GSA Office of Governmentwide Policy

Real Property Policysite

The Future Is Now

Sustainability and Asset Management

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"Sustainability is a mode of thinking and acting responsibly. It is grounded in the knowledge that all of life is interdependent - that local action may have global consequences."

(Whole Building Design Guide)

Cover Photo: GSA PBS: Smith+Gill's Clean Technology Tower, Chicago, IL: Building form is used to harness the power of the wind and sun to create a carbon neutral building.)

Inside This Issue

POLICYSITE

The Future Is Now: Sustainability and Asset Management

POLICYSITE

A MESSAGE TO OUR READERS

This edition highlights the latest in sustainable development perspectives from government and industry experts, covering the diverse technologies, trends and initiatives that are leading the way in shaping the stewardship of the nation's assets on behalf of the American people.

We are focusing on sustainability in this issue because of its critical role in the asset management community and society as a whole. Sustainability is an elemental principle of how we must act towards this planet. According to the Whole Building Design Guide, "Sustainability is a mode of thinking and acting responsibly. It is grounded in the knowledge that all of life is interdependent - that local action may have global consequences."

Sustainable development is no longer a novel concept. As an integral part of our industry, sustainability principles are being incorporated in design and energy efficiency throughout the asset management industry.

The continuing importance of sustainability in asset management, in our workplaces and in our community, as well as in our nation's future, is evidenced by recent executive and legislative efforts of the U.S. Government.

On December 19, 2007, the U.S. Congress enacted a comprehensive bill which was signed by the President: the Energy Independence and Security Act of 2007. This bill, in conjunction with Executive Order 13423, signed on January 24, 2007, Strengthening Federal Environmental, Energy, and Transportation Management, will increase energy security and make this country stronger, safer and cleaner for future generations.

Sustainability is an ongoing critical and challenging issue for today's asset management and workplace development experts and we would like to continue to raise the bar through an ongoing dialogue of ideas and critical thinking in our industry.

We would like to thank our contributors for their generous collaboration and support in assisting us in this dialogue: Finland's Senate Properties, General Services Administration's Public Buildings Service, Office of the Federal Environmental Executive, Public Works and Government Services Canada, U.S. Army Corps of Engineers, U.S. Department of State, as well as many public/private sector real estate and workplace experts. The articles contributed to this issue reflect the influence of sustainability in many diverse areas, including building information modeling, energy metering, planning and conferencing.

We recognize the interdependence of our roles and responsibilities with these and other industry partners and supporters, as we share these important ideas and practices with you for a sustainable future. ■

The Office of Real Property Management

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Our mission in GSA is to develop, promote, and assess conformance with management policies and regulations for the effective and efficient stewardship of Federal real property assets and alternative workplaces. GSA is a governmentwide leader in asset management, best practices, inventory reporting, legislative reform, performance measurement, sustainability, and telework.

Public Works and Government Services Canada (PWGSC) is a regular contributor to POLICYSITE and language translations are included for PWGSC articles in this issue.

For more information, comments or input, please contact the Managing Editor, Richard Ornburn, in the Regulations Management Division, at richard.ornburn@gsa.gov, or 202-501-2873. Graphic design provided by GSA's Office of Citizen Services and Communications: Graphic Designer - David L. Alexander.

For more information about the Office of Real Property Management, visit our website:

www.gsa.gov/realpropertypolicy

"(Canada's) PWGSC is working to incorporate sustainable development considerations into the very fabric of its business..."

(Photo: Atrium, Greenstone Building, Yellowknife, Northwest Territories, Canada, LEED® Canada-NC 1.0 Gold. Photo credit: Manasc Isaac Architects Ltd)

