

Green Building Certification System Review  
Co-Chairs Memorandum

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## I. Summary of Recommendations

### Summary of Findings

Paragraph 436 of the Energy Independence Security Act of 2007 (EISA) established the Office of Federal High-Performance Green Buildings (OFHPGB) and requires the OFHPGB Director to identify a certification system "most likely to encourage a comprehensive and environmentally-sound approach to certification of green buildings." The federal government may use rating systems as tool for evaluating and measuring compliance with federal sustainable design requirements. See Section II for more detail on the EISA process.

#### *Findings Relating to Use of Green Building Certification Systems*

The EISA 436 Ad-hoc Discussion Group determined that, properly aligned with Federal requirements, use of green building certification systems would be an efficient use of Federal resources. One of the biggest added values that green building certification systems offer Federal agencies is that they maintain robust infrastructures that are kept current with market developments, including maintenance of professional training and accreditation systems for designers, engineers, auditors and assessors to ensure professionals maintain knowledge currency in the evolving market.

The Ad-hoc Discussion Group reviewed three major rating systems to determine their usefulness in verifying federal agency compliance with federal high-performance green building design principles and found that none of the systems evaluated in the 2012 report currently assure compliance with all of the Federal requirements. The Ad-hoc Discussion Group found that no single rating system meets the needs of all Federal agencies and all portfolios. However, the 3<sup>rd</sup> party conformity assurance framework built into all three systems can provide Agencies with independent assurance that Federal requirements are met.

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Concerning use of green building certification systems in the Federal sector, the Group recommends:

- 1 Agencies should select the green building certification systems that best suits their mission and portfolio needs and apply the system according to agency needs. However, there are important guidelines that agencies should take into account when selecting green building certification systems:
  - a At the national level, guidance should be developed that identifies specific credits/points that agencies should focus on when seeking certification. These points/credits should be aligned with Federal requirements and treated as “prerequisites” for Federal building certification. GSA proposes a process similar to the development of these recommendations, with such guidance issued by OFEE.
  - b For internal consistency and efficient use of resources, agencies should be encouraged to use only one system at the agency or service level for *New Construction and Major Renovations* and only one system at the agency or service level for *Existing Buildings*. Decisions to use multiple systems within one agency should be based on organizational structure & portfolio needs considering broad classes of building and use types. HHS alternate language: Effective use of these systems requires a high degree of familiarity with each system as well as the system’s application to different building and types. Decisions to use multiple systems within one agency should be based on a finding that the organizational structure supports effective use of training resources, and meets and portfolio needs considering broad classes of building and use types.
- 2 This guidance should apply to all buildings. Even buildings that account for a small or unusual portion of the Federal portfolio can benefit from the use of this guidance. Experience with green building certification systems has demonstrated that the systems are flexible enough to develop applications to all building types if Federal agencies have the right direction about how to use the systems. Strategic engagement can be used to develop portfolio level applications for particular uses or building types. The Federal sector should formalize a process to maintain currency with the evolution of green building certification systems and underlying standards. Elements of the recommended “currency” process include:
  - a The Federal sector should maintain currency in the use of any green building rating system, and automatically adopt the newest version of any standard or green building certification system within one year after it is finalized, unless there is an overt decision not to adopt the latest version. In addition, reasonable grandfathering and certification completion dates should be developed to address buildings where green building certification work was begun under an/older version(s) of adopted rating systems/standards. (This is normally allowed by the system owners.)
  - b The major Federal portfolio holders and resource agencies should convene to review any updated green building certification systems and their linkage to underlying standards critical to building performance in a process similar to the current EISA 436(h) review.
  - c GSA’s Office of Federal High-Performance Green Buildings will track green building certification systems and standards, and work with the Departments of Energy and Defense to review changes and convene the Federal interagency group.
- 3 The Federal government should strategically engage with green building certification system owners to encourage better alignment with Federal agency needs while continuing the Federal government’s role in market leadership. Green building certification systems currently serve as

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a bridge both in supporting the transformation to high-performance within the Federal portfolio, and in harmonizing Federal green building activities with the private sector. The Office of Federal High-Performance Green Buildings could lead this engagement with input from major real estate portfolio holders, the office of Science and Technology Policy, NIST and the OFEE. Strategically engaging to develop better alignment with Federal agency needs could range from fundamental improvement in content to address societal and human health needs (such as (a), below, to efficiency compliance improvements, such as (b), below. Agency expertise can also be represented on the technical committees and/or development boards of the rating systems

- a The Federal government can play a vital role in encouraging integration of societal and human health needs that are notably missing from or only incidental to green building certification systems and “green” standards for new construction. Needs include:
  - i Evaluation of building products and processes throughout their entire lifecycle, to reduce or eliminate those that may present an unreasonable risk of injury to human health and the environment, and,
  - ii Incorporation of workplace design/space utilization and worker mobility as key strategies that ultimately drive the operational performance of buildings and the potential impact of buildings on occupant health and productivity. Federal government agencies, in optimizing real property utilization and consolidating inventories, can play a vital role in encouraging integration of “workplace” into these high-performance building frameworks.
  - iii Sustainable building locations. With improved commuter surveys, Scope 3 commuter emissions and building GHG emissions could be optimized over the life cycle for location.
  - Iv Work with green building certification systems owners to avoid duplication of effort by accepting documentation for certain credits based on existing Federal reporting and associated 2<sup>nd</sup> party conformity assurance processes.

