	classrooms, and offices.	Yes	3 classrooms, and offices.	Measurement
		Lighting 2. Two options can be used to meet additional		Lighting 2. Two options can be used to meet additional daylighting and lighting controls performance expectations:	
	Two options can be used to meet additional daylighting and	daylighting and lighting controls performance expectations:		Comply with either Option 1 or Option 2.	
	lighting controls performance expectations:	Comply with either Option 1 or Option 2.			
	 Option 1: Achieve a minimum daylight factor of 2 percent (excluding all direct sunlight penetration) in 50 percent of all 	Option 1: Achieve a minimum daylight factor of 2 percent (excluding all direct sunlight penetration) in 50 percent of all		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	space occupied for critical visual tasks.		space occupied for critical visual tasks.	
	Option 2: Provide occupant controlled lighting, allowing	Option 2: Provide occupant controlled lighting, allowing		Option 2: Provide occupant controlled lighting, allowing	
Contighting and Lighting Co-to-1-	adjustments to suit individual task needs, for 50% of regularly	adjustments to suit individual task needs, for 50% of regularly	V	adjustments to suit individual task needs, for 50% of regularly	Calculation
Daylighting and Lighting Controls	occupied spaces. Use low emitting materials for building modifications,	occupied spaces. Low Emit 1. Use low emitting materials for building	100	4 occupied spaces. Low Emit 1. Use low emitting materials for building	CarculdiiUli
	maintenance, and cleaning. In particular, specify the following	modifications, maintenance, and cleaning. In particular,		modifications, maintenance, and cleaning. In particular,	
	materials and products to have low pollutant emissions:	specify the following materials and products to have low		specify the following materials and products to have low	
	composite wood products, adhesives, sealants, interior paints and finishes, solvents, carpet systems, janitorial supplies, and	pollutant emissions: composite wood products, adhesives, sealants, interior paints and finishes, solvents, carpet		pollutant emissions: composite wood products, adhesives, sealants, interior paints and finishes, solvents, carpet	
ow-Emitting Materials	furnishings.	systems, janitorial supplies, and furnishings.	Yes	3 systems, janitorial supplies, and furnishings.	Evidence of Intent
	Use integrated pest management techniques as appropriate to	Pest 1. Use integrated pest management techniques as		Pest 1. Use integrated pest management techniques as	
ntegrated Pest Management	minimize pesticide usage. Use EPA-registered pesticides only when needed.	appropriate to minimize pesticide usage. Use EPA-registered pesticides only when needed.		appropriate to minimize pesticide usage. Use EPA-registered 2 pesticides only when needed.	Evidence of Intent
megratea i cot managamant	Prohibit smoking within the building and within 25 feet of all	Tobacco 1. Prohibit smoking within the building and within 25	Yes	Tobacco 1, Prohibit smoking within the building and within 25	
	Prohibit smoking within the building and within 25 feet of all building entrances, operable windows, and building ventilation	Tobacco 1. Prohibit smoking within the building and within 25 feet of all building entrances, operable windows, and building	Yes	Tobacco 1. Prohibit smoking within the building and within 25 feet of all building entrances, operable windows, and building	
Environmental Tobacco Smoke Control	Prohibit smoking within the building and within 25 feet of all	Tobacco 1. Prohibit smoking within the building and within 25	Yes	Tobacco 1, Prohibit smoking within the building and within 25	Evidence of Intent
Environmental Tobacco Smoke Control	Prohibit smoking within the building and within 25 feet of all building entrances, operable windows, and building ventilation lintakes.	Tobaco 1. Prohibit smoking within the building and within 25 feet of all building entrances, operable windows, and building yentilation intakes.	Yes	Tobacco 1. Prohibit smoking within the building and within 25 feet of all building entrances, operable windows, and building 2 ventilation intakes.	
Environmental Tobacco Smoke Control	Prohibit smoking within the building and within 25 feet of all building entrances, operable windows, and building ventilation intakes. Per section 6002 of RCRA for EPA-designated products, use	Tobacco 1. Prohibit smoking within the building and within 25 feet of all building entrances, operable windows, and building ventilation intakes. Recycle 1. Per section 6002 of RCRA for EPA-designated	Yes	Tobacco 1. Prohibit smoking within the building and within 25 feet of all building entrances, operable windows, and building 2 ventilation intakes. Recycle 1. Per section 6002 of RCRA, for EPA-designated	