1. BUILDING INFORMATION MODELING (BIM)

POLICYSITE

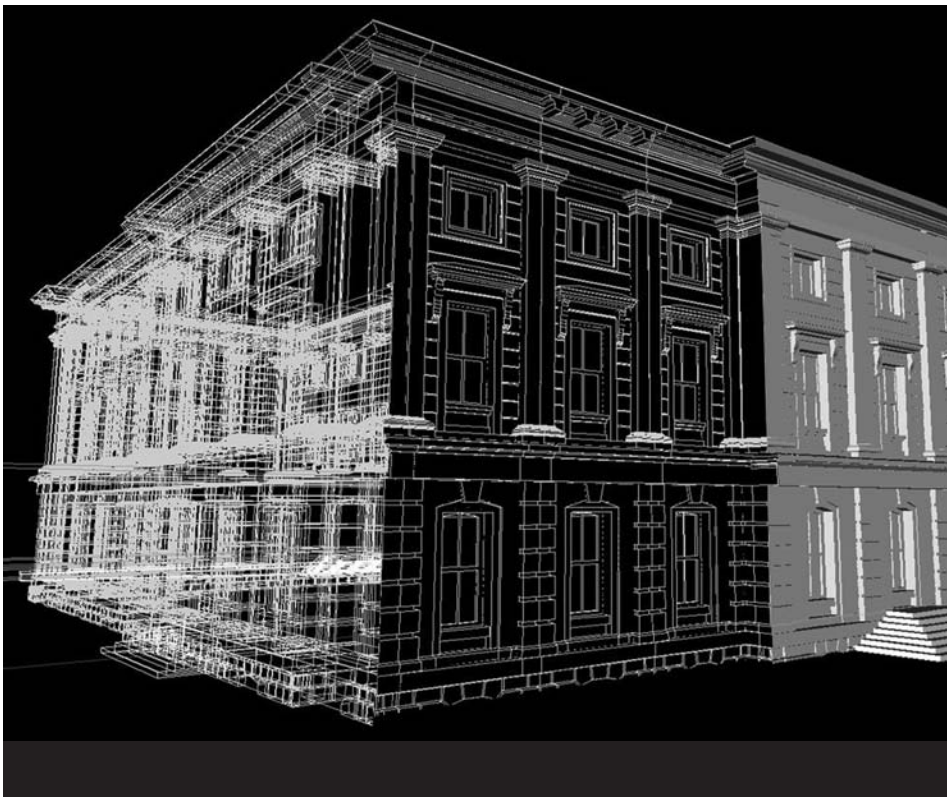
BIM, SUSTAINABILITY AND INTERNATIONAL PARTNERSHIPS

(by Charles Matta, FAIA, Director, Center for Federal Buildings and Modernizations, Office of the Chief Architect, GSA Public Buildings Service, charles.matta@gsa.gov)

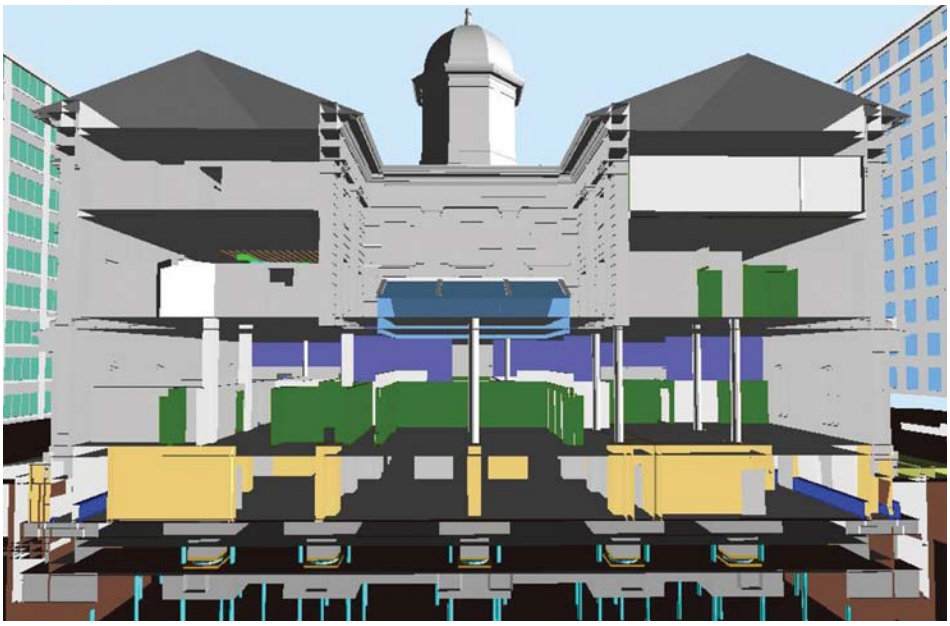
In the world of architecture and construction, BIM is the latest buzz. The acronym stands for Building Information Modeling, and is a 3D-4D-nD tool where detailed three-dimensional renderings take on added value as "time" (the fourth D) and other dimensions such as "cost" are integrated with the building model.