## **II. Background: EISA 436 Process**

Section 436 of EISA requires the Director of GSA’s Office of Federal High-Performance Green Buildings to evaluate green building certification systems every five years to identify a system and certification level that will be most likely to encourage a comprehensive and environmentally sound approach to certification of green federal buildings. EISA requires the GSA Administrator to provide his/her recommendation to the Secretary of Energy, who then consults with the Secretary of Defense and the GSA Administrator, to identify the system(s) appropriate for use in the Federal sector to certify green buildings.

GSA first evaluated certification systems in 2006 focusing on new construction. Based on this 2006 review, GSA recommended the U.S. Green Building Council’s Leadership in Energy and Environmental Design (LEED) to the Secretary of Energy for use in the Federal sector. GSA completed its most recent evaluation of green building certification systems in March 2012 focusing on certification systems for new construction, major renovations, and existing buildings. The Green Building Certification System review study can be found at <http://www.gsa.gov/gbcertificationreview>.

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In recognition that there was a high level of interest in this 2012 green building certification system review, both within and outside the Federal sector, GSA asked the Department of Energy and the Department of Defense to co-chair an interagency Ad-hoc Discussion Group (Ad Hoc Discussion Group) to work through a set of related questions and issues:

- Interrelationships among green building certification systems and recently promulgated green building standards for new construction;
- Federal high-performance building design, construction & operations requirements;
- Metrics to inform building performance tracking & reporting;
- Proposed revisions to the Federal High-performance and Sustainable Building Guiding Principles (Guiding Principles);
- How high-performance in buildings can reduce the total cost of ownership;<sup>1</sup> and
- The appropriate role of green building certification systems in advancing high-performance buildings in the Federal sector.

The Ad-hoc Discussion Group included representatives from portfolio major Federal real property portfolio holders, including GSA, the Department of Defense, the Department of Energy, the Department of Agriculture, the Environmental Protection Agency, the Department of State, the Department of Health and Human Services, the Department of Veterans Affairs, and the Department of Justice. The Ad-hoc Discussion Group met numerous times during May-July 2012 and held two public listening sessions to gather verbal and written comments. This information is being used by GSA to develop possible approaches that could form the basis of the EISA 436(h) recommendation. Summary minutes of the interagency ad hoc discussion group findings are attached as Appendix 1. A summary of comments received during the listening sessions is attached as Appendix 2.

### **III. Green Building Certification Systems: Use by Federal Agencies and Principal Findings of the 2012 Evaluation**

Green building certification systems currently serve a number of functions within the Federal sector. Agencies have been using green building certification systems to provide definitions of high-performance that guide design of new buildings (New Construction, "NC") and major renovations (MR) of existing buildings for nearly ten years. Agencies have begun to use green building certification systems in the existing building portfolio to provide definitions of high-performance for ongoing operation of facilities as well. Green building certification systems are also being used by agencies as an integrated framework to demonstrate that Federal high-performance building requirements have been met, especially with regard to the Guiding Principles. Because green building certification systems have been developed around 3rd party conformance assurance processes, agencies use green building certification systems to provide independent verification that both performance metrics and Federal (including contractual) requirements have been met.

The 2012 report evaluated in depth three green building certification systems that passed screening criteria:<sup>2</sup> (1) the Green Building Initiative's Green Globes® 2010; (2) the U.S. Green Building Council's Leadership in Energy and Environmental Design LEED® 2009; and (3) the International Living Building

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<sup>1</sup> Issues of cost effectiveness will be considered by the ad hoc discussion group following completion of the National Research Council report by the NRC Committee to Evaluate Energy-Efficient and Sustainability Standards Used by the Department of Defense for Military Construction and Repair targeted for completion in late September, 2012.

<sup>2</sup> Screening criteria included: Systems must employ whole building evaluation, addressing key sustainable design and operations metrics; systems must be available in the U.S. market; systems must have third party certification. The review was focused on commercial buildings because these building types dominate the Federal real estate portfolio. Green building certification systems applicable to residential construction were not included in this review because little residential home building/operation occurs in the Federal sector.

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Institute's Living Building Challenge™ 2011. Both the Green Globes and LEED new construction and existing building systems, and the Living Building Challenge Building and Renovation typologies were reviewed. The 2012 evaluation found that none of the existing green building certification systems as designed meets all of the Federal Government's needs for high-performance building metrics and conformity assessment, especially when considering the Federal sector's legal requirements in this area. However, each of the systems could meet Federal sector needs with better alignment between Federal requirements and green building certification system metrics, documentation and conformance assessment methods.

