

Introductions

Designated Federal Office Ken Sandler welcomed members of the Green Building Advisory Committee (hereafter “the Committee”) and provided an overview of the meeting agenda.

Kevin Kampschroer, Federal Director of GSA’s Office of Federal High Performance Green Buildings (hereafter “the Office”), declared that he was pleased to have the Committee reconvened and emphasized the many opportunities that exist going forward.

Mr. Kampschroer shared background on and his vision for the Office.

- The Office, established by the Energy Independence and Security Act of 2007 (EISA), is driven by the principle that getting the right info to the right people can catalyze real change.
- By applying sound building principles, including integrative design, GSA saves money over the long term. Viewing buildings in terms of their life cycle costs and benefits is a critical component of greening the Federal building portfolio.

Chairman Bob Fox welcomed new and returning committee members to the meeting, and emphasized his excitement for the work of the Task Groups. Individual introductions followed.

The Green Building Advisory Committee: Your Role as A Committee

Ken Sandler, GBAC Designated Federal Officer

Ken Sandler discussed the Committee’s mission and responsibilities, along with goals for today’s meeting.

- This Committee follows in a long tradition of Federal advisory committees, which are guided by the Federal Advisory Committee Act (FACA). Key principles are independence, ethics, balance and openness.
- Per its Charter, the Committee advises GSA “to accelerate the successful transformation of the Federal building portfolio to sustainable technologies and practices.”
- The Committee helps the Office meet its mission by injecting new ideas, innovation, and information on key industry and technology trends.
- The Committee has given advice to date on specific GSA projects (e.g., the Facilities Management Institute, FMI.gov), on the Office’s review of green building certification systems, and through a resolution to incorporate the “social cost of carbon” into Federal building portfolio decision making.
- At the heart of today’s meeting will be presentations from the Committee’s two current Task Groups, outlining their proposals on net zero energy buildings and building performance labeling. The Committee will have to decide what action to take on these proposals. The group will also be given an opportunity to make further motions.

Cost of Carbon Resolution Discussion

Chairman Bob Fox asked Committee Member Greg Kats to discuss the cost of carbon resolution that he had originally proposed to the Committee.

- The resolution, approved at the Committee's November 12, 2013 meeting, stated: "All federal building investment, design, construction, retrofit and location decisions should incorporate the social cost of carbon, including carbon from energy use and embedded in materials. The cost of carbon referenced should be the most current calculation as updated by the US Office of Management and Budget."
- The social cost of carbon (SCC) is a Federal interagency estimate of the monetized damages associated with the incremental increase in carbon emissions in a given year. (See materials on the topic online at <http://www.epa.gov/climatechange/EPAactivities/economics/scc.html>.)
- This recommendation would not increase the cost of a particular capital project, but would allow agencies to prioritize projects based on their energy and climate impacts. It would promote the best net present value for smarter decision-making.
- GSA is working through the details of how this could work in a capital budget scenario, for ultimate presentation of the idea to OMB for consideration of revision to its budgeting guidelines (Circular A-11). Pilots can help identify where potential barriers exist.
- Challenges exist in carbon accounting for the impacts of building materials, as this information is not readily available at present.

Federal Green Building Requirements & Progress to Date

Dr. Tim Unruh, Director, DOE Federal Energy Management Program (FEMP)

Dr. Tim Unruh and Sarah Jensen, FEMP Sustainability Program Manager, discussed the Federal government's progress towards achieving the sustainability goals set forth in legislation and executive orders.