The model can also be rich with facts and information including specifics about site and building orientation, material attributes, assembly, interior spaces, and mechanical, electrical and plumbing systems. BIM software also allows users to analyze a variety of design and construction issues.

The result is a powerful tool that, for any real estate organization, makes BIM essential to project delivery and facilities management. Drawings and data within the model can be developed to distinguish between individual systems and materials. Programs can help design heating, ventilating, and air conditioning (HVAC) systems and predict energy consumption. With laser-scanning technology, BIM can generate highly accurate as-built documentation of existing structures. It can help customers visualize and fine tune the design of their spaces and the phasing of tenant moves. It can generate catalogues of systems and building components and provide an understanding of construction details, facts that in turn, can be used as data for quantity take-offs



Pioneer Courthouse Modernization & Seismic Base Isolation, Portland, OR (3D & 4D BIM example)



BIM Pioneer Courthouse, Portland, OR

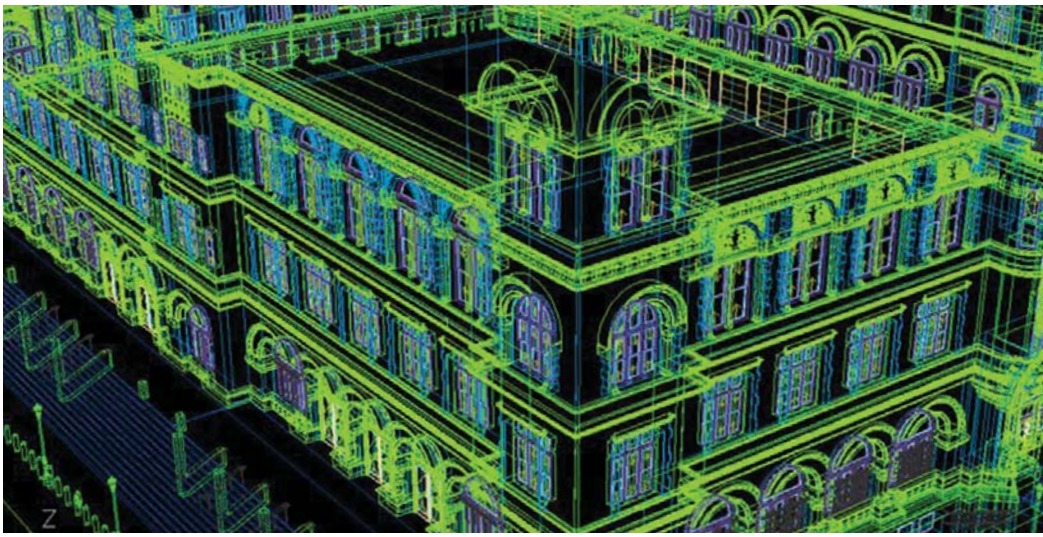
and cost estimates.

Since 2003, the General Services Administration (GSA) has had a National 3D-4D BIM Program and been an industry leader in implementing BIM strategies. Validating a design's spatial program was among its first uses. In 2004, the U.S. Courthouse in El Paso, TX, was modeled with BIM to confirm that the design fulfilled the program and other requirements, such as fenestration ratios, efficiency ratios, and - per the ANSI/BOMA (American National Standards Institute/Building Owners and Managers Association) standard - totals for rentable square feet. In 2005, BIM was employed to give judges at the Jackson, MS, courthouse a digital preview of their courtroom via a virtual model that included layout, lighting and acoustics. In 2007, laser scans became the basis for developing a 3D model of the historic U.S. Post Office and Courthouse in Brooklyn, NY, accurate to a quarter inch. Perhaps most significantly, all prospectus-level projects funded from fiscal year (FY) 2007 forward must have a BIM spatial program for Final Concept approval by the Commissioner for the GSA Public Buildings Service (PBS).

In the years ahead, as the BIM mandate is expanded, the payoff with respect to sustainability holds great promise.

In the energy arena, it will be possible to profile consumption substituting alternative designs and HVAC systems. This type of analysis will be critical in complying with the Energy Independence and Security Act of 2007 that, from a 2003 baseline, specifies a 30 percent reduction in energy consumption per gross square foot by 2015 in Federally-owned buildings. But that's just the beginning of the story.