Each of the green building certification systems reviewed is built around a set of standards, metrics and tools that, collectively, are intended to define what "high-performance" means in the design, construction and operation of buildings. The "standards" included in these systems are typically developed by third party sources (standards development organizations, industry coalitions, regulatory bodies, and not-for-profit organizations), that are widely recognized in the market. Each green building certification system selects a set of standards and integrates them with performance metrics and implementation tools to create its own definitional framework of "high-performance" in buildings. This framework provides the basis for independent, 3<sup>rd</sup> party verification that the building has met the definition of "high-performance" created by that particular green building certification system (a conformance assessment process).

The frameworks developed by the three systems are very different in structure and approach, which makes one-to-one comparisons challenging. The Green Globes framework is built around a checklist of optional points selected by the user. Conformance assessment includes a review of documentation prepared by the facility team and an on-site visit by an accredited assessor. The LEED framework is built around a set of credits with assigned point values; some credits are required (prerequisites) and others are optional and selected by the user. Conformance assessment is based on a review of prescribed documentation submitted through an on-line system and evaluation by a team of accredited professionals. These two systems use many of the same 3<sup>rd</sup> party standards, metrics and tools to define performance. The Living Building Challenge is performance based: the system does not prescribe standards or methodologies to achieve the performance specified for each "element." Conformance assessment is based on a review of documentation prepared by the facility team and an on-site visit by an accredited assessor; buildings must be able to show measured performance for at least one year to be recognized.

In summary, each of the green building certification systems include four primary components: performance definitions (frequently expressed as requirements); performance metrics (describing how a facility demonstrates that it has met the definitional performance requirements); conformance/reporting documentation and methodologies; packaged in an integrated framework of conformance assurance that includes both certification of buildings and training and accreditation of the assessors or auditors who provide independent verification of performance,

Members of the Ad-hoc Discussion Group believe that independent verification of design, construction and operational performance to be a valuable tool for Federal agencies. This perception is rooted in agency experience that lower performance and less conformance with requirements is typically seen in building projects that were self-certified then later assessed through an independent process. However, a green building certification system is most useful if it is clearly aligned with Federal high-performance building requirements. Like the green building certification systems, the Federal framework for high-performance buildings includes definitional performance requirements (at the building and portfolio scales); performance metrics; and reporting requirements which frequently specify documentation and conformance methodologies.

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The 2012 report found that each of the systems evaluated provides an integrated, whole building framework that is generally consistent with Federal requirements.<sup>3</sup> The 2012 evaluation found that most Federal requirements could be met through either the Green Globes or LEED systems,<sup>4</sup> although supplemental efforts would be required in many cases to fully align with all three aspects of the Federal framework. The 2012 report also found that there were some important missing pieces:

- For new construction and major renovations, Green Globes does not directly address benchmarking and building system controls. LEED 2009 does not include integrated design, process water, benchmarking, moisture control, acoustics, building system controls and greenhouse gas emissions. Because the Living Building Challenge system does not specify performance paths, it does not specifically address integrated design, commissioning, water efficient products, measurement and verification, benchmarking, recycled content, biobased content, thermal comfort, moisture control, indoor air quality protection during construction, acoustics, building system controls, and greenhouse gas in the same manner as Federal requirements.

For existing buildings: Green Globes does not directly address commissioning, recycled content, biobased content, low emitting materials, siting, and building system controls. LEED does not address greenhouse gas emissions. The Living Building Challenge s does not directly address commissioning, water use, stormwater, water efficient products, measurement and

verification, recycled content, biobased content, thermal comfort, integrated pest management, moisture control, acoustics and building system controls. Another major aspect of high-performance buildings that is currently missing from green building certification systems is workplace design and ongoing evolution and considerations of workplace mobility. Coupled with the density and effectiveness of building use, these are crucial aspects of an integrated approach to high-performance buildings and critical elements to Federal agencies, affecting productivity, worker health, and portfolio size. Further discussion of workplace and mobility is included in section IV, below. Also missing is a comprehensive evaluation of building products and processes throughout their entire lifecycle, to reduce or eliminate those that may present an unreasonable risk of injury to health and the environment

In addition to the “missing pieces” outlined above, there is an urgency to better measure, match and track building design and actual performance in the Federal sector. “Measured performance” is important for several reasons. First, many Federal reporting requirements are based on a demonstration of actual performance.<sup>5</sup> Second, facility managers must understand how a building is actually performing in order to adjust operations to improve performance. Finally, operational policies and procedures are most effectively updated to support continual improvement if they are evidence-based. Various methods to measure actual performance are now widely available for energy and water performance data; other areas where performance can be quantitatively measured include quantities of recycled or re-used materials, waste generation, indoor air quality, and acoustic quality. Generally speaking, the federal government needs to consider how to better “match and measure performance” consistently across a building’s life cycle (design, completion of initial construction, and long term

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<sup>3</sup> Appendix C contains a summary of Federal requirements for high-performance buildings, as applied in the 2012 evaluation of green building certification systems.

<sup>4</sup> As noted above, the Living Building Challenge does not specify how to meet its performance requirements (i.e., identifying metrics, standards or documentation to demonstrate performance). Because the Federal system is very specific in its requirements, the Living Building Challenge “out of the box” generally did not align well with Federal requirements.

