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Green Building Advisory Committee

Advice Letter:

Strategic Portfolio Planning for

Sustainability, Resilience, and Footprint Consolidation

TO: KEVIN KAMPSCHROER, CHIEF SUSTAINABILITY OFFICER, GSA

FROM: GSA GREEN BUILDING ADVISORY COMMITTEE

DATE: July 8, 2016

The following recommendations were developed by the Portfolio Prioritization Task Group of GSA's Green Building Advisory Committee (hereafter "the Committee") and accepted by the full Committee at its meeting on April 28, 2016.

INTRODUCTION

Problem & solution statement:

Federal mandates for capital facility assets establish objectives for sustainability (such as reductions in greenhouse gas emissions, energy and water use), improved facility space utilization (including facility consolidation and disposition of underutilized assets), and resilience (such as the ability to adapt to climate change and other impacts over time). These responsibilities are often parceled out to different organizational components within the Federal agencies and, as a result, may be implemented inefficiently or inconsistently on a project-by-project basis. As a result, it is often difficult to achieve significant progress on Federal government-wide goals to meet these objectives. While Federal agencies have many green buildings to showcase, they could achieve much greater efficiencies and success through more consistent portfolio-wide strategies.

Strategically integrating these objectives and proactively incorporating them into agency portfolio planning and management processes from concept stage throughout project implementation can provide significant economic and resource efficiencies, improve consistency across projects and agencies, and accelerate Federal Government progress in achieving these goals. This integration can take advantage of the synergies

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among the objectives of sustainability, resilience, and effective space utilization, while effectively addressing geographic, regional, environmental, and mission objectives.

The goal of these recommendations is to establish an “integrative portfolio management” approach, specifically to:

- Promote early and on-going cooperation and coordination among federal agency planners, project managers, sustainability specialists, climate change adaptation and resilience experts, design professionals, portfolio managers, financial managers, and other key professionals, such that these goals of effective space utilization, sustainability, and resilience become integral components of Federal planning, project design and development, and ultimately, project delivery;
- Identify and implement strategies, tools, and advanced practices to more effectively and cost-efficiently meet sustainability, resilience, and space utilization needs within long term coordinated planning visions and processes.

Expected Benefits

The recent Executive Order (EO 13693) states, “Federal leadership in energy, environmental water, fleet, buildings, and acquisition management will continue to drive national greenhouse gas reductions and support preparations for the impacts of climate change.” In addition, the Office of Management and Budget (OMB) recently updated OMB Circular A-11 (*Preparation, Submission, and Execution of the Budget*), particularly “compliance with green building requirements in the Federal Real Property Profile, to comply with Executive Order 13653, Preparing the United States for the Impact of Climate Change, and to be consistent with agency-approved Climate Adaptation Plans” (Section 31.9).¹

In February 2016, the Council on Environmental Quality released the revised *Guiding Principles for Sustainable Federal Buildings and Associated Instructions*, which “reflect the evolution of sustainable building design, construction, and operating practices since 2008, incorporate other building-related E.O. 13693 requirements...[and] include climate resilience in building design, construction, and operations, and protect Federal facilities investments from the potential impacts of climate change.”²

¹ The entire Circular A-11 may be found at https://www.whitehouse.gov/omb/circulars_a11_current_year_a11_toc A summary of recent changes is available at

https://www.whitehouse.gov/sites/default/files/omb/assets/a11_current_year/summary.pdf

²https://www.whitehouse.gov/sites/default/files/docs/guiding_principles_for_sustainable_federal_buildings_and_associated_instructions_february_2016.pdf

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Therefore, as mandated by EO 13693 and other recent legislative and executive actions, the US Federal Government has been directed to improve the performance of its capital facility assets to enable economic opportunity and environmental regeneration. These requirements are intended to enhance the health, safety, and well being of US citizens during normal and extreme conditions.

Actions taken to accomplish these goals will improve the efficiency and effectiveness of Federal Government investments in built facility assets. Coordinating action to capitalize on the synergistic and complementary nature of strategies to simultaneously address sustainability, resilience, and footprint consolidation objectives will reduce cost, streamline project delivery, and reduce the risk of adopting strategies with counterproductive unintended consequences.

State of Knowledge and Practice: GBAC/FFC Workshops

The Green Building Advisory Committee and the Federal Facilities Council³ held two workshops during 2015 on “Strategically Incorporating Sustainability, Resilience, and Footprint Consolidation in Portfolio Planning.” The objectives of the workshops were to examine current effective practices in the convergence of planning for sustainability, resilience, and facility utilization; discuss current and emerging strategies, techniques, and tools to improve the portfolio-wide prioritization of investments in built facility assets; and identify specific research, design, development, demonstration, and deployment needs to rapidly improve the prioritization of investments in built facility assets to meet high performance requirements under normal and extreme conditions.

The first workshop (September 14, 2015) focused on current advances in portfolio management in government, private organizations, and nonprofit institutions. These advances included new and emerging planning methods, tools, and actions that organizations and agencies are presently using to achieve multiple objectives. The first workshop also addressed current mandates to incorporate sustainability, resilience, and space utilization into facility planning and management, while achieving agency missions.

The second workshop (October 27, 2015) specifically focused on portfolio management policies and approaches being applied by Federal agencies, and ways in which Federal

³ The **Federal Facilities Council** (FFC) is a cooperative association of federal agencies having interests and responsibilities related to all aspects of federal facility design, construction, operation, and management. Established in 1953, the FFC operates under the National Research Council, the principal operating agency of the National Academies, congressionally chartered, private, non-profit corporations. Additional information is available at <http://www.nationalacademies.org/ffc>.