BIM, due to its sophistication and efficiency, offers several other sustainable benefits. It will enable project managers to more effectively and efficiently respond to customer space needs as we provide tenants with digital walk-throughs and 3D models. This should speed design, improve satisfaction and reduce change orders. For major renovations of occupied buildings, BIM will yield dependable as-built 2D and 3D drawings and facilitate the scheduling and relocation of > > >



(Right) U.S. Post Office & Courthouse Modernization Brooklyn, NY (3D Laser Scanning example)

> > > workspaces. In the construction process, it will permit faster, more precise take-offs and virtual construction images using 4D models, providing opportunities to reduce both costs and waste.

An impressive example of BIM's impact is found in the renovation of GSA's 300 North LA (Los Angeles) office built in 1965. From 2006 to 2009, this huge, 1,050,232 square foot building (Federal Building, 300 N. Los Angeles St., Los Angeles, CA) was and is to remain fully occupied as it goes through an extensive modernization. Work planned during this period includes asbestos abatement and a seismic retrofit, to be carried out with tenants in place. The good news was that with BIM drawings and analysis, the project timeline was reduced by 19 percent, and the temporary relocation process is progressing much more smoothly and successfully than in non-BIM projects of similar size and scope.

If there is a potential stumbling block on the road to this kind of success, it would be the development of proprietary BIM software that does not permit the integration of data from another BIM program. For this reason, GSA advocates an open standards BIM platform accessible to all. More specifically, recognizing the global nature of this challenge,

Signing of the International BIM Agreement: (l to r) Morten Lie of the Directorate of Public Construction and Property, Norway; David Winstead, Commissioner, U.S. General Services Administration (GSA) Public Buildings Service; Aulis Kohvakka of Senate Properties, Finland; and Les Shepherd, GSA Chief Architect.

GSA is partnering with public real estate organizations in other nations to develop and ensure interoperability in BIM software and systems.

Historic International Partnership

In an historically noteworthy event, an international agreement supporting this objective was executed with the public real estate organizations of Finland, Denmark and Norway. It was signed in Washington, DC, on January 17, 2008. Our partners in this agreement are Senate Properties (the Finnish public real estate enterprise), the Danish Enterprise and Construction Authority and the Norwegian Directorate of Public Construction and Property.

Our commitment is "to initiate and participate in open BIM-related research, development, and collaboration efforts." This includes making our own construction projects accessible as pilots. We will also issue corresponding BIM requirements, open standards mandates, and adoption schedules with the goal of using these on a regular basis within two to four years. We will take advantage of existing forums to implement the agreement including The Workplace Network and the International Alliance for Interoperability. Other countries also plan to join in this effort.

This is a significant collaboration and gives GSA and other users a leadership role in the development of this important tool. And, it promotes global cooperation and creativity that will help leverage BIM's value and its cost-saving and efficiency-related sustainable outcomes. ■

You can find the latest on BIM at PBS at www.gsa.gov/bim.

BIM - "Award-winning" Technology: GSA's Building Information Modeling (BIM) program was honored during the October 29, 2007, CoreNet Global Summit with the prestigious "H. Bruce Russell Global Innovator's Award." This corporate real estate award recognized GSA for the use of innovative BIM technology to more efficiently manage a portfolio of 8,600 Federal assets. The BIM program was also recognized as a "Top Award Winner" in the 2007 GSA Achievement Award for Real Property Innovation, for its use of innovative ... technologies to complement, leverage, and improve existing technologies to achieve major quality and productivity improvements.

2. BUILDING DESIGN

JEAN CANFIELD BUILDING - LEADING THE WAY FOR CANADA'S PWGSC ATLANTIC IN CHARLOTTETOWN, PRINCE EDWARD ISLAND

(provided by Sarah Baggs, A/Manager, Architecture and Interior Design, Atlantic Region, Public Works and Government Services Canada (PWGSC))

Reducing Our Environmental Footprint

The Jean Canfield Building is located in Charlottetown, Prince Edward Island (PEI) in Canada. Situated on University Avenue, at the gateway to the downtown business district, the site was chosen for its prominent and easily accessible location. The location also provided an opportunity to restore a brownfield site. It was important to address the urban design and contextual issues surrounding the site, including its low-rise downtown density and the surrounding historic building fabric. Several comparative massing studies were conducted in order to achieve a balance between appropriate site coverage, building height, and configurations, which would maximize opportunities for the penetration of natural light.