<sup>5</sup> See, e.g., the EISA requirement to reduce energy intensity by 3 percent per year, or 30 percent by FY 2015.

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operation), and all of the green building certification systems should improve in the area of “measured performance” for the categories outlines above.

However, absolute, quantitative measurement of performance is not possible for all aspects of high-performance building design, construction or operation. Demonstrations of performance for new construction and major renovations are frequently based on calculations, modeling, or design projections (“calculated” metrics), using industry standards and assumptions to estimate or project how a building will perform. “Calculated” performance for energy and water use can be verified post occupancy using the “measured” performance methods referenced above.

In addition, some aspects of operational performance are most appropriately addressed through policies and standard operating procedures (“evidence of intent”); performance can be appropriately documented by demonstrating that policies and procedures are being implemented on an ongoing basis. In this area, the documentation and conformance assessment methods developed by green building certification systems can provide a useful framework to guide facility managers as they develop, implement and maintain appropriate policies and procedures.

Green building certification systems’ documentation requirements can be duplicative when there is a robust federal tracking and reporting system already in place. This is most obvious in the areas of energy and water performance where agencies annually report facility and portfolio performance through a Federal reporting system that is independently audited within each agency. The Ad-hoc Discussion Group determined that some other aspects of building performance could be independently validated without reliance on green building certification systems. For example, in new construction, many high-performance design and construction metrics could be integrated into code compliance reviews; this appears to be a likely evolution as the market matures. Commissioning processes could be broadened to include many high-performance metrics for both construction assurance and ongoing operations. The environmental management systems (EMS) in place in many Federal facilities largely overlap with green building certification systems for existing buildings; sustainability metrics could easily be integrated into existing business systems and incorporated into EMS.

One of the biggest added values that green building certification systems offer Federal agencies is that they maintain robust infrastructures that are kept current with market developments. This is important benefit because the market is evolving so rapidly. Each of the green building certification systems reviewed regularly updates its performance metrics to maintain currency with changes in underlying standards, product certifications, applicable regulations, etc. Each of the green building certification systems maintain professional training and accreditation systems for designers, engineers, auditors and assessors, including continuing education requirements to assure that professionals maintain knowledge currency in the evolving market.

These aspects of green building certification systems represent substantial cost avoidance for federal agencies: large, ongoing investments of resources would be required to maintain a separate federal infrastructure. Costs avoided include:

- Eliminating cost to the Government of developing its own standards
- First costs to develop Federal or agency-specific standards
- Ongoing costs to keep Federal performance standards and metrics current with market developments
- First and ongoing costs to develop and maintain conformance metrics, methods and systems

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- First and ongoing costs to maintain cadre of trained assessors/auditors using internal resources

The Ad-hoc Discussion Group determined that, properly aligned with Federal requirements, use of green building certification systems would be an efficient use of Federal resources. This direction is also consistent with legal direction that Federal agencies use market driven voluntary consensus standards and conformity assessment activities whenever possible (rather than developing Federal standards). National Technology Transfer and Advancement Act and OMB Circular A-119 identify two primary reasons why the Federal sector should rely on market driven standards and systems:

- Eliminate the cost to the Government of developing its own standards and decrease the cost of goods procured and the burden of complying with agency regulation
- Provide market leadership
  - Further the policy of reliance upon the private sector to supply Government needs for goods and services.
  - Provide incentives and opportunities to establish standards that serve national needs
  - Encourage long-term growth for U.S. enterprises and promote efficiency and economic competition through harmonization of standards.

## I **Recommendations for Use of Green Building Certification Systems**

### ***A. Recommendations Applicable to All Federal Buildings: New Construction/Major Renovations and Existing Buildings***

The Federal Government should engage strategically with green building certification systems owners to develop better alignment with Federal agency needs. Such strategic engagement could reinforce and continue the important role that green building certification systems currently play both in supporting the transformation to high-performance within the Federal portfolio, and in harmonizing Federal green building activities with the private sector.

The discussion in Section II, above, highlights areas where strategic engagement could produce better alignment with Federal needs. Additional opportunities to produce better results for Federal agencies through strategic engagement are identified below.

The Ad-hoc Discussion Group recommends that agencies select the green building certification systems that best suits their mission and portfolio needs. However, there are important guidelines that agencies should take into account when selecting a green building certification system:

- A At the national level, guidance should be developed that identifies specific or mandatory credits/points that agencies should focus on when seeking certification. These points/credits should be aligned with Federal requirements and considered as “prerequisites” for Federal building certification. This is an important element of strategic engagement with green building certification systems owners. As discussed in section III, above, the guidance developed for use of green building certification systems should address both performance metrics appropriate for each selected credit/point and documentation required to demonstrate conformance with the system for Federal activities. This guidance could be included as part of the Interpretive Guidance for the Guiding Principles, discussed in more detail at section IV, below.
- B For internal consistency and efficient use of resources, agencies should be encouraged to use only one system at the agency or service level for New Construction/Major Renovations and only one system for Existing Buildings.. Decisions to use multiple systems within one agency should be based on organizational structure and portfolio needs considering broad classes of building and use types. For example: the Commerce Department includes multiple organizations that are operationally distinct, with portfolios comprised of different building types and uses (e.g. Census Bureau and NOAA). Bureaus, institutes and secretariats could choose different green building certification systems because of their different mission needs and because their facility management, training, and reporting infrastructures are distinct.
- C This guidance should apply to all buildings, even those representing relatively small segments in the Federal portfolio. Experience with green building certification systems has demonstrated that the systems are flexible enough to develop applications to all building types if Federal agencies have the right direction about how to use the systems. Applying one green building certification systems to all buildings in an agency’s portfolio simplifies application at both the facility and portfolio scales, avoiding the confusion inherent in creating numerous exceptions to a general rule. Strategic engagement can be used to develop portfolio level approaches applicable to particular building classes or and types.

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- D The Ad-hoc Discussion Group evaluated two agency-specific tools that could serve as models for strategic engagement with the green building certification systems owners: the Guiding Principles assessment tool developed by the Green Building Initiative for the Veteran's Administration, and the Sustainable Operations and Maintenance Program tool developed by GSA based on the LEED volume certification model.<sup>6</sup>

The Federal sector should formalize a process to maintain currency with the evolution of green building certification systems and underlying standards. Elements of the recommended "currency" process include:

- A The Federal sector should maintain currency in the use of any green building rating system by automatically adopting the newest version of any standard or green building certification system within one year after it is finalized, unless there is an overt decision made not to adopt the latest version.
- B Representatives from major Federal portfolio holders and resource agencies should convene to review any updated green building certification systems and changes to underlying standards critical to building performance in a process similar to the current EISA 436(h) review.
- C GSA's Office of Federal High-Performance Green Buildings will track the evolution of green building certification systems and standards, and work with the Departments of Energy and Defense to review changes and convene the interagency group. These agencies will reach out to other agencies with specific areas of expertise as needed (e.g., NIST, NIOSH, NIEHS, CDC, USFS, EPA, DOL, FTC, and the Energy Information Agency). The Office of Federal High-performance Green Buildings will provide direct staff support to the Office of the Federal Environmental Executive on green building certification systems and building standards.

***B. Recommendations Specific to New Construction/Major Renovations***

A major point of discussion for the Ad-hoc Discussion Group was whether/how the Federal sector should use newly finalized code-compliant standards for design and construction of high-performance buildings: ASHRAE Standard 189.1-2011 "Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings" (incorporating the International Green Construction Code). There is unanimous agreement among the Group that some portions of ASHRAE 189.1 provide useful metrics to specify and define certain aspects of performance for new construction and major renovation. However, there is strong consensus among portfolio owners that 189.1 is most useful as a specification in construction contracts and that compliance with the entire standard should not be used as a Federal reportable performance measure. The above referenced "currency" framework should evaluate what parts of 189.1 are important enough to be included in the Guiding Principles Implementation Guidance. Agencies should use also 189.1 where it benefits them.

Certain elements of ASHRAE 189.1 should be identified as performance metrics to be used as specifications in design documents and construction contracts. These selected elements of ASHRAE 189.1 should not be identified part of the Federal Guiding Principles. Agencies need flexibility to vary application of 189.1 elements based on factors such as regional/community resource needs; campus and community infrastructure opportunities; facility use profiles; and agency mission needs. The

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<sup>6</sup> "Volume certification" is an attractive option, supporting efficient use of Federal resources. "Volume certification" allows an agency to establish policies, programs, performance paths and associated documentation at the portfolio level, then "precertify" these elements for application at the facility level. Ideally, metrics, documentation and conformance methods should be aligned with Federal requirements, rather than duplicating effort by requiring conformance to green building certification systems documentation.

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government also needs flexibility to quickly evaluate and respond to updates to the standard as it evolves; this flexibility is impeded when elements of standards are directly incorporated into legal requirements. Additional thought is needed about the implications of applying certain aspects of 189.1 to Federal activities; further delineation may be needed to guide Federal users.

***C. Recommendations Specific to Existing Buildings***

As discussed in Section III, above, green building certification systems' documentation requirements can be duplicative and complex when there is a robust federal tracking and reporting system already in place. This is most evident in the existing building portfolio relating to ongoing reporting of energy and water performance: although the Federal reporting system already includes a conformance assurance process that includes independent auditing, agencies seeking green building certification must submit additional documentation to receive credit for performance in these areas. One approach to address this duplicative use of resources would be to direct agencies not to seek certification in the energy and water categories. However, all green building certification systems weight these two categories so that even basic certification would be unattainable without addressing these areas of performance. The EISA 436 Ad-hoc Discussion Group believes that green building certification systems owners should accept Federal documentation in lieu of green building certification systems' documentation for energy and water performance.