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agencies could develop, assess, and build on these approaches. (Speakers and topics for the workshops are included in Appendix I.)

Approximately 250 people participated in the workshops, representing around 20 Federal agencies plus other organizations. The National Academies Press will publish a Workshop Proceedings (expected by the end of 2016) summarizing the two workshops.

Those workshops and the NAP report are the basis for these recommendations to GSA's Office of Federal High-Performance Green Buildings, which works to promote, coordinate and stimulate green building across the entire Federal government.

These recommendations are also aimed at the Federal Real Property Council (FRPC), a group chaired by OMB that coordinates the activities of Senior Real Property Officers of numerous agencies. GSA, in conjunction with the FRPC, manages the Federal Real Property Profile (FRPP), the inventory system for federal real property. The FRPC's goals include: 1) an increased level of agency accountability for asset management; 2) improved comparison and benchmarking across various types of real property assets; 3) improved accurate, reliable data to help make asset management decisions, including disposing of unneeded federal properties and effective stewardship of high performance federal facilities.

These recommendations are directed first towards the GSA, in its leadership role for improving the Federal portfolio of real property assets, and second, to all other Federal agencies that manage real property assets.

RECOMMENDATIONS

The GSA Green Building Advisory Committee has developed a set of recommendations for Federal agencies to incorporate integrated portfolio planning to strategically address sustainability, resilience, and effective space utilization.

Recommendation 1: Establish Integrative Portfolio Management Pilot Program

The Committee recommends that the GSA establish a pilot program with one or more of its Regions to develop, design, demonstrate, test, evaluate, and document the opportunities for integrative portfolio management that more proactively and comprehensively incorporates sustainability, resilience, and space utilization objectives. The goal is to build upon the already extensive planning processes of GSA's Public Buildings Service, Office of Real Property Asset Management, to ensure that these objectives, and associated cross-office and interdisciplinary coordination, are built into its processes.

The ultimate product of the pilot program is envisioned to be a "How-To" Guide for "integrative portfolio management" across all stages of real property assessment,

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planning, design, construction, operation, maintenance, and renewal. To the extent possible, the pilot program will engage with other Federal agencies (in addition to GSA), leveraging networks including the Government-wide Real Property Information Sharing (GRPIS) Program,⁴ which serves to promote formation of real property councils within major federal communities nationwide, to coordinate and collaborate on the portfolio prioritization and management of the objectives.

The pilot program can build on innovations underway at GSA including the Mid-Atlantic (3), Heartland (6) and National Capital (11) Regions. (Please see Appendix II for more detailed examples of these practices.) Following are some potential concepts for the process stages of such a pilot program:

- **Institutionalize integration of space utilization, sustainability, and resilience considerations into all organizational processes associated with Federal real property assets.** For example, the GSA may institutionalize coordinated planning including portfolio managers, federal agency planners, project managers, design professionals, sustainability specialists, climate change adaptation and resilience experts, and other key professionals through more consistent participation of these critical personnel in five-year capital planning. Within a Federal agency, Regional Office / Central Office coordination meetings can be used as an opportunity to emphasize priority issues.
- **Develop and implement screening processes to better integrate space utilization, sustainability, and resilience into capital facility asset planning and management processes.** For example, GSA may convene key officials (e.g., Sustainability Manager, Design and Construction Planning Branch Chief, Energy Manager and a regional Portfolio representative) bi-annually to review the owned assets across a range of metrics that may include: mission criticality, space utilization, climate resiliency and adaptation planning, Guiding Principles compliance, readiness, Facility Condition Index, energy & water use and cost, tenant satisfaction, operational needs, and other measures. The GSA may also develop more consistent review processes for all potential projects through the Regional Offices through which program managers can comment on scopes of work related to sustainability, resilience, and space utilization to incorporate feedback before the project is awarded. Utilizing the GRPIS program, Federal agencies may work together to identify opportunities and risks related to sustainability, resilience, and space utilization in a specific geographic region to set a vision for how the future real estate portfolio should perform regarding the potential impacts of climate change, among other identified issues.