This newly constructed flagship for the Canadian

> > >

Jean Canfield Building, Charlottetown, Prince Edward Island, Canada.

Photo credit: Larry Jones, BGHJ/Urbana Architects in joint venture

> > > Federal government opened in December 2007. It has a gross floor area of approximately 17,500 square meters (188,368 square feet) and houses approximately 500 public servants, representing 14 departments and several shared services.

Project Goals

Driven by the Government of Canada's commitment to reduce its environmental footprint, increase energy savings, and lower greenhouse gas emissions, the team developed a project that would stand as a testament to these goals. By creating a healthy and sustainable working environment, both building occupants and Canadian citizens who visit the building can become more engaged in this environmental effort.

Project Process - Integrated by Design

From the onset, the project utilized an interactive and collaborative integrated design approach. All design disciplines and client representatives took part in start-up meetings, brainstorming sessions, and design charettes. Team members were encouraged to think outside of their traditional disciplines and to explore how each feature or component of the building could integrate, and contribute to, the broader goals of the project. Life cycle analysis (investigation and valuation of the environmental impacts of the project caused by its existence) and return were emphasized but each design choice was weighed against its impact on occupancy and maintenance, not just it's first cost and initial impact (as is done in traditional life cycle cost analysis).

The project was a joint venture between Bergmark Guimond Hammerlund Jones (Charlottetown, PEI) and HOK (Hellmuth, Obata + Kassabaum) Canada (Toronto, Ontario), who brought with them an appreciation of local materials and conditions, and a broad experience base in sustainable design principles.

Photo credit: Jack Leclair Photography

The Building and its Context

The design is both empathetic and progressive. A 4-story concrete structure, clad in traditional red brick, hugs the sidewalk on its two most visible elevations at the 'gateway' intersection to downtown. The materials and rhythm of these facades pay homage to the historic surroundings. At the main entry, the building form steps back from the sidewalk and begins to break from its rectilinear form, contrasting red brick with large sandstone panels. Tucked around the next corner, the building line departs from the city grid and provides a triangular pocket park at grade, with a striking contrast of elevational treatment on the south-facing side, utilizing curtain walls mounted with solar shades bearing photovoltaic panels. A full array of photovoltaic panels mounted at the rooftop level is also evident on the south side. The building form maximizes southern exposure and minimizes western exposure, while respecting adjacent urban density and setbacks on the two major streets most affected by this development.

The interior planning grouped together all tenant amenities and common spaces in locations that permit them to remain intact and unaffected by typical tenant churn and re-fit. Business centers, coffee/relief areas, recycling centers, meeting rooms, and private telephone rooms were clustered together and located adjacent to other permanent building elements. Two of these "neighborhood clusters" are provided on each floor. The resulting tenant floor areas are flexible, loft-like spaces, with demountable partitions that permit light and air transfer. Exposed ceilings, underfloor service access, and modular design make the spaces easy to adapt for client changes. Areas visited by the general public are on the first floor, allowing the main line of enhanced security to fall between the ground and second floors.

Tenant Participation is Crucial

The project required tenants who would adapt and function effectively within this framework. The team knew that perception of an interior aesthetic with exposed structure and systems, as well as the perception of decreased visual privacy would require a cultural adjustment. Appropriate tenant security, acoustical privacy, and glare control required special consideration from both designers and building operators in order not to compromise natural airflow and daylight penetration.

A set of Tenant Selection Criteria was developed, focusing on tenants requiring only generic open office space (maximum 20-30 percent enclosed), and not excessive enclosed special purpose space. A series of information sessions were held, from the concept design stage through to move-in. The intent was to keep tenants aware of the less-typical aspects of the new building design, help them understand its necessary covenants, and encourage them to embrace the design philosophies. Continued information sessions, as well as an outreach program within the building will serve to encourage building occupants in their role as ambassadors for sustainability.

LEED® Green Building Rating System

The goals for the project closely reflect the categories in the Leadership in Energy and Environmental Design (LEED®) Green Building Rating System for New Construction: sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor air quality, and innovation. The LEED® Canada NC (New Construction) 1.0 system was used as a design guideline, a goal setting strategy and a rating system. This added rigor to the integrity of the project documentation process and helped validate other performance indicators.