The Federal government should work with green building certification systems owners to develop an equivalent point system for certification of energy and water credits/points based on existing Federal reporting documentation and associated conformity assurance processes. Conceptually, this alternative certification path could take the following form:

- If the building is metered for energy/water AND is a building for which the portfolio owner has established targets as part of its energy and/or water reduction strategy to meet the Guiding Principles AND the building is meeting its energy targets, THEN
- Certification system owner awards the minimum points for energy/water. No additional documentation is needed to achieve the specified level of energy performance within the green building certification systems
- If there is desire among agencies to certify facilities at a level higher than the minimum, a predetermined set of points could be developed based on Federal documentation.

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Appendix A: Summary Minutes from EISA 436(h) Ad Hoc Discussion Group

Note that some discussions of a deliberative nature about topics not directly related to the application and use of green building rating systems are not included in this summary.

May 17, 2012 Meeting

The meeting included an overview of the EISA 436 Ad-hoc Discussion Group's charter and projected schedule; an overview of the green building certification system evaluation completed in April 2012; and discussion of the "key questions" developed to guide discussion at each meeting.

May 29, 2012 Meeting

The meeting's focus was on federal requirements, metrics and tools for new construction. The group discussed four issues. The majority of discussion was devoted to whether the Federal building performance requirements should be weighted. A consensus was not fully reached. The second issue focused on available tools (metrics, documentation and assurance of conformance) that can be used to meet requirements: GBCS, ASHRAE 189.1, Energy Star Federal High Performance and Sustainable Buildings Checklist (Portfolio Manager Guiding Principles checklist). The group reached a consensus that, pending additional analysis, ASHRAE 189.1 could be used to define performance, but this discussion was put on hold until additional analysis is received, which is expected in late June 2012. The third issue focused on what systems could be used to show compliance. The following pathways were established as potential ways to measure HPGB requirements and show compliance:

- Use GBCS - auditors and assessors
- Enhanced code compliance – local and internal code compliance processes
- Expanded commissioning – engineering firms
- Hybrid of commissioning, weighting, etc.
- Performance-based contracting

June 12, 2012 Meeting

The third meeting focused on Federal Requirements, metrics, and tools for existing buildings. The majority of the meeting's discussion centered on strategies for weighting federal requirements and/or categories and credits in green building certifications systems if used by agencies to comply with federal requirements. Issues discussed include:

- 1 Discussion of the pros and cons of weighting Federal building performance requirements for existing buildings. Some agencies have weighted some requirements more heavily than others (especially in the areas of energy and water use) for cost savings, and have developed internal policies to implement this direction. Some agency representatives believe that weighting Federal requirements would undercut the integrated design/whole building approach that is essential to achieving sustainable buildings
- 2 Weighting within green building certification systems (GBCS) presents a different scenario, because the GBCS address a broader range of issues than Federal requirements, and the system owners have already established weighting systems in the frameworks of the systems. Consensus was reached that there should be Federal direction regarding which specific points/credits should be pursued within GBCS
- 3 There are multiple strategies to weight green building certification systems to better reflect Federal needs. Certain points/credits could be assigned greater weight; some points/credits could be made mandatory and others optional; or Federal direction could be given on the

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performance paths and/or metrics to be used within specific points/credits. A majority of group members believe each agency should be responsible for deciding how to weight certification systems based on their individual portfolio and mission requirements; however, several group members stressed the importance of providing guidance to agencies to steer agencies towards better-performing buildings and ensure government-wide consistency and standardization. Overall, there is agreement that agency flexibility is important in identifying strategies to meet federal requirements.

- 4 The final issue discussed was how an agency can ultimately validate that it has conformed to its approach (whatever that approach may be) to comply with federal requirements. Many of the issues are similar, but strategies for conformance may vary for new construction versus existing buildings. Strategies discussed for existing buildings include a GBCS; agency-specific tools developed within a GBCS framework; Energy Star Portfolio Manager; or an internal quality control process. The majority of group members felt that there should be some degree of consistency around conformance in order to make effective interagency comparisons.

June 28, 2012 Meeting

The focus of the fourth meeting of the EISA GBCS Ad Hoc Discussion group was on federal requirements, metrics, and tools for existing buildings. The group reviewed a series of tables created by GSA to clarify executive and statutory federal requirements for existing buildings and the available metrics and tools that can be used to demonstrate performance of and conformance with these requirements, which come from certification systems, standards, federal programs, and more. The group reached consensus over the potential value of these tables to serve as a decision-making support tool for facility managers, and also reached consensus on applying a categorization and weighting strategy to the metrics for performance and conformance within clusters of building requirement goal areas. Although group members conceded that creating a formal decision-making tool from the tables is beyond the scope and timeline of this discussion group, it was suggested that development of this tool could be one of the final group recommendations. Formal consensus was not reached on this suggestion.

July 11, 2012 Meeting on Use of ASHRAE 189.1

The EISA GBCS Ad Hoc Discussion group convened on July 11, 2012 to discuss whether and how ASHRAE standard 189.1 should be used within the federal government for new construction and major renovations. The discussion group reached consensus that ASHRAE 189.1 should be used in the federal government, but not be adopted in its entirety. Further, the group reached consensus that ASHRAE 189.1 would best serve as a robust set of specifications to better define the government's design and construction requirements in contracts rather than as a set of performance requirements. The group agreed that ASHRAE 189.1 does not provide a framework for conformance assurance; green building certification systems and tools such as Energy Star Performance Manager are more appropriate for conformance.