⁴ <http://www.gsa.gov/portal/content/101821>

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- **Establish geographical regional prioritization of potential integrative solutions for sustainability, resilience, and space utilization.** Regional considerations of energy, water, waste, and mobility issues could inform GSA prioritization of potential integrative solutions related to sustainability, resilience and space utilization. Once the potential solution sets are prioritized, the GSA teams could more easily select and implement these solutions to yield outcomes sensitive to regional environmental/space/resilience priorities.
- **Target specific real property assets for further integrative study and work.** For example, GSA may contract more comprehensive building engineering reports (BERs) as needed, and consider integrative improvements (e.g., change “like for like replacement” to “most efficient replacement,” as per regional prioritization of potential integrative solutions, above). In this process, GSA may more strategically rank and select specific assets for in-depth and integrative analysis each year, and coordinate with major building stakeholder groups in workshops (e.g., Sustainability Program Manager, Asset Manager, Field Office personnel, Design and Construction PMs, Regional Chief Architect, Contracted O&M, Energy Manager and BA54 Manager) to create an Action Plan for each asset, with links of work items to Guiding Principles, OMB A-11, and other requirements
- **Implement integrative solutions that take advantage of the complementarity of sustainability, space utilization, and resilience objectives.** For example, GSA teams may implement solutions that simultaneously reduce energy and water use, thereby increasing operational resilience under extreme conditions. GSA and other Federal agency teams may incorporate sustainability, green purchasing, and resilience language into interior design, architectural and engineering (A/E) scopes of work, and all contracts to establish organizational responsibility for each action. During project and portfolio planning, a functional programming process could be conducted with stakeholders to thoroughly understand and document user, departmental, and operational needs of a project within a regional context. This information can drive the creation of supportive physical environments that maximize efficiencies, reduce square footage needs, and become a basis for continual improvement of portfolio management.
- **Fund integrative sustainability, space utilization, and resilience approaches and projects through multiple sources (as appropriate).** For example, GSA teams may identify local utility provider rebate and incentive programs, and other Federal funding sources, such as set aside funding to meet overall performance benchmarks (e.g., Guiding Principles, EOs).
- **Develop training modules on integrative approaches and solutions for all professionals associated with Federal real property assets.** For example, the GSA may leverage existing training programs to provide training for asset

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managers to establish a basic understanding of the complementarity of sustainability, resilience, and space utilization, such as the interdependence among building operations, HVAC, plumbing and electrical equipment to support sustainable investments within their facilities. The GSA may also work with partner organizations to provide training for Portfolio offices, incorporating greening Executive Orders and Guiding Principles to help asset managers understand how to integrate sustainability, resilience, and effective space utilization into portfolio planning and management. The GSA and other Federal agencies may work with partners to educate real estate developers and property managers on these Federal mandates and the potential integrative approaches and solutions. GSA's Facilities Management Institute (fmi.gov) has resources aimed at helping facility managers identify core competencies and curricula to meet them, some of which may be helpful for planners as well.

Recommendation 2: Incorporate Criteria in Federal Real Property Policy, Guidance and Databases

The Committee recommends that the GSA Office of Federal High-Performance Green Buildings collaborate with GSA's Real Property Policy Division (RPPD) and the Federal Real Property Council (FRPC), building off of the pilot project(s) described in Recommendation 1, to identify and incorporate key criteria related to EO 13693 and EO 13653 into:

- Federal real property data and analytical tools. The Federal Real Property Profile (FRPP) is a database of Federal assets, now being supplemented by new tools to analyze these data for improved Federal real property investment decisions. The Committee recommends that the FRPC and RPPD identify and implement ways to use these tools to better integrate sustainability, resilience and space utilization for tracking and decision-making;
- Federal real property management guidance. For example, OMB's Reduce the Footprint guidance⁵ could be revised to incorporate lessons learned from proposed pilot projects and a portfolio prioritization template; and
- The Federal Management Regulation (FMR)⁶ e.g., 41 CFR Chapter 102, Subchapter C - Real Property, and Bulletins.

In addition, GSA staff could facilitate communication across the Federal agencies through the FRPC on the pilot program (Recommendation #1) and implementation of integrative portfolio management tools, methods, and solutions (Recommendation #3).

⁵ <https://www.whitehouse.gov/sites/default/files/omb/financial/memos/implementation-reduce-the-footprint.pdf>

⁶ <http://www.gsa.gov/portal/category/21221>

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Recommendation 3: Compile Integrative Portfolio Management Tools, Methods, and Solutions

The Committee recommends that the GSA Office of Federal High-Performance Green Buildings collaborate with the GSA Regions, other Federal agencies, US national labs, and other partners to identify and compile sets of solutions, processes, tools, and approaches that advance integrative portfolio management for sustainability, space utilization, and resilience. In particular, the rapid advancement in the state of knowledge and practice (as briefly surveyed in the GBAC/FFC workshops in 2015) reveals approaches that take advantage of the complementarity of sustainability, space utilization, and resilience objectives, and solutions that can effectively meet several objectives at once (e.g. coordinating energy efficiency projects to make GSA's goal of using 100% renewable energy by 2025⁷ more cost-effective to achieve, ensuring roof replacements incorporate additional insulation, PV mounts, and/or other green features, etc.). These complementary practices and solutions may be applicable throughout portfolio planning, project planning, design, and implementation, and can be shared throughout the Federal government. (For examples, please see Appendix III.)

CONCLUSION

Strategically integrating these objectives and proactively incorporating them into agency portfolio planning and management processes from the earliest stages and throughout project implementation can provide significant economic and resource efficiencies, improve consistency across projects and agencies, and accelerate Federal Government progress in achieving these goals. This integration can take advantage of the synergies among the objectives of sustainability, resilience, and effective space utilization, while effectively addressing regional geographic, environmental and mission objectives.

The Committee recommends that:

- GSA establish a pilot program with one or more of its Regions to develop, demonstrate, test, evaluate, and document the opportunities for integrative portfolio management that incorporates sustainability, resilience, and space utilization objectives.
- GSA Office of Federal High-Performance Green Buildings work with the GSA Real Property Division and the Federal Real Property Council to identify and incorporate key criteria into Federal real property policy, guidance and databases.

⁷ General Services Administration, 2015 Strategic Sustainability Performance Plan, Goal 8: http://www.gsa.gov/portal/mediaId/119682/fileName/GSA_FY_2015_SSPP_Final.action

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- GSA Office of Federal High-Performance Green Buildings work with the GSA regions, other Federal agencies, US national labs, and other partners to identify and compile sets of solutions, processes, tools, and approaches that advance “integrative portfolio management” for sustainability, space utilization, and resilience.