- FEMP works closely with the Office of the Federal Environmental Executive and individual agencies to support, monitor and report on their progress.
- Established in 2006 by the Federal Leadership in High-Performance and Sustainable Buildings Memorandum of Understanding, the Guiding Principles (GPs) became mandatory through Executive Order (EO) 13423 and reinforced in EO 13514.
 - The GPs encompass energy, water, waste, and indoor environmental quality (IEQ), with an overriding emphasis on integrative design and operations.
 - FEMP equips agencies with strategies, training, tools and forums for interagency collaboration.
 - ENERGY STAR Portfolio Manager includes a GPs checklist that many agencies use for monitoring their progress towards them.
- Buildings constitute 33% of overall Federal energy consumption, nearly 50% of which is attributed to electricity use.
- The Federal government has:
 - Cut its energy use intensity (EUI) by 20.6% since 2003 (vs. 2013 goal of 24%);
 - Increased electricity from renewable energy to 9.2% (vs. 7.5% goal);
 - Reduced potable water use 19.1% since 2007 (vs. 12% goal); and
 - Achieved the GPs at 3.65% of buildings and 7.32% of sq. ft. (vs. 11% goal).
- DOD is responsible for 60% of total Federal building energy consumption. GSA's EUI of 58.1k Btu/sq.ft. is significantly lower than the commercial building average.
- Federal investment in energy projects, through appropriations, Energy Saving Performance Contracts (ESPCs) and Utility Energy Savings Contracts (UESCs), peaked during 2010- 2011 thanks to the Recovery Act. Following the President's ESPC initiative, the government has maintained its investments in ESPCs.

- Every four years the government must audit 25% of its buildings representing 75% of its energy use. FEMP maintains a Compliance Tracking System (CTS) database to monitor progress on this goal (<http://energy.gov/eere/femp/eisa-compliance-tracking-system-reports-and-data>). Agencies have identified \$10.2B in potential energy conservation measures with annual savings of \$984M, with \$3B in projects implemented to date.

Federal Green Building Requirements & Progress – Committee Comments:

- Identify opportunities to gather and report on cost saving metrics as part of the Federal performance reports.
- In addition to tracking energy use per square foot, the government should monitor total square footage – which is happening in response to the President’s Freeze the Footprint initiative.
- Consider taking into account external influences on building use and density, e.g., footprint consolidations and transitioning soldiers from battlefield to bases.

Net Zero Federal Buildings: Task Group Report & Discussion

Victor Olgyay, Rocky Mountain Institute, Task Group Co-Chair
David Kaneda, Integral Group, Task Group Co-Chair

Victor Olgyay and David Kaneda summarized the Task Group’s work and recommendations.

- The Task Group proposal challenges the Federal government to strengthen its net zero energy (NZE) commitments for both new and existing buildings. The recommendations include definitions of NZE and specific long term and interim goals. The group built in flexibility to allow agencies multiple paths to achieving NZE goals.
- Definitions:
 - The group defined a Net Zero Energy Building (NZEB) as “an energy-efficient building where the actual source energy consumption measured at the site boundary is balanced by on-site renewable energy production on an annual basis.”
 - It also defined Off-site NZEBs (where off-site renewable energy is used), REC-NZEBs (where Renewable Energy Credits (RECs) are used), NZEB Campuses (covering groups of buildings on a contiguous site), and NZEB Portfolios (covering groups of buildings on multiple sites).
- NZE goals for GSA and the rest of the Federal government are summarized below:

Table I: Summary of Proposed Net Zero Energy (NZE) Federal building Goals

Target date	Entire Federal govt.	Each Federal agency	GSA & Regions
2017		Start planning NZE retrofits. Agencies with larger portfolios to lead the effort.	Initiate ≥20% of new construction building area to be NZE (≥1 NZE pilot). Start planning NZE retrofits.
2020	≥1% of total building area = NZE. All new construction initiated to achieve NZE by 2030		≥1% of each Region’s building area = NZE (≥1 building).

	(per EO 13514).		
2025	≥10% of total building area = NZE.	≥1 building = NZE. Continue planning NZE projects.	≥10% of each Region's building area = NZE. Continue planning NZE projects.
2030	≥50% of total building area = NZE. All new construction = NZE (per EISA).	≥25% of building area = NZE. Continue planning NZE projects.	≥50% of each Region's building area = NZE. Continue planning NZE projects.