July 12, 2012 Meeting

Principle topics at this meeting were GSA's proposed categorization of federal requirements coupled with performance and, and conformance metrics to meet those requirements; and if unusual building types within the federal portfolio should be given special consideration when pursuing a green building certification system (GBCS). The discussion group agreed with GSA's proposed grouping and categorization; Consensus was reached that, with the exception of buildings that may be dealing with

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significant process energy loads, unique building types do not need special consideration for using a GBCS, and that certification systems already have strategies in place to deal with diverse building type

## **Appendix B: Summary of Comments from Listening Sessions**

### **June 25, 2012 Public Listening Session<sup>7</sup>**

- Federal government should adopt only consensus-based standards; material standards must be developed in consensus-based technical reviews; Federal government should also allow the use of regional standards when appropriate
- Federal government should adopt ASHRAE Standard 189.1 as a requirement for new construction because it is consensus-based and material neutral. ASHRAE 189.1 also provides a direct path to energy efficiency
- USGBC does not use a consensus-based approach to the development of LEED; should not be recommended for Federal use.
- Green Building Certification System Review report fatally flawed because it failed to consider if voluntary consensus was used – LEED and Living Building Challenge are not consensus-based certification systems
- Green Globes the only system that offers fully accredited new building standards and adheres to the ANSI process
- GSA should not recommend LEED or Living Building Challenge unless amended – both seek to employ arbitrary chemical avoidance limits
- Green Globes is less rigorous than LEED. Living Building Challenge is the preferred alternative to LEED. The presence of pre-requisites is the biggest distinction between Green Globes and LEED.
- LEED best aligns with the government’s Guiding Principles and provides the best value for the taxpayers
- LEED should not be the only certification system recommended as it leads to a monopoly; should also consider ASHRAE 189.1 and the IgCC
- Federal government should only focus on LEED 2009; do not adopt a new version of LEED without the same scrutiny
- GBI’s Guiding Principles Checklist should also be considered with the other green building certification systems
- LEED provides set of tools that are high performance, highly used, and consensus based. LEED has worked for GSA and is still working
- LEED has established itself as industry standard – prerequisites are critical; Green Globes does not have any prerequisites
- LEED is the choice of the private sector and should be the choice for the Federal government
- LEED meets EISA criteria
- Living Building Challenge not ready for Federal use
- USGBC offering credits to address hazardous materials but they do not go far enough

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<sup>7</sup> Comments made by the public were presented orally or in a written statement and have not been fact-checked for accuracy

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**July 10, 2012 Public Listening Session**<sup>8</sup>

- Green Globes and LEED provide environmental rigor and marketplace traction
- Living Building Challenge provides the vision of true sustainability but not as practical; good stretch goal/vision but the market is not ready
- Green Globes is less appropriate for GSA – untested and not as recognized in the market
- LEED is rigorous in development and application; Green Globes studies show less rigor than LEED
- Green Globes easier to use, however the market only recognizes LEED
- LEED better for existing buildings – this is where the focus of GSA and Federal government is headed in the future
- LEED is a means to communicate; customers are aware of LEED
- LEED should be the preferred system for GSA and the Federal government; LEED uses a consensus-based approach that will benefit the US short-and long-term
- ASHRAE Standard 189.1 and IgCC do not directly satisfy all the Federal mandates; have potential but too new
- ASHRAE 189.1 is complicated and not well tested and requires a new learning curve; does not fully address lifecycle analysis
- If Government were to create a new rating system, this would create confusion in the market and would be a “step back”
- LEED meets EISA requirements and is the only standard that aligns with Federal requirements
- Third party certification is critical – government must use to meet objectives
- Whole building rating systems are critical; new systems need learning curve – takes away time for high performance design
- Federal government should recognize multiple systems; buildings all different – not one system fits all; should also consider ASHRAE Standard 189.1 and IgCC
- Federal government should use third-party consensus-based standards
- Concerns with LEED on not addressing life cycle carbon reductions yet
- LEED reports out on their comments received and is consensus-based
- Other criteria should be considered outside of the PNNL study: education of professionals, widespread recognition, number of long standing government initiatives by certification systems, availability certification by portfolio, demonstration of product innovations in the market, number of code alliances established and international leadership role the US should play – don’t lose momentum
- Should look at intent of green building certification system credits, current versions of rating systems and emphasis on carbon footprint; LEED has advantage over others

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<sup>8</sup> Comments made by the public were presented orally or in a written statement and have not been fact-checked for accuracy