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APPENDIX I: GBAC/FFC Workshop Agendas

Strategically Incorporating Sustainability, Resilience, and Footprint Consolidation In Portfolio Planning: An FFC Workshop Monday, September 14, 2015 8:30 am – 5:00 pm

Agenda

Workshop 1 (Monday, September 14, 2015)

7:30 a.m.	Registration Check-In and Coffee
8:30 a.m.	Welcoming Remarks
8:40 a.m.	Introduction: Kevin Kampschroer Chief Sustainability Officer of the U.S. General Services Administration
	Keynote: Miranda A.A. Ballentine Assistant Secretary of the Air Force for Installations, Environment, and Energy, Headquarters U.S. Air Force
9:30 a.m.	Strategic Portfolio Planning for Campus/Installations <ul style="list-style-type: none">• Bruce Nevel, Associate Vice President for Facilities Development and Management (FDM), Arizona State University• Donna McIntire-Byrd Chief, Energy & Sustainable Design, Bureau of Overseas Buildings Operations, US Department of State• Marc Kodack Office of the Deputy Assistant Secretary of the Army for Energy and Sustainability
	Moderator: Ken Sandler, Sustainability & Green Building Advisor, GSA
11:00 a.m.	BREAK
11:15 a.m.	Strategic Portfolio Planning for High Tech/High Resource Intensity Facilities <ul style="list-style-type: none">• Elizabeth Selbst Management Analyst, Green Management Program, Department of Veterans Affairs• James Symanski Sustainable Design Program Manager, Office of Construction & Facilities Management, Department of Veterans Affairs• Barbara Macchioni Deputy Facility Manager,, Lawrence Livermore National Laboratory• Peter Williams, IBM Distinguished Engineer, Chief Technology Officer for IBM's Big Green Innovations Incubator

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Moderator: Sarah Slaughter, President, Built Environment Coalition

12:45 p.m.
1:30 p.m.

Lunch (served onsite)
Strategic Portfolio Planning for Offices, Courthouses, and Other Facilities

- Anna Franz
Director, Planning and Project Management, Architect of the Capitol
- Joseph Parisi
Sustainability Program Manager, General Services Administration
- Thomas Scarola, Director of Engineering, Tishman Speyer

Moderator: Brendan Owens, Vice President, LEED Technical Development

3:00 p.m.
3:15 p.m.

BREAK
Synthesis of Strategies and Preparing for the Planning Exercise

- Maureen Sullivan
Deputy Assistant Secretary of Defense (Environment, Safety & Occupational Health)
- Kevin Kampschroer
Chief Sustainability Officer at the U.S. General Services Administration

Moderator: Sarah Slaughter, President, Built Environment Coalition

4:45 p.m.
5:00 p.m.

Wrap-up
Adjourn

**Strategically Incorporating
Sustainability, Resilience, and Footprint Consolidation
In Portfolio Planning: FFC Workshop 2
Tuesday, October 27, 2015
8:30 A.M. to 5:00 p.m.**

Workshop Goals:

- Attendees leave with both a better understanding of how to successfully incorporate lifecycle-based sustainability, resilience and footprint consolidation into portfolio planning, and the inspiration to get it done.
- Findings serve to support Advisory Committee recommendations to the Federal government
- Identify:
 - Practical strategies, tools and resources for economically evaluating and incorporating sustainability, resilience and footprint consolidation into the portfolio prioritization process;
 - Criteria and/or data needs (e.g., facility hazard vulnerability) for this integration of goals;

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- Ways in which federal guidance may encourage more strategic incorporation of these factors into portfolio decision-making;
- Opportunities for process improvement.

AGENDA

8:30 a.m.	Registration Check-In and Coffee
9:00 a.m.	Review and discussion of strategic approaches, practices, and tools from first workshop
9:30 a.m.	<i>Portfolio Planning As Part of Executive Policy and the President's Management Agenda</i> Invited - OMB – Federal Real Property - GAO or White House – Resilience/Climate Change Vulnerability
11:00 a.m.	BREAK
11:15 a.m.	<i>Current Agency Portfolio Planning Frameworks</i> Invited - USACE - NAVFAC - GSA - NASA
12:30 a.m.	Lunch (served onsite)
1:30 p.m.	Facilitated Breakouts (Scenarios) Scenario 1: Sustained O&M Budget with Utility cost increases (Board Room) A sustained O&M budget at current levels is assumed for the next 5 years. However, your portfolio is located in a region with 3% annual utility price increases during those 5 years. Scenario 2: Net Zero Energy and Water for Mission Critical Facilities (Members Room) All mission-critical facilities need to be able to operate without external energy and water services for 10 days (but can be grouped with other portfolio properties). Scenario 3: One-time \$10B Infrastructure Investment in Agency (Room 120) Your agency stands to receive a one-time infrastructure investment of \$10B towards the renewal and modernization of your portfolio. This money has to be obligated to projects within 10 years. The money is stipulated that it cannot be used to increase portfolio size (there must be a matching reduction footprint). Additionally, resilience and climate change must

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be a factor in the portfolio planning.

The goal of each breakout is to propose frameworks for portfolio planning that consider sustainability, resilience, and footprint consolidation.