Sustainable Design Features

Site:

- Brownfield site in a downtown location
- Easy access to public transit and walking
- Bicycle racks
- Restored open green space - native and adaptive plants, shade trees at grade, small green roof area - reduced heat island effect
- EnergyStar rated reflective roof
- On-site stormwater management

Water:

- Potable water use in irrigation reduced through the use of indigenous landscaping materials
- Water efficient fixtures - dual flush toilets and waterless urinals

> > >

> > >

- Rainwater collection - re-use in janitor's sinks and the flushing of toilets

Energy:

- High performance building envelope
- Natural and displacement ventilation
- Chilled slab cooling
- Maximized daylight
- Occupant and daylight dimming lighting control system
- Photovoltaics
- Green power from local windmills
- Projected energy savings of 50 percent

Materials:

- Construction waste management: 75 percent construction waste diverted from landfill
- Locally extracted and manufactured materials
- Recycled content in drywall, acoustical ceiling tiles, carpet tiles, rubber flooring, and aluminum
- Concrete locally sourced - including high fly ash content

Indoor Environmental Quality:

- Natural and displacement ventilation reduces airborne germs and contaminants
- Separate ventilation and chilled/ heated slab allows for a more effective ventilation system
- Interior materials ensure low or no VOC (Volatile Organic Compound) content
- Access to daylight and views - narrow floor plate and daylit atrium

Innovation LEED®:

- Exterior solar shades to mount photovoltaics
- Radiant floor with under-floor air distribution
- Outreach materials: signage, displays, case study materials, and ongoing occupant training sessions

A Rewarding Project

The design and construction of the Jean Canfield Building has allowed Public Works and Government Services Canada (PWGSC) staff, consultants, building operators, and occupants to explore the part each of us can play in conducting business in a more sustainable fashion. The construction industry and accommodation services are sectors that play a significant role in our efforts to reduce our environmental footprint. ■

The Government of Canada is committed to challenging both its employees and citizens as we work together to embrace our common goal of achieving a more sustainable future.

2. CONCEPTION DE L'IMMEUBLE

L'IMMEUBLE JEAN CANFIELD - CHEF DE FILE POUR LES TPSGC DE L'ATLANTIQUE À CHARLOTTETOWN, ÎLE-DU-PRINCE-ÉDOUARD

(fourni par Sarah Baggs, directrice adjointe, Architecture et Aménagement intérieur, Région Atlantique, Travaux publics et Services gouvernementaux Canada (TPSGC))

Réduction de notre empreinte écologique

L'immeuble Jean Canfield se trouve à Charlottetown, Île-du-Prince-Édouard (IPE) au Canada. Situé sur University Avenue, à l'entrée du quartier des affaires au centre-ville, l'emplacement a été choisi pour son emplacement éminent et sa facilité d'accès. Le lieu offrait également l'occasion de restaurer un terrain urbain abandonné. Il était important de prendre en compte la conception urbaine et les questions contextuelles du site, y compris la faible densité des petits immeubles du centre-ville et l'ensemble des immeubles historiques environnants. Plusieurs études volumétriques comparatives ont été menées afin d'obtenir un équilibre entre la couverture appropriée du site, la hauteur et les configurations de l'immeuble qui optimiseraient la pénétration de la lumière naturelle.

Cet immeuble récemment construit est un centre phare

> > >

Immeuble Jean Canfield, Charlottetown, Île-du-Prince-Édouard, Canada.

Mention de source: Larry Jones, BGHJ et Urbana Architects en partenariat

> > > du gouvernement fédéral canadien inauguré en décembre 2007. Sa superficie brute est d'environ 17 500 mètres carrés (188 368 pieds carrés) et il abrite approximativement 500 fonctionnaires, représentant 14 ministères ou organismes et plusieurs services communs.

Objectifs du projet

Poussée par l'engagement du gouvernement du Canada à réduire son empreinte écologique, à augmenter les économies d'énergie et à réduire les émissions de gaz à effet de serre, l'équipe a élaboré un projet qui pourrait être reconnu comme un testament de ces objectifs. En créant un environnement de travail sain et durable, les occupants de l'immeuble et les citoyens canadiens qui le visitent peuvent s'engager encore plus dans les efforts de préservation de l'environnement.