Environmental Tobacco Smoke Control	Prohibit smoking within the building and within 25 feet of all building entrances, operable windows, and building ventilation intakes. Per section 6002 of RCRA, for EPA-designated products, use products meeting or exceeding EPA's recycled content	Tobacco 1. Prohibit smoking within the building and within 25 feet of all building entranes, operable windows, and building ventilation intakes. Recycle 1. Per section 6002 of RCRA, for EPA-designated products, meet or exceed EPA's recycled content	Yes	Tobacco 1. Prohibit smoking within the building and within 25 feet of all building entrances, operable windows, and building 2 ventilation intakes. Recycle 1. Per section 6002 of RCRA, for EPA-designated products, meet or exceed EPA's recycled content	
Environmental Tobacco Smoke Control	Prohibit smoking within the building and within 25 feet of all building entrances, operable windows, and building ventilation intakes. Per section 6002 of RCRA for EPA-designated products, use	Tobacco 1. Prohibit smoking within the building and within 25 feet of all building entrances, operable windows, and building ventilation intakes. Recycle 1. Per section 6002 of RCRA for EPA-designated	Yes	Tobacco 1. Prohibit smoking within the building and within 25 feet of all building entrances, operable windows, and building 2 ventilation intakes. Recycle 1. Per section 6002 of RCRA, for EPA-designated	
Environmental Tobacco Smoke Control	Probibli smoking within the building and within 25 feet of all building entrances, operable windows, and building ventilation intakes. Per section 6002 of RCRA, for EPA-designated products, use products meeting or exceeding EPA's recycled content recommendations for building modifications, maintenance, and cleaning. For other products, use materials with recycled content such that the sum of postconsumer recycled content	Tolasco 1. Prohibit smoking within the building and within 25 feet of all building entrances, operable windows, and building ventilation intakes. Recycle 1. Per section 6002 of RCRA, for EPA-designated products, meet or exceed EPA's recycled content recommendations for building modifications, maintenance, and cleaning. For other products, use materials with recycled content such that the sum of postconsumer recycled content	Yes	Tobacco 1. Prohibit smoking within the building and within 25 feet of all building entrances, operable windows, and building 2 ventilation intakes. Recycle 1. Per section 6002 of RCRA, for EPA-designated products, meet or exceed EPA's recycled content recommendations for building modifications, maintenance, and cleaning. For other products, use materials with recycled content such that the sum of postconsumer recycled content.	
Environmental Tobacco Smoke Control	Probibli smoking within the building and within 25 feet of all building entrances, operable windows, and building verillation intakes. Per section 9002 of RORA, for EPM-designated products, use products meeting or exceeding EPMx recycled context recommendations for building modifications, maintenances, and cleaning. For other products, use maintenances, and cleaning. For other products, use maintenances, and cleaning. For other products, use maintenia with recycled content such that the sum of postsonsumer recycled content puls one-half of the pre-consumer content constitutes at least	Tobacco 1. Prohibit smoking within the building and within 25 feet of all building entrances, operable windows, and building ventilation intakes. Recycle 1. Per section 6002 of RCRA, for EPA-designated products, meet or recorded EPA is reported content recommendations for building modifications, maintenance, and cleaning. 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	Yes	Tobacco 1. Prohibit smoking within the building and within 25 feet of all building entrances, operable windows, and building 2 ventilation intakes. Recycle 1. Per section 6002 of RCRA, for EPA-designated products, meet or exceed EPA's recycled content recommendations for building modifications, maintenance, and cleaning, For other products, use materials with recycled content such that the sum of postconsumer recycled content such that the sum of postconsumer recycled content plus one-half of the pre-consumer content constitutes at least.	
Environmental Tobacco Smoke Control	Probibli smoking within the building and within 25 feet of all building entrances, operable windows, and building ventilation intakes. Per section 6002 of RCRA for EPA-designated products, use products meeting or exceeding EPA's recycled content recommendations for building modifications, maintenance, and cleaning For other products, use remaints with recycled content such that the sum of postsonaumer recycled content such that the sum of postsonaumer recycled content (VM) (based on cost or weight) of the foliations.	Tobacco 1. Prohibit smoking within the building and within 25 feet of all building entrances, operable windows, and building ventilation intakes. Recycle 1. Per section 6002 of RCRA, for EPA-designated products, meet or exceed EPA's recycled content recommendations for building modifications, maintenance, and clearing. For other products, use materials with recycled content such that the sum of poststonsumer recycled content 10% (based on cost or weight) of the total value of the least.	