Answer:

- Do federal agencies currently prioritize investments effectively and measurably in regard to sustainability and resilience? Is there significant room for improvement?
- What do you know now– what information and data are already available to support decision making? What are some of the prioritization and planning tools and resources being used?
- What do you need to know – what information is needed to make an informed strategic decision? What sorts of tools and resource could do the most to help achieve this goal?
- How do you bring together the necessary expertise? – organizationally, where do agency experts and implementers on portfolio planning, asset management, sustainability, resilience (etc.) sit and what are both the organizational barriers between and effective connections among them?

Outline/whiteboard a strategic process which considers:

- Strategy, tools, data, resources available/needed
 - builds a robust business case and a process to understand the contribution and impact for every project in the planned portfolio
- Organizational Inputs
 - gains input and exchanges ideas with all relevant functional areas of the organization to create “a single plan of record” for the organization as a whole
- Integration of Operations with Finance

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and Budget

- integrates strategic, operational and financial planning into one seamless process
- Risk
 - identifies sources of risk, and uses “what if” scenarios to allow for intelligent contingency planning and full visibility of all trade-offs to build agility in multiple areas of the organization
- Monitoring and Performance
 - continually reviews and re-evaluates the progress, resource needs, business cases, risks and priorities of every project in the organization strategic plan
- Workforce
 - assesses impacts to operations workforce including attrition, skill requirements, training, as well as project effects to facility occupants
- Procurement models (e.g. ESPC)
 - evaluates prospects for service or facility sharing, alternative financing or procurement opportunities

3:30 p.m.

BREAK

3:45 p.m.

Report back from breakouts and consolidation of thoughts

4:30 p.m.

Summary of thoughts and path forward

What changes in overall federal government-wide or agency processes are most critical to integrate these factors into portfolio planning?

5:00 p.m.

Adjourn

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APPENDIX II

Best practices based on innovations underway at GSA including in the Mid-Atlantic (3), Heartland (6) and National Capital (11) Regions

a) Develop organizational plans to institutionalize integration and coordination for space utilization, sustainability, and resilience

- i) Institutionalize planning coordination among portfolio managers, federal agency planners, project managers, design professionals, sustainability specialists, climate change adaptation and resilience experts, and other key professionals.
- ii) Engage critical personnel in five-year capital planning (e.g., GSA Regional sustainability officer, resilience officer, and asset manager in GSA's five-year capital planning of building investment).
- iii) Establish specific organizational linkages at the Regional level for sustainability, resilience, and space utilization (e.g., GSA Regional sustainability officer, resilience officer, asset manager, and facilities management team).
- iv) Utilize Regional Office and Central Office meetings as an opportunity to emphasize particular issues.

b) Develop and implement screening processes to integrate space utilization, sustainability, and resilience into capital facility asset planning and management processes:

- i) Have key officials (e.g., Sustainability Manager, Design and Construction Planning Branch Chief, Energy Manager and a regional Portfolio representative) meet together bi-annually to review the owned assets across a range of metrics that may include:
 - (1) Facility Condition Index
 - (2) Tiering
 - (3) Hold Period
 - (4) Energy & Water Use and Cost:
 - a) Asset managers should review annual energy and water usage data and multi-year trend analysis to understand how a particular building or facility is operating over time and if any future energy and water reinvestment opportunities exist. If energy or water is trending up, ask the local building and operation managers "why" to see if it is an anomaly or a systemic issues that speaks to a reinvestment strategy
 - (5) Waste Diversion
 - (6) GHG Emissions
 - (7) Tenant satisfaction data including IEQ scores and other feedback
 - (8) O&M Costs
 - (9) Vacancy Rate in relation to User Needs
 - (10) Guiding Principle Compliance Readiness
 - (11) User, Departmental, and Operational Needs for Space.

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- a) Consider underlying need for space, reduction or expansion of footprint, consolidation opportunities, etc.
- (12) Mission Criticality. Identify high and medium mission critical functions and the assets that hold them.
- (13) Climate Resiliency and Adaptation Planning
 - a) Consider projected Climate Risks in site selection and location decisions (i.e. higher floodplain levels, wider floodplains, new Flood Management Risk Standards, etc.) prior to siting new building projects or making large capital fund commitments at existing facilities.
 - b) Update Architecture and Engineering standards for agency facility design to address climate change risks in design.
 - c) Include items in design that speed recovery after “acute weather” events.
- (14) Balance relocation costs with adaptation costs to address climate change risk at mission critical facilities
 - ii) Develop and use a routing process for all potential projects through the Regional Office (e.g., GSA Regional Office of Facility Management) so that program managers can comment on scopes of work (e.g., study, design and construction) related to sustainability, resilience, and space utilization to incorporate feedback before the project is awarded.
 - iii) Identify opportunities and risks related to sustainability, resilience, and space utilization to set a vision for what the future real estate portfolio should look like.
 - iv) Review projects at the Central Office across program managers and items to explicitly incorporate integrated space utilization, sustainability, and resilience into the planning process.
- c) Target specific assets for further study and work**
 - i) Contract more comprehensive building engineering reports (BERs) as needed, and consider improvements (e.g., replace “of equal replacement” with “most efficient replacement” including associated costs).
 - ii) Rank and select specific assets for more in-depth analysis each year, and coordinate with major building stakeholder groups in workshops (e.g, sustainability program manager, asset manager. Field Office, Design and Construction PMs, Regional Chief Architect, Contracted O&M, Energy Manager and BA54 manager) to create an Action Plan for each asset, with links of work items to Guiding Principles, OMB A-11, and other requirements.
 - (1) Involve all building stakeholder groups in workshops (e.g, sustainability program manager, asset manager. Field Office, Design and Construction PMs, Regional Chief Architect, Contracted O&M, Energy Manager and BA54 manager).
 - (2) Study data from BERs, PCS, Energy Efficient Expert Evaluations (E4s,done by the Pacific Northwest National Lab, PNNL), retro-commissioning, etc., as reference for developing solutions
 - (3) Enumerate how the listed work items relate to Guiding Principles compliance (e.g., LEED EBO&M, Green Globes CIEB credits)