- The group also recommended clear disclosure of energy use, including accounting for where RECs are used.
- Study how to increase the rate of adoption, through innovative financing, service provider partnerships and other strategies as a follow on topic for this Task Group.
 - In order to diffuse NZE into the market, it is important to show its advantages (financial and other benefits), compatibility (ability to support core missions), simplicity (more benefit than challenge), trialability (demonstration of how to accomplish goals), and observable results (tangible successes).

Net Zero Federal Buildings - Committee Comments

- Getting the goal of achieving NZE out there will go a long way toward increasing adoption and moving the market. Raising the bar is necessary with NZE – what seem like stretch goals now may be necessary to meet climate challenges.
- Frame the discussion to emphasize achieving these goals at the portfolio level.
- Not all buildings will make sense to attempt to bring to NZE, so identify the best prospects. Leverage both Freeze the Footprint and Climate Adaptation programs to weed out poorly performing buildings. But also find ways to ensure that divestment of assets doesn't simply shift carbon emissions to other parties.
- Don't allow the flashiness of NZE to detract from other critical goals.
- Monitor California's progress towards NZE goals and take lessons learned back to the Federal program.
- Consider how resilience is valued and if GSA can explicitly make property preferences based on these valuations.
- State a clear preference for energy generated onsite rather than purchased.

The Committee voted unanimously to adopt the Task Group's recommendations, outlined in the Net Zero Energy Buildings Proposal, as an Advice Letter of the Committee to Mr. Kampschroer.

Working Lunch – GSA PBS Recovery Act Investments: Environmental Benefits

Lance Davis & Walter Tersch, GSA Public Building Service

Guest presenters Lance Davis and Walter Tersch shared the projected and achieved environmental performance and savings of GSA PBS' Recovery Act investments, discussing both portfolio-wide metrics and specific case studies.

- Recovery Act projects are expected to reduce energy consumption by 19% across 447 buildings, with projected annual cost savings of \$62M once fully operational. ARRA

Modernization projects are expected to realize an average Energy Use Intensity (EUI) of 50 kBtu/SqFt/year, 45% below the national average.

- gBUILD, PBS' database to track Recovery Act-funded projects, collects and tracks information including energy and water projects and results. The tracking mechanism allows PBS to identify outliers and those facilities not performing as projected.
- In FY2013, actual energy consumption was 1% lower than projected energy consumption for the 275 buildings with completed Recovery Act projects. This success can be attributed to strong regional accountability structures and incentive programs.
- In FY2013, the 275 buildings with completed projects were consuming approximately one trillion fewer BTUs vs. their 2008 baselines. The cumulative energy savings from completed Recovery Act projects has exceeded 1.7 trillion BTUs over three years.
- 89 of GSA's Recovery Act projects are installing at least one renewable energy technology.
- Recovery Act projects' efficiency and generation improvements are anticipated to reduce GSA's GHG emissions by 365,000 metric tons of carbon dioxide equivalent (MtCO_{2e}) annually.
- Between February 2009 and June 2014, 48 buildings with Recovery Act projects have earned LEED certifications across the United States, with 60 more expected to be certified by FY2020. Recovery Act investments alone are projected to nearly triple the total number of GSA-owned LEED certified buildings.
- 120 projects include water conservation elements, such as fixture replacements, water-efficient irrigation, and more efficient landscaping. These projects are estimated to save 120 million gallons of water annually.
- Two case studies, the Dr. A.H. McCoy Federal Building and Ronald V. Dellums Federal Building, highlight specific achievements at the local level. The McCoy Building is using 33% less than it did prior to the Recovery project, while the Dellums Building is using 22% less.

GSA PBS Recovery Act Investments – Committee Comments

- Provide investment metrics for the green building projects. Perform benefit to cost ratio or return on investment analyses (beyond liquidity measures like simple payback).
- For those buildings performing better than projected, identify and disseminate lessons learned to transition successes throughout the project portfolio.
- Share information on GSA's gBUILD performance tracking approach and methodology for others to emulate.
- Disseminate best practices and lessons learned in incentivizing onsite performance to others.
- Track and share savings over time, as they can worsen without proper O&M. Provide feedback to occupants and energy managers alike on how their actual energy performance stacks up against projections. Use feedback to incentivize competition.
- Share data, both quantitative and qualitative, on occupant satisfaction prior to and post Recovery Act projects.