Yes	Tobacco 1. Prohibit smoking within the building and within 25 feet of all building entress, operable windows, and building 2 ventilation intakes. Recycle 1. Per section 6002 of RCRA, for EPA-designated products, meet or exceed EPA's recycled content recommendations for building modifications, maintenance, and cleaning, For other products, use materials with recycled content such that the sum of post-consumer recycled content 100f, building modifications are supported to the 100f, building modifications of the 100f, building modifications with the 100f, building modifications are supported to 100f, building modifications with the 100f, building modification and 100f, building modifications with 100f, building modifications with 100f, building modifications and 100f, building modifications with 100f, building mo	
Environmental Tobacco Smoke Control	Probibli smoking within the building and within 25 feet of all building entrances, operable windows, and building ventilation intakes. Per section 6002 of RCRA for EPA-designated products, use products meeting or exceeding EPA's recycled content recommendations for building modifications, maintenance, and cleaning. For other products, use mentals with recycled content such that the sum of postconsumer recycled	Tobacco 1. Prohibit smoking within the building and within 25 feet of all building entrances, operable windows, and building ventilation intakes. Recycle 1. Per section 6002 of RCRA, for EPA-designated products, meet or exceed EPA's recycled content recommendations for building modifications, maintenance, and cleaning. Er other products, use materials with recycled content such that the sum of postsonsumer recycled content plus one-half of the pre-consumer content constitutes at least materials in the project. If EPA-designated products meet performance requirements and are available at a reasonable performance requirements and are available at a reasonable.	Yes	Tobacco 1. Prohibit smoking within the building and within 25 feet of all building entroses, operable windows, and building 2 ventilation intributes. Recycle 1. Per section 6002 of RCRA, for EPA-designated products, meet or exceed EPA's recycled content recommendations for building modifications, maintenance, and cleaning. 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 and all the project. If EPA-designated products meet performance requirements and are available at a reasonable at a reasonable	
Environmental Tobacco Smoke Control	Probibli smoking within the building and within 25 feet of all building entrances, operable windows, and building ventilation intakes. Per section 6002 of RCRA, for EPA-designated products, use products meeting or exceeding EPA's recycled content recommendations for building modifications, maintenance, and cleaning. For other products, use materials with recycled content such that the sum of postconnumer recycled content such such such such such such such such	Tobacco 1. Prohibit smoking within the building and within 25 feet of all building entrances, operable windows, and building ventilation intakes. Recycle 1. Per section 6002 of RCRA, for EPA-designated products, meet or exceed EPA's recycled content contendations for building modifications, maintenance, and cleaning. For other products, use materials with recycle and cleaning. For other products, use materials with recycle and cleaning. For other products, use materials with recycle places one-half of the pre-consumer continues at least 10% (based on cost or weight) of the total value of the materials in the project. If EPA-designated products meet performance requirements and are available at a reasonable cost, a preference for purchasing them shall be included in all	Yes	Tobacco 1. Prohibit smoking within the building and within 25 feet of all building entrances, operable windows, and building 2 ventilation intakes. Recycle 1. Per section 6002 of RCRA, for EPA-designated products, meet or exceed EPA's recycled content secommendations for building modifications, maintenance, and cleaning. For other products, use materials with recycled and cleaning. For other products, use materials with recycled plus one-half of the pre-reconsumer content constitutes at less 10% (based on cost or weight) of the total value of the materials in the project. IEPA-designated products meet performance requirements and are available at a reasonable cost, a preference for protraining them shall be included in all	