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- (4) Outcome of the workshops are three Action Plans enumerating improvements in three time frames (1-2 years, 5 years, Long-term) with rough estimates for improvement or benefit (e.g., Guiding Principles, Energy Efficiency, Water Conservation).

d) Implement asset-specific action plans

- i) Incorporate sustainability, green purchasing, and resilience language into interior design, architectural and engineering (A/E) scopes of work, and all contracts.
- ii) Establish organizational responsibility for each action (e.g., responsibility assigned with respect to estimated cost and/or timing)
 - (a) No Cost items - by field office, building manager to execute with O&M contractor
 - (b) Low Cost threshold items - completed by field office as funding is available
 - (c) Higher cost items - integrated into the five year planning process where they compete with funding in the BA54, 55, 63, 64 budget areas.
 - (d) Studies for further information are submitted for BA61 funding and compete with other BA 61 requests, or integrated into a larger project if possible.
 - (e) The asset manager (portfolio) is responsible for ensuring the items get considered during the annual investment planning process. They also use the action plans to complete the ABP Sustainability Strategy
- iii) Consider asset-specific action plans during annual investment planning process, and engage the asset portfolio manager and sustainability manager as needed.

e) Fund sustainability, space utilization, and resilience projects through multiple sources (as appropriate).

- i) Identify local utility providers for rebate and incentive programs.
- ii) Identify other Federal funding sources, such as set aside funding to meet overall performance benchmarks (e.g., Guiding Principles, EOs).
 - (1) BA 54 - set aside funding to meet overall performance benchmarks (e.g., Guiding Principles, EOs).
 - (2) BA 55 funding for energy related projects
 - (3) BA 63 rebate funding
 - (4) ESPCs
 - (5) Selling renewable energy credits (RECs)
- iii) Identify other possible funding sources.

f) Develop training modules related to space utilization, sustainability, and resilience for all relevant personnel:

- i) Provide training for asset managers to establish a basic understanding of building operations, HVAC, plumbing and electrical equipment and where sustainable investments can be made in their facilities. They should attain green building training and certification as appropriate.
- ii) Provide training for Portfolio offices, incorporating greening Executive Orders and Guiding Principles to help asset managers understand how to integrate them into planning.

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- (1) Regions 3 & 6 have already contributed to such training).
- iii) Educate real estate developers and property managers on these Federal mandates
- iv) Provide training on Asset Business database (e.g., energy and water use over last 3 years)

Note: This proposal is the product of an independent advisory committee to GSA, and as such, may or may not be consistent with current GSA policy.

APPENDIX III

Advanced Methods, Tools, and Approaches for Integrating Sustainability, Space Utilization, and Resilience in Portfolio Management

Example: Functional Programming Process Diagram

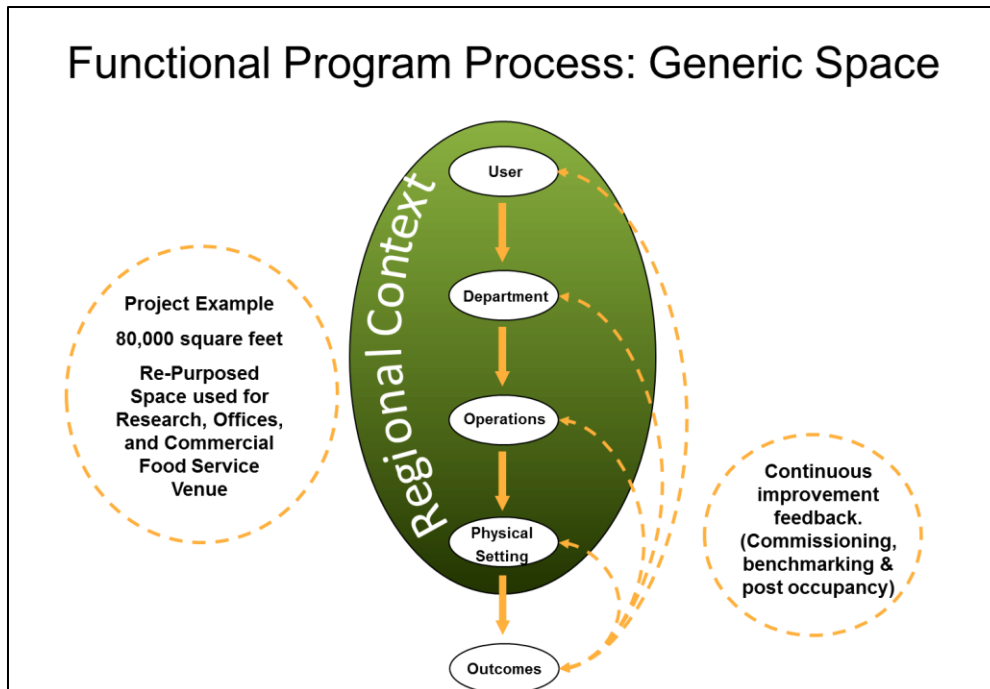


Figure 1: Provided Courtesy of JSR Associates, Inc. and With Seniors in Mind: www.jsrassociates.net