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- GSA should interpret EISA as follows – require at least one system but allow GSA to recommend more than one
- GSA should make it clear that its review and recommendations are limited to current versions of certification systems
- PNNL report needs to be redone – why did Living Building Challenge make the cut in the review
- GSA should take a closer look at ASHRAE 189.1 and IgCC
- Encourage GSA to voice challenges with current LEED system
- Concern with current LEED version fails to recognize importance of LCA building materials
- LEED disadvantages wood products grown and manufactured domestically
- GSA incorrect in belief that LEED meets OMB Circular A-119 and the NTTAA; USGBC has been unresponsive to public comments submitted
- Third party certification should be required including a thorough document review by an independent trained and licensed assessor
- LEED could result in capital cost reduction and taxpayer savings
- GSA should select a few projects each year to meet Living Building Challenge requirements
- Encourage GSA and Federal government to accept components of ASHRAE 189.1 that pertain to the efficient use of water

## **Appendix C: Summary of Current Federal Requirements for High-Performance Buildings**

### ***Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings (Guiding Principles)***

- Employ Integrated Design Principles (NC); Employ Integrated Assessment, Operations & Management Principles (EB)
- Enhance Indoor Environmental Quality
- Optimize Energy Performance
- Protect and Conserve Water
- Reduce Environmental Impact of Materials
- Performance metrics selected by GBCS developers generally align well with federal requirements

### ***Federal Requirements for New Construction and Major Renovations***

#### ***Summarized*** (source requirement documents in parentheses)

- 1 Integrated Design (Guiding Principles)
- 2 Commissioning (Guiding Principles, EISA)
- 3 Indoor Water (Guiding Principles, EPAAct, EO 13423, EISA, EO 13514)
- 4 Process Water (Guiding Principles, EPAAct)
- 5 Outdoor Water (Guiding Principles, EO 13423, EISA, EO 13514)
- 6 Storm Water (Guiding Principles, EISA, EO 13514)
- 7 Water-Efficient Products (Guiding Principles, EO 13514)
- 8 Energy Efficiency (Guiding Principles, EPAAct, EO 13423, EISA)
- 9 On-Site Renewable Energy (Guiding Principles, Executive Order 13423, EISA)
- 10 Measurement and Verification (Guiding Principles, EPAAct, EISA)
- 11 Benchmarking (Guiding Principles)
- 12 Recycled Content (Guiding Principles, Resource Conservation and Recovery Act, EO 13514)
- 13 Biobased Content (Guiding Principles, Farm Security and Rural Investment Act, EO 13514)
- 14 Environmentally Preferable Products (Guiding Principles, EO 13514)
- 15 Waste and Materials Management (Guiding Principles, EO 13514)
- 16 Ozone Depleting Compounds (Guiding Principles, Montreal Protocol and Title VI of the Clean Air Act Amendments of 1990)
- 17 Low-Emitting Materials (Guiding Principles, EO 13514)
- 18 Ventilation (Guiding Principles) Thermal Comfort (Guiding Principles)

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- 19 Daylighting (Guiding Principles)
- 20 Environmental Tobacco Smoke Control (Guiding Principles)
- 21 Protect Indoor Air Quality during Construction (Guiding Principles)
- 22 Moisture Control (Guiding Principles)
- 23 Acoustic (EISA)
- 24 Building System Controls (EISA)
- 25 Siting (EISA)
- 26 Greenhouse Gas (EISA)

***Federal Requirements for Existing Buildings Summarized*** (source requirement documents in parentheses)

- 1 Integrated Assessment, Operation, and Management (Guiding Principles)
- 2 Commissioning (Guiding Principles, EISA)
- 3 Indoor Water (Guiding Principles, EPA Act, EO 13423, EISA, EO 13514)
- 4 Outdoor Water (Guiding Principles, EO 13423, EISA, EO 13514)
- 5 Storm Water (Guiding Principles, EISA, EO 13514)
- 6 Process Water (Guiding Principles, EPA Act)
- 7 Water-Efficient Products (Guiding Principles, EO 13514)
- 8 Energy Efficiency (Guiding Principles, EPA Act, EO 13423, EISA)
- 9 On-Site Renewable Energy (Guiding Principles, Executive Order 13423, EISA)
- 10 Measurement and Verification (Guiding Principles, EPA Act, EISA)
- 11 Benchmarking. (Guiding Principles)
- 12 Ventilation (Guiding Principles)
- 13 Thermal Comfort (Guiding Principles)
- 14 Moisture Control (Guiding Principles)
- 15 Integrated Pest Management (Guiding Principles)
- 16 Daylighting (Guiding Principles)
- 17 Low-Emitting Materials (Guiding Principles, EO 13514)
- 18 Protect Indoor Air Quality during Construction (Guiding Principles)
- 19 Environmental Tobacco Smoke Control (Guiding Principles)
- 20 Recycled Content (Guiding Principles, Resource Conservation and Recovery Act, EO 13514)
- 21 Biobased Content (Guiding Principles, Farm Security and Rural Investment Act, EO 13514)
- 22 Environmentally Preferable Products (Guiding Principles, EO 13514)
- 23 Waste and Materials Management (Guiding Principles, EO 13514)
- 24 Ozone Depleting Compounds (Guiding Principles, Montreal Protocol and Title VI of the Clean Air Act Amendments of 1990)
- 25 Acoustic (EISA)
- 26 Building System Controls (EISA)
- 27 Siting (EISA)
- 28 Greenhouse Gas (EISA)