Environmental Tobacco Smoke Control	Probibli smoking within the building and within 25 feet of all building entrances, operable windows, and building ventilation intakes. Per section 6002 of RCRA for EPA-designated products, use products meeting or exceeding EPA's recycled content recommendations for building modifications, maintenance, and cleaning. For other products, use mentalia with recycled content such that the sum of postsonaumer excyled content such that the sum of postsonaumer excyled content such that the sum of postsonaumer excyled contents such that the sum of postsonaumer excyled contents of the second sum of the second	Tobacco 1. Prohibit smoking within the building and within 25 feet of all building entrances, operable windows, and building ventilation intakes. Recycle 1. Per section 6002 of RCRA, for EPA-designated productis, meet or exceed EPA's morpoled content recommendations for building modifications, maintenance, and cleaning. 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% cleased on cost or weightj of the total value of the materials in the project. If EPA-designated products materials in the project. If EPA-designated products materials in the project. If EPA-designated products metable cost, a preference for purchasing them shall be included in all solicitation releavent to construction, operation, maintenance of	Yes	Tobacco 1. Prohibit smoking within the building and within 25 feet of all building entress, operable windows, and building 2 ventilation intakes. Recycle 1. Per section 5002 of RCRA, for EPA-designated products, meet or exceed EPA's recycled content recommendations for building modifications, maintenance, and cleaning, For other products, use materials with recycled 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. If EPA-designated products meet performance requirements and are available at a reasonable cost, a preference for purchasing them shall be included in all old side in the building. EPA's procede content products.	
Environmental Tobacco Smoke Control	Probibli smoking within the building and within 25 feet of all building entrances, operable windows, and building ventilation intakes. Per section 6002 of RCRA for EPA-designated products, use products meeting or exceeding EPA's recycled content recommendations for building modifications, maintenance, and cleaning. For other products, use mentalia with recycled content such that the sum of postsonaumer excyled content such that the sum of postsonaumer excyled content such that the sum of postsonaumer excyled contents such that the sum of postsonaumer excyled contents of the second sum of the second	Tobacco 1. Prohibit smoking within the building and within 25 feet of all building entrances, operable windows, and building ventilation intakes. Recycle 1. Per section 6002 of RCRA, for EPA-designated productis, meet or exceed EPA's recycled content recommendations for building modifications, maintenance, and cleaning. Er other products, use materials with recycled content such that the sum of postconsumer recycled content such that the sum of postconsumer recycled content by some-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. If EPA-designated products meet performance requirements and are available at a reasonable content of the production of the pr	Yes	Tobacco 1. Prohibit smoking within the building and within 25 feet of all building entress, operable windows, and building 2 ventilation intakes. Recycle 1. Per section 5002 of RCRA, for EPA-designated products, meet or exceed EPA's recycled content recommendations for building modifications, maintenance, and cleaning, For other products, use materials with recycled 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. If EPA-designated products meet performance requirements and are available at a reasonable cost, a preference for purchasing them shall be included in all old side in the building. EPA's procede content products.	
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M	Measured	Measuring data is preferable, and something the Federal sector is already doing. Metered performance data is most common in energy and water; however, quantities of recycled materials, waste generation, and indoor air quality are also examples of measured performance. "Measured" is assigned to a metric if there is a way to measure actual performance post installation/occupancy and the documentation required that those measured numbers be provided to demonstrate conformance.
С	Calculation	Calculated performance serves as a proxy for measurements, and rely on industry standards and assumptions to estimate or project how a building or system will perform. In the absence of measured data, calculated performance provides useful, comparative valued that can be used to support design or operational decisions. "Calculated" is assigned when calculations or modeling are performed, but those calculations do not rely wholly upon measured numbers.
		Evidence of Intent is a useful proxy for documenting frameworks to support decision-making. When measurements and calculated estimates are unavailable, other existing evidence may be used as an indicator for a building's design or operation. For example, the presence of an Environmental Management System is a positive indicator that building operations will address commonly identified impacts. "Intent" occurs when the nature of the documentation requires only an assertion that the
I	Evidence of Intent	credit was performed.