Resources Identified by the Task Group

Federal Government-Wide Policies & Strategies

Sustainability Executive Order

- [Executive Order 13693: Planning for Federal Sustainability in the Next Decade](#)
- [Guiding Principles for Sustainable Federal Buildings and Associated Instructions](#) (Feb 2016)

Federal Asset Management and “Reduce the Footprint”

- U.S. Office of Management and Budget (OMB): [A National Strategy for Reducing the Federal Government’s Real Estate Footprint](#) (March 25, 2015)
- GAO High Risk Report: [2015 update](#)
- Executive Order 13327, [Federal Real Property Asset Management](#):
- [Federal Real Property Council](#)
- [Federal Real Property Association](#)
- [GSA State of the Portfolio 2015](#)
- [GSA Office of Real Property Asset Management](#)

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Federal Climate Resilience/Adaptation Plans and Policies

- [Executive Order 13653](#): Preparing the United States for the Impacts of Climate Change
- [GSA's Climate Adaptation Plan](#)
- Links to [all agencies' adaptation plans](#)

Tools & Training

Climate Resilience

- ICLEI – Local Governments for Sustainability: [Climate Preparedness](#)
 - [ADAPT](#) is a cloud-based software application for managing local climate adaptation analysis and planning processes.
- [U.S. Climate Resilience Toolkit: a collection of resources to aid in U.S. adaptation to climate change](#)

Federal Asset Management and Master Planning

- [Facility Guidelines Institute for healthcare planning, design, and construction](#)
- [Federal Real Property Profile](#): the Federal "database of all real property under the custody and control of all executive branch agencies, except when otherwise required for reasons of national security," in accordance with Executive Order 13327
- NASA [Facilities and Real Estate Division](#)
 - [NASA Handbook for Master Planning: provides a description of the Center master planning process and identifies best practices, elements of a master plan, and standards](#)
- U.S. Department of Defense (DoD)
 - [DoD Master Planning Institute](#): serves as a clearing house to publicize, coordinate, and conduct master planning training relevant to planning staff at federal installations and, where appropriate, consulting firms doing planning work for the DOD
 - [Unified Facilities Criteria](#) (UFC) documents provide planning, design, construction, sustainment, restoration, and modernization criteria, and apply to the Military Departments, the Defense agencies, and DoD Field Activities
 - [UFC 2-100-01 Installation Master Planning](#): outlines a total process for master planning (and ultimately the development of a Master Plan) through the preparation of linked plans that can be implemented in total or incrementally based on each service's needs and resources
- U.S. Department of Veterans Affairs (VA), Office of Construction & Facilities Management, Sustainable Design Program
 - [Technical Information Library \(TIL\): the source for VA's electronic design and construction information](#)
 - [VA Sustainable Design Manual](#): strives to capture all mandated requirements into one easy-to-use manual

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Sustainability and Green Buildings

- [GSA Carbon Footprint Tool](#): free, user friendly, online tool available for federal agencies to compile and report their annual comprehensive Greenhouse Gas (GHG) emissions inventory, as required by Executive Order 13693, as well as track progress towards achieving GHG reduction goals
- [GSA Sustainable Facilities Tool](#): an interactive online resource that shows users how to build, buy and operate green. SFTool assists project managers, procurement professionals, facility managers and others to identify, understand and integrate sustainable strategies into their projects
- [USGBC LEED v4 Impact Category and Point Allocation Development Process](#): reviews the weighting structure and process that was developed for LEED version 4, and highlights key findings based on statistical analysis of the results

Best Practices & Case Studies

Climate Resilience

- EPA [Federal Green Challenge: The FGC is a national effort challenging EPA and other federal agencies to lead by example in reducing federal government's environmental impact](#)
- NOAA's Resilient Coastal [Communities](#): NOAA Sea Grant announced grants totaling \$15.9 million to support over 300 projects around the nation that help build resilient coastal communities and economies
- [Resilient Design Institute](#): accessible source of resilient design information from clear case studies to wide-ranging principles and strategies to a blog that balances technical information with readability
- [USGBC Green Building and Climate Resilience report: summarizes the most recent research on the likely impacts of climate change at various scales: regional, neighborhood, and site or building](#)
- White House [Climate Action Champions: 16 U.S. communities recognized as Climate Action Champions for Leadership on Climate Change](#)
- White House Climate Change Preparedness Pilots:
 - [Hampton Roads, VA](#) Sea Level Rise Preparedness and Resilience Intergovernmental Planning Pilot Project
 - [NASA/Houston](#)
 - [DOE/NREL/Fort Collins, Colorado](#)
 - Anchorage, AK

Federal and non-Federal Asset Management and Master Planning

- Arizona State University (ASU)
 - ASU [Campus Metabolism Tool](#): enables students, faculty, and staff to access real-time information on the campus's electricity, steam, water, and renewables usage
 - ASU [Sustainability Initiatives Revolving Fund](#) (SIRF)
 - Association for Advancement in Sustainability in Higher Education's (AASHE) [Sustainability Tracking, Assessment & Rating System](#) (STARS)
- General Services Administration (GSA)