Processus du projet - conçu pour s'intégrer

Dès le début, le projet a utilisé une approche conceptuelle intégrée, interactive et participative. Tous les représentants des activités de conception et du client ont pris part aux réunions de démarrage, aux séances de remue-méninges et aux ateliers de conception. Les membres de l'équipe ont été incités à sortir des sentiers battus de leurs disciplines conventionnelles et à explorer comment chaque caractéristique ou composant de l'immeuble pourrait intégrer et contribuer aux objectifs génériques du projet. L'analyse du cycle de vie (recherche et évaluation des conséquences du projet sur l'environnement) et le rendement ont été mis en relief, mais chacun des choix conceptuels a été pesé en fonction de ses conséquences sur l'occupation et la maintenance et non en fonction seulement du coût et des conséquences initiaux (comme cela se fait lors d'une analyse conventionnelle du coût du cycle de vie).

Le projet a été réalisé grâce à un partenariat entre Bergmark Guimond Hammerlund Jones (Charlottetown, Î.-P.-É.) et HOK (Hellmuth, Obata + Kassabaum) Canada (Toronto,

Mention de source: photographie de Jack Leclair

Ontario), qui ont apporté une évaluation des conditions et matériaux locaux et une grande expérience basée sur des principes de conception durables.

L'immeuble et son contexte

La conception est à la fois empathique et progressiste. Une structure en béton de 4 étages, revêtue de briques rouges traditionnelles, ceinture le trottoir sur ses deux élévations les plus visibles au 'carrefour à l'entrée du centre-ville. Les matériaux et le rythme de ces façades rendent hommage au milieu historique environnant. À l'entrée principale, la forme de l'immeuble s'écarte du trottoir et met fin à sa forme rectiligne, faisant un contraste entre la brique rouge et de larges panneaux en pierre de taille. Bordé autour du coin de rue suivant, la ligne de l'immeuble abandonne la grille de la ville et fournit un petit parc triangulaire, avec un contraste saisissant du traitement de l'élévation sur le côté sud, utilisant des murs de courtine montés avec des écrans solaires dotés de modules photovolcaïques. Un ensemble complet de panneaux photovoltaïques montés sur le toit est aussi évident sur le côté sud. La forme de l'immeuble maximise l'exposition sud et minimise l'exposition à l'ouest, tout en respectant la densité urbaine limitrophe et les retraits sur les deux rues principales les plus affectées par ce développement.

La planification intérieure a regroupé toutes les commodités offertes aux locataires et les espaces communs qui leur permettent de rester intacts et inchangés par les réaménagements et les remises en état habituelles des locataires. Des centres d'affaires, des aires de repos/de pauses-café, des centres de recyclage, des salles de réunions et des salles de téléphone privées ont été groupés ensemble et situés près d'autres éléments permanents de l'immeuble. Deux de ces groupements de voisinage sont disponibles sur chaque étage. Les surfaces résultantes pour les locataires sont flexibles, s'apparentent à des lofts et sont dotées de cloisons démontables qui permettent le passage de la lumière et de l'air. Des plafonds apparents, un accès de service au sous-sol et la conception modulaire offrent des espaces facilement adaptables qui leur permettent d'effectuer des changements. Les aires visitées par le public sont au premier étage, permettant à la ligne de sécurité principale évoluée de se retrouver entre le rez-de-chaussée et le deuxième étage.

La participation des locataires est essentielle

Le projet nécessite des locataires qui peuvent s'adapter et qui fonctionnent efficacement dans cet environnement. L'équipe savait que la perception d'un intérieur esthétique avec la structure et les systèmes à découvert, ainsi que la perception d'une diminution de l'intimité visuelle exigeraient un rajustement culturel. La sécurité appropriée des locataires, l'intimité acoustique et le contrôle de l'éblouissement ont exigé une attention particulière des concepteurs et des techniciens de l'immeuble pour ne pas compromettre l'écoulement de l'air et la pénétration de la lumière du jour.

Une série de critères pour la sélection des locataires a été établie, en se concentrant sur les locataires qui exigent uniquement de l'espace de bureau générique et ouvert (au maximum 20 à 30 pour cent d'espaces fermés) et non trop d'espace fermé à usage spécial. Une série de séances d'information ont été tenues, de la phase de conception jusqu'à l'emménagement. Elles avaient pour but d'informer les locataires sur les aspects inhabituels de la nouvelle conception de l'immeuble, de les aider à comprendre ses covenants nécessaires et de les inciter à adopter la philosophie de conception. Des séances d'information continues, ainsi qu'un programme d'extension au sein de l'immeuble serviront à inciter les occupants de l'immeuble à maintenir leur rôle d'ambassadeurs de la durabilité.