ATTACHMENT B



Guiding Principles Compliance 2012 Price List

	Principles Comp vey & Third-Par			ngs	
Guiding Principles Compliance Su Project Registration, Self-Evaluation Report (Single Assessment/Certifica	survey (PDF form), and Self-Evalua	ition	\$500	per building
Guiding Principles Compliance The Price Per Building Based on Building			upied)		
Individual Building or Campus < 100,000 SF					
Individual Building or First/Primary Campus Building ²	\$5,0	000	\$0.030/SF \$15,000		
Second/Subsequent Campus Building ³	\$3,000	\$4,000	\$5,000		\$6,000
<u> </u>	g Square Footage < 100,000 SF	(Enclosed or Occ 100,000 to < 200,000 SF	upied) 200,0 < 500,0		500,000+ SF
Price Per Building Based on Building Individual Building or Campus	, ,	100,000 to	200,0		500,000+ SF
Individual Building or First/Primary Campus Building ² ⁴	\$4,000 \$0.020/SF \$10,000			\$10,000	
Second/Subsequent Campus Building 3 4	\$2,000	\$3,000	\$4,0	000	\$5,000
Assessor Travel Expenses 16 (Mandatory for all on-site assessments)					
Expediting Fee 7	\$2,500 regardles	ss of square footag	ge		
Appeal Fee 9	\$1,000 one-time	flat fee			
Optional Order Entry Fee (GBI personnel enter orders for a campus/group of buildings) 10 11	\$500 per campus/group order (<10 buildings per campus/group) 10 \$1,000 per campus/group order (10-50 buildings) 10				



Guiding Principles Compliance 2012 Price List

Available Discounts 10	Discount Amount
Federal Agency – New Customer, Volume Discount ⁵ Applicable to Federal Agencies that purchase GP Compliance Third-Party Assessment/Certification for 25 or more buildings for the first time	\$2,000 one-time fee discount

Guiding Principles Compliance Certification Recognition Items	Price Each
Guiding Principles Compliance 16x16 Certification Plaque (includes shipping)	\$785
Certificate (included with Assessment/Certification)	N/C

Notes for Guiding Principles Compliance

- 1. Purchase of project registration and self-evaluation survey/report, an on-site assessment, and assessor travel fees are required for each building as part of the third-party Guiding Principles Compliance assessment.
- 2. Pricing category applies to an individual building and to the first and primary (largest) building on a campus if multiple buildings are being assessed. Pricing for the first building on the campus is based on the size of the largest and primary campus building irrespective of whether it is being assessed for GP Compliance or not.
- 3. Pricing category applies ONLY to buildings that are 1) the second and subsequent buildings on a campus 2) are colocated as a campus (in close proximity), 3) share substantial elements of GP assessments with the first and primary campus building, and 4) have the site visit performed simultaneously with the site visit for the first and primary campus building. GBI determines applicability in its sole discretion.
- 4. Clients must order a Green Globes CIEB/CIEB Healthcare subscription, Green Globes third-party assessment, assessor travel fee selection, and all other required elements of the Green Globes CIEB third-party certification in order to be able to order the Supplemental Guiding Principles Compliance Third-Party Assessment. Both items must be ordered at the same time and paid in a single transaction. GBI determines applicability in its sole discretion.
- 5. When a single Federal Government agency purchases 25 or more Guiding Principles Compliance third-party assessments in a single transaction, GBI will discount \$2,000 from the total amount payable and due. Exclusive discount. One time use per organization. GBI determines applicability in its sole discretion.
- 6. Buildings located outside continental 48 states (AK, HI, or US territories) must select to pay actual expenses +20% for Assessor travel expenses (flat fee may not be used).
- 7. Applicable if customer requests and GBI performs assessment within 4 weeks of order/payment.
- 8. Payment required prior to GBI processing a customer appeal for final report and score/rating. Also required for a customer-requested update to a GBI-approved preliminary report or formal appeal of Assessor's updated report if the cause for report amendment was the result of client action/inaction.
- 9. GBI determines applicability in its sole discretion.
- 10. This service is optional. GBI personnel will enter the client orders online for a campus/group of buildings for the indicated fee. All buildings for group order entry must a) be ordered at one time, b) have common contract terms, and c) have common payment arrangements. Pricing is per campus/group with a maximum of 50 buildings per order entry fee.