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- Asset Business Plan: web-based tool that has a series of data used to prioritize projects and analyze funding allocations
- LCA tools (pilot study on three GSA buildings in Baltimore)
- PBS Decision Lens tool: complete solution for creating the intelligent portfolio; creates a prioritized list of alternatives based on the true values and priorities of the organization
- GSA Office of Evidence and Analysis (OEA) Real Property Management Tool: uses Tableau software to create data visualizations and dashboards in order to view aggregated facility data in a more meaningful manner
- GSA OEA's Asset Consolidation Tool: enables users to map Federal facilities (by agency, type, etc.) and identify potential opportunities for consolidation based on the number of occupants and square footage of facilities within a specific radius
- U.S. Air Force utilizes several tools to integrate sustainability into its installation planning process:
 - Strategic Sustainability Performance Plans (SSPP)
 - Installation Sustainability Management System (ISMS): DOD-wide pilot initiative that allows the Air Force to display and track its progress on sustainability on an integrated dashboard
 - Installation Development Plans (IDPs) and Sustainable Development Indicators (SDI)
 - Installation Complex Encroachment Management Action Plans (ICEMAPs): provide a consistent framework to identify, mitigate, and prevent encroachment impacts on installations, test and training ranges, and airspace
- U.S. Department of State, [Bureau of Overseas Buildings Operations](#)
 - Tools for existing buildings
 - Utility Management Dashboards: enables decision-makers to view the building portfolio at different levels – worldwide, region, mission (i.e., country), post (i.e., city), and building
 - Energy Performance Dashboards
 - Sustainability Report Cards: measure individual building progress towards target goals
 - Solar Hot Water and Solar Power Optimization (SolOpt)
 - Tools for new buildings
 - Eco-Charrette: brings all disciplines together to discuss the opportunities and constraints surrounding a project
 - Living Document: includes planning, concept design, schematic design, and design development; records the decisions and rationale reached throughout the process
 - Eco-Diplomacy Goals
 - Water Balance Diagram
 - Life Cycle Cost Analysis Tool
- U.S. Department of Veterans Affairs
 - [Green Management Programs](#)

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- Resource Maps: solar potential, fuel station availability, spark spread across the U.S.
- eROI Analysis Tool

Sustainability and Green Buildings

- Architect of the Capitol (AOC)
 - AOC Project Summary Sheet: Scorecard on Energy and Sustainability Initiatives
- Lawrence Livermore National Laboratory [Data Center Sustainability Master Plan](#)
- U.S. Army implements its [Net Zero Initiative](#) for energy, water, and solid waste at 17 pilot installations. Each program follows a hierarchy of steps to attain net zero goals.
 - Energy: Reduction, Efficiency, Recovery, Cogeneration, Renewable Energy
 - Waste: Reduction, Re-Purpose, Recycling & Composition, Energy Recovery, Disposal
 - Water: Reduction, Efficiency, Recycle, Reuse. Recharge

Relevant Reports

- Sustainability and Lifecycle Cost (LCC)
 - National Research Council (2013). [Energy-Efficiency Standards and Green Building Certification Systems Used by the Department of Defense for Military Construction and Major Renovations](#)
- Sustainability and Lifecycle Cost (LCC) and Lifecycle Analysis (LCA)
 - Widell, C., Shriver, D. (2013). [Demonstrating the Environmental & Economic Cost-Benefits of Reusing DoD's Pre-World War II Buildings.](#)
- High-Performance Buildings and Campuses: Field Data
 - US Department of Defense, Army (2013). [Net Zero Progress Report: Net Zero Pilot Installation Initiative 2012.](#)
- Strategic Portfolio Management
 - NRC, [Predicting Outcomes of Investments in Maintenance and Repair of Federal Facilities](#), National Academy Press, 2012
- National Policy for Resilience
 - U.S. Global Change Research Program (2014). [National Climate Assessment 2014](#). U.S. Global Change Research Program, Washington, DC.
 - IPCC (2014). [Climate Change 2014 Synthesis Report: Summary for Policymakers](#). Intergovernmental Panel on Climate Change, Geneva, Switzerland.
 - National Research Council. (2012). [Disaster Resilience: A National Imperative](#). National Academies Press, Washington, DC.

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APPENDIX IV

Members of Portfolio Prioritization Task Group

Green Building Advisory Committee Task Group Members or Designees

Amy Costello, Armstrong World Industries
Brendan Owens, U.S. Green Building Council (Co-chair)
Bucky Green, Environmental Protection Agency
CJ Cordova, U.S. Department of Veterans Affairs
Elizabeth Selbst, U.S. Department of Veterans Affairs
Jane Rohde, JSR Associates
Jonathan Herz, U.S. Department of Health and Human Services
Kent Peterson, P2S Engineering
Lt. Col. Gary Dorman, U.S. Department of Defense
Matt Jungclaus, Rocky Mountain Institute
Maureen Sullivan, U.S. Department of Defense
Nico Kienzl, Atelier Ten
Sarah Slaughter, Built Environment Coalition (Co-chair)
Timothy Unruh, U.S. Department of Energy FEMP
Victor Olgay, Rocky Mountain Institute

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Bradley Nies, GSA Heartland Region (R6)
Chris Mattingly, GSA Mid-Atlantic Region (R3)
Donald Horn, GSA OFHPGB
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Eliza Hotchkiss, National Renewable Energy Laboratory