Federal Building Performance Labels: Task Group Report & Discussion

Michael Deane, Turner Construction, Task Group Co-Chair

(Note: Co-Chair Brendan Shane, Washington DC Dept of Environment, was unable to attend)

Michael Deane presented the recommendations of the Task Group to the Committee.

- Documenting, analyzing and acting on building performance information are essential to achieving and sustaining high performance in buildings. What gets measured gets managed, and raising awareness can help alter occupant and management behavior.
- To this end, the Task Group recommends:
 - All Federal agencies should adopt labels that display building performance metrics in several categories currently tracked by Federal agencies, including energy, water and waste.
 - Label content should be expanded to include metrics related to Indoor Environmental Quality (IEQ – including temperature, noise, light and air quality) that impact the health, productivity and wellbeing of building occupants
- In its previous iteration, the Task Group focused more on the label's appearance. This iteration refocused the discussion around the information to be tracked, with an emphasis on current federal requirements for gathering and reporting data, and how they may be supplemented, e.g., with IEQ data tracking.
- The general recommendations for successful labeling include: consistent format - clear, transparent and understandable, easy to access and actionable, appropriate level of detail for different user groups, prominently displayed within the building to raise awareness, displayed on line to increase transparency, erring on the side of disclosure, with normalized data (e.g. by gross square feet), considering other appropriate metrics for specific building types, establishing benchmarks to monitor progress towards goals, and updating as requirements and data availability change.
- The Task Group provided detailed recommendations for labelling/reporting data for each of the four topic areas (energy, water, waste, and IEQ).

Federal Building Performance Labels – Committee Comments

- How and what information is provided for a building (e.g, label vs. dashboard) should depend on the audience being targeted, and for what purposes. CEOs, for example, care about the financial impacts.
 - A dashboard at the building entrance may be valuable to visitors but building occupants are likely to learn to ignore it.
 - Facility managers can clearly use building performance information to improve operations.
 - Key audiences include portfolio managers, building managers, commissioning agents, occupants, and the general public.
- Energy management companies and utilities own much of the needed energy data, and are making it more readily available through the Green Button program.
- Need to take liability concerns into account – e.g., that IEQ data could be used as the basis for lawsuits. But as with increased release of infection rate data by hospitals, disclosure creates shared risk.
- The Committee unanimously approved a motion for the Task Group to regroup following the Committee's recommendations and return with more focused recommendations, i.e.:
 - Create a matrix of key audiences, their data needs and best approaches to meet those needs.
 - Identify a separate track for IEQ, which offers more challenging issues.
 - Conduct a proof of concept or business case to support these recommendations, or propose for GSA to do so.

- Additional volunteers to join this Task Group included C.J. Cordova, Amy Costello, Jonathan Herz, Kent Peterson and David Kaneda.

How Do We Know If Our Projects Are Having An Impact?

Dr. Judith Heerwagen & Michael Bloom, GSA Office of Federal High-Performance Green Buildings

Judith Heerwagen and Michael Bloom discussed the Office's efforts to track impacts of its activities.

- Approach based on a model of translational research focused on rapidly transitioning research to everyday practice. Building research needs to be translated from journals and websites into language and formats that practitioners can and will use.
- This requires an understanding of how to embed knowledge into a cultural and social context as opposed to only pushing solutions. The focus is on getting the right information to the right people at the right time.
- The Office's strategy has two components: *Translation* and *ARIA*
 - Translation: identifying new approaches and ideas, distilling those ideas into their key findings with an emphasis on their value.
 - The key is to keep communications simple, actionable, useful and motivating to the target audience.
 - Examples of how the Office translates research results for key audiences include:
 - The Washington Post infographic *Are you in an unhealthy office relationship?* (<http://www.washingtonpost.com/wp-srv/special/health/unhealthy-vs-healthy-office/index.html>), to which the Office contributed;
 - GSA's Sustainable Facilities Tool (www.sftool.gov);
 - The Office's Research into Practice materials, covering topics including electrical plug load, water conservation and submetering (<http://www.gsa.gov/portal/category/105695>).
- *ARIA (Awareness, Response, Integration, Action)* describes the Office's approach to monitoring its impacts, by identifying criteria for success and tracking specific metrics. Measuring impacts on performance is challenging, as there are many moving pieces involved.
- Awareness is the first step to get the information out there. In today's environment, there are more pathways than ever before, from traditional partner engagements to cutting-edge social network analysis.
 - The SFTool can monitor traffic, viewing habits, and channel value. Metrics help identify which channels are the most effective so that resources and time can be more optimally allocated.
- Response: Through user surveys and myProjects features, the SFTool can identify which sustainability practices are more likely to be adopted by which audience groups.
- Integration: Beyond audience response, the next goal is integration by target audiences of best practices into everyday activities.
 - Brian Gilligan of the Office discussed FMI.gov, a tool for implementing the Federal Buildings Personnel Training Act (FBPTA) which measures the impact of facility management skills and knowledge provided through trainings.

- Skills assessment tools help GSA understand what people need to know, and determine whether each required competency has been acquired. Organizations can then roll this information up to determine where more training or resources are needed.
- Action: Finally, the Office hopes to identify ultimate impacts on the environment as a result of actions by key audiences.

Tracking Impact - Committee Comments

- Beyond government's own actions, GSA should track its indirect influence on the marketplace through the supply chain.

Election of Committee Chair

Chairman Bob Fox announced the two candidates to replace him as Chair of the Committee: Dr. E. Sarah Slaughter and Mr. Greg Kats. The candidates had provided statements of interest prior to the meeting. Greg Kats was selected to serve as the new Committee Chair.

Topics Proposed by Committee Members

Chairman Bob Fox invited the Committee to discuss new areas of advice to GSA for the group to pursue. Proposed motions for the group to consider included:

- Study CO2 footprint reduction value of transitioning to telework and video conferencing. Develop new metric: carbon footprint per hour worked.
- Identify best strategies to speed Federal adoption of the committee's NZE recommendations.
- Begin transitioning beyond NZE to net-positive energy buildings in order to offset transportation energy.
- Investigate extent to which current utility rules and structures provide disincentives to installation of renewables, and identify potential solutions.
- Research leasing models that encourage tenants to save energy, as current leasing contracts do not account for plug loads, etc.
- Investigate best ways for agencies to achieve climate resiliency goals while dovetailing with other green building objectives.
- Research how the Federal government can take greater leadership in the renewables supply side through power purchase agreements (PPAs).
- Investigate avenues to allow individual buildings to opt into PPAs e.g., through annual PPA solicitations, and allow longer term PPA contracts.
- Develop portfolio-wide strategies to match green building priorities to where they can have the most impact.
- Investigate Federal budget scoring for leases and purchases and how it may better facilitate renewables policy

Chairman Bob Fox proposed that the draft motions be sent to Ken Sandler, to be shared, refined, and voted upon by the group.

Public Comment Period

The Committee heard comments from Federal personnel in the audience on topics including: aligning building O&M with increasing telework and hoteling; performance incentives and goals in O&M contracting; providing electric vehicle charging stations at Federal facilities; and developing a portfolio strategy to apply GSA's P-100 building performance standards flexibly.

Closing comments

Chairman Bob Fox thanked all participants for supporting the goals of the Committee, with special acknowledgements to Kevin Kampschroer and Ken Sandler for all of their work behind the scenes, and reaffirmed his excitement to participate as an active member at the next Committee meeting.

Kevin Kampschroer and the entire Committee personally thanked Bob for his service as Chairman.

Tour of GSA Headquarters, 1800 F Street, NW
Lance Davis, Public Building Service