Section 3:

Analysis of the General Services Administration's Sustainable Operations and Maintenance Program"

GSA is implementing sustainable operations and maintenance practices in its portfolio of owned buildings to increase environmental efficiency, reduce costs and comply with federal requirements included in the Guiding Principles for Sustainable Existing Buildings. Using the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) Volume Program for Operations and Maintenance as a framework, GSA has developed standardized procedures for implementing no and low cost practices that promote the efficient use of natural resources and enhance indoor environmental quality. To meet the intent of the Guiding Principles, documentation of building performance is based on GSA operational policies and LEED for Existing Buildings v2009 (LEED EB) metrics. GSA's approach also includes a training program for property management teams covering both the implementation and documentation of building performance. Furthermore, a quality control process is in place to verify that performance requirements have been met. The Program is supported by a web-enabled tool that allows for streamlining of data collection, while providing dashboard capability that displays portfolio level progress and key performance metrics. GSA's approach allows for buildings within the agency's portfolio to verify compliance with the Guiding Principles, and, where appropriate, pursue LEED EB certification through the LEED Volume for Operations and Maintenance. Further details on key aspects of GSA's approach are provided below.

Standardized procedures and documentation

GSA's approach provides a set of uniform, consistent practices and standards that enable GSA property managers to gauge building performance as it relates to the Guiding Principles for Sustainable Existing Buildings. Using the LEED Volume for Operations and Maintenance program as a framework, GSA developed standard operations and maintenance practices and streamlined documentation requirements to validate compliance with the Guiding Principles and pursue certification, as appropriate. As a starting point, each of the Guiding Principles for Sustainable Existing Buildings was mapped to one or more credits under the LEED EB rating system. The documentation and performance requirements were then further refined to reflect applicable federal mandates, regulations and GSA operational policies. The Guiding Principles to LEED EB crosswalk can be found on page 3.

Training

Implementation of sustainable operations and maintenance practices and documentation of performance is led by the individual building management teams. To this end, GSA developed training modules related to each of the LEED EB credits. This education plan was designed not only to document compliance with the Guiding Principles, but also to build capacity within the organization to achieve increasing levels of environmental and operational performance.

Quality Control

Quality control mechanisms are in place to verify that performance requirements have been met. The approach includes four levels of documentation, approval and quality control.

- Building management teams receive training on each LEED credit and how to document and implement credit requirements.
- Building management team members review all documentation for correctness, implementation, and accuracy at the facility level.
- Regional Sustainability Subject Matter Experts (SMEs) review and approve the documentation developed by facility teams, and support the facility teams during the LEED EB pre-performance and performance periods.
- SMEs at the national level perform audits on a representative sample of submissions and support both facility and regional team members through the pre-performance and performance periods.

For properties pursuing LEED EB certification, USGBC performs an audit of a representative sample of certification applications.

Web-Based Tool

GSA's Program is supported by a web-enabled tool that allows for streamlining of data collection, while providing a dashboard that will allow viewing of portfolio level progress and include key metrics and performance indicators critical to GSA business requirements. The tool supports all program elements, including:

Training webinars

GSA Sustainable Operations & Maintenance Program

- Data gathering, sample reports, reference documents, policies
- Dashboard reporting
- Quality control process
- Functionality to submit certification applications to USGBC using LEED Automation
- Supports ongoing tracking of operational performance
- Data analysis

Guiding Principles to LEED EB Crosswalk

	Guiding Princip	les Summary Definitions	
Guiding Principle & Category	Guiding Principle Element	Description	Reference Credits
mploy Integrated Assessment, Operations	& Management Principles		
Commissioning	Commissioning	Complete recommissioning to optimize and verify performance of fundamental building systems.	EAc2.1 - EAc2.3
	Internated 4. Team Beats	Establish and anciptain an interest of particular and	DIES
	Integrated 1 - Team Roster	Establish and maintain an integrated project team.	BIF2
Integrated Assessment, Operation,	Integrated 2 - Purchasing, Recycle, IEQ, Water and Energy	Establish operational goals for energy, water, material use and recycling, and indoor environmental quality and ensure the incoporation of these goals throughout the life of the building.	MRp1 - MRp2 -EQc1.1 WEp1 & WEc2 EAp1
and Management			
	Integrated 3 - Tenant Education	Develop and maintain a program to engage and educate building tenants on the building's sustainability efforts.	IOc1.1 - EAp1
	integrated 5 Tenant Education	saliang tenants on the saliang stastaniashity enois.	100211 27491
	Integrated 4 - Occupant Feedback	Augment building operations and maintenance as needed using occupant feedback on work space satisfaction.	EQc2.1
nhance Indoor Environmental Quality			
	Daylighting and Controls, Lighting 1 - Partial Lighting Control	Provide sustainable lighting levels to building occupants.	EAc3.1
Daylighting and Lighting Controls	Daylighting and Controls, Lighting 2 - Occupant Control	Provide occupant controlled lighting for 50% of regularly occupied spaces.	EQc2.2
Integrated Pest Management	Integrated Pest Management - Interior & Exterior	Use integrated pest management techniques as appropriate to minimize pesticide usage. Use EPA-registered pesticides only when needed.	EQc3.6 SSc3
Low-Emitting Materials	Low-Emitting Materials	Use environmentally friendly products for building modifications, maintenance, and cleaning. Specify products and materials that have low pollutant emissions.	<u>EQc1.1</u>
Moisture Control	Moisture Control	Employ a moisture control strategy to prevent building damage, minimize mold contamination, and reduce health risks.	<u>EQc1.1</u>
nvironmental Tobacco Smoke Control	Tobacco Smoke Control	Prohibit smoking within 25 feet of the building entrances, operable windows, and building intakes.	EQp2
Ventilation & Thermal Comfort	Ventilation & Thermal Comfort	Confirm the building meets ASHRAE 55-2004: Thermal Environmental Conditions for Human Occupancy and ASHRAE 62.1-2007: Ventilation for Acceptable Indoor Air Quality.	EQp1 EQc2.3