LEED[MD], un système de classement des bâtiments écologiques

Les objectifs du projet reflètent fidèlement les catégories du système de classement des bâtiments écologiques du LEED[MD] (Leadership in Energy and Environmental Design) relatif aux nouvelles constructions : sites durables, efficacité de consommation de l'eau, énergie et air, matériaux et ressources, qualité de l'air à l'intérieur et innovation. Le système NC (Nouvelles Constructions) 1.0 du LEED[MD] du Canada a servi de guide de conception, de stratégie d'établissement des objectifs et de système de classement. Ce système a apporté de la rigueur à l'intégrité du processus de documentation > > >

> > >du projet et a permis de valider d'autres indicateurs de rendement.

Caractéristiques de la conception durable

Site:

- Le site de Brownfield au centre-ville
- Facilité d'accès aux transports en commun et aux piétons
- Supports à vélo
- Un espace vert ouvert et rénové - des plantes indigènes et adaptives, des arbres d'ombrage au niveau du sol, une petite surface verte sur le toit - a réduit l'effet des îlots de chaleur
- Un toit fabriqué au moyen de matériaux réfléchissants certifié EnergyStar
- Gestion interne de l'eau de pluie

Eau:

- L'utilisation d'eau potable pour l'irrigation a été réduite en employant des matériaux d'aménagement paysager indigènes
- Des installations à faible consommation d'eau - toilettes à double chasse et urinoirs sans eau
- Collecte de l'eau de pluie - réutilisation dans les lavabos des concierges et pour chasser l'eau des toilettes

Énergie:

- Enveloppe du bâtiment à haut rendement
- Ventilation naturelle et par déplacement
- Rafraîchissement par dalles refroidies
- Maximisation de la lumière du jour
- Système de commande de l'éclairage par l'occupant et par la baisse de la lumière du jour
- Modules photovoltaïques
- Énergie écologique produite par des moulins à vent locaux
- Projection d'économies d'énergie de 50 pour cent

Matériaux:

- Gestion des déchets de construction : 75 pour cent des déchets de construction détournés du site d'enfouissement
- Matériaux extraits et fabriqués localement
- Cloisons sèches, panneaux acoustiques du plafond, carrés de moquette, sols en caoutchouc et aluminium fabriqués à base de produits recyclés
- Béton fabriqué localement - y compris le contenu des cendres volantes

Qualité de l'environnement intérieur:

- La ventilation naturelle et par déplacement réduit les germes et les contaminants dans l'air
- Une ventilation distincte et des dalles refroidies/réchauffées offrent un système de ventilation plus efficace
- Des matériaux intérieurs assurent une faible ou aucune concentration de COV (composés organiques volatils)
- L'accès à la lumière du jour et les vues - étroites dalles de plancher et atrium permettant à la lumière du jour de pénétrer

Innovation LEED[MD]:

- Des écrans solaires extérieurs pour installer des modules photovoltaïques
- Des sols irradiants avec distribution de l'air sous le sol
- Documents de soutien : signalisation, affichages, documents d'étude de cas et sessions de formation des occupants en continu

Un projet gratifiant

La conception et la construction de l'immeuble Jean Canfield ont permis au personnel des Travaux publics et Services gouvernementaux Canada (TPSGC), aux consultants, aux techniciens d'immeuble et aux occupants de découvrir le rôle que chacun d'entre nous peut avoir dans la conduite des affaires de manière plus durable. L'industrie de la construction et les services d'hébergement sont des secteurs qui jouent un rôle important dans les efforts que nous déployons pour réduire notre empreinte écologique. ■

Le gouvernement du Canada s'est engagé à inviter à la fois ses employés et ses citoyens à travailler ensemble vers notre objectif commun d'un avenir plus durable.

3. CHALLENGES

MOVING FORWARD: THE CHALLENGES AHEAD

(provided by the Office of Applied Science, GSA Public Buildings Service (PBS), contact: Don Horn, AIA, LEED® AP, Director, Sustainable Design Program, GSA PBS, donald.horn@gsa.gov)

On the Brink of Change

As one of the largest public real estate organizations in the world, the General Services Administration's (GSA) Public Buildings Service (PBS) has the responsibility to demonstrate an intelligent approach to design