GSA Sustainable Operations & Maintenance Program

	Guiding Princip	oles Summary Definitions	
Guiding Principle & Category	Guiding Principle Element	Description	Reference Credits
Optimize Energy Performance			
Benchmarking	Benchmarking	Using Energy Star's Portfolio Manager or equivalent tools, track and compare building performance to previous years' data.	EAp2, EAc1 & EAc6
		5 6 1 1750	
Energy Efficiency 1 - 4 Points Minimum	Energy Efficiency 1 - 4 Points Minimum	Achieve an Energy Star score rating of at least 75 OR reduce energy use by 20% compared to 2003 usage OR reduce energy use by 20% compared to ASHRAE 90.1-2007.	EAp2, EAc1 & EAc6
Energy Efficiency 2 - ENERGY STAR & FEMP Products	Energy Efficiency 2 - ENERGY STAR & FEMP Products	Use energy efficient and FEMP-designated products when possible.	MRp1
Measurement & Verification	Measurement & Verification	Install and callibrate building level energy meters, including those that measure natural gas and stream, to track performance	EAp2, EAc1 & EAc6
On-Site Renewable Energy	Onsite Renewable Energy	Implement onsite renewable energy projects, when lifecycle cost effective.	EAc4
Protect and Conserve Water			
Indoor Water		Reduce potable water usage by 20% compared to the baseline established by the Uniform Plumbing Codes 2006 or the International Plumbing Codes 2006 OR compared to the	
	Indoor Water 1 - 20 % Reduction	building's water usage in 2003 or later.	WEp1 & WEc2
Outdoor Water 2	Outdoor Water 2 - 50 % Reduction	Reduce potable irrigation water use by 50% compared to conventional methods OR measured irrigation water use in 2003 or later OR use no potable irrigation water	WEc3
	Storm Water (Option One)	Employ strategies that reduce storm water runoff and discharges of polluted water offsite.	SSc2 SSc6
Measurement of Water Use			
	Storm Mater (Ontion Two)	Employ strategies that reduce storm water runoff and	SSc2 SSc3 SSc6
	Storm Water (Option Two)	discharges of polluted water offsite.	5502 5503 5506
Water-Efficient Products	Water Efficient Products 1 - Water Sense	Ensure the use of WaterSense-labeled and other water-efficient products when possible.	WEp1 & WEc2
Reduce Environmental Impact of Materials		Eliminate or plan for the phase out of the use of CFC	54 20 54 5
Ozone Depleting Compounds	Ozone Depleting Compounds	refrigerants .	EAp3 & EAc5
· I	Ozone Depleting Compounds	·	EAp3 & EAC5
· I		Ensure the use of products containing recycled content, in accordance with EPA's CPG recycled content requirements	
	Ozone Depleting Compounds Recycled Content	refrigerants . Ensure the use of products containing recycled content, in	MRp1
Ozone Depleting Compounds		Ensure the use of products containing recycled content, in accordance with EPA's CPG recycled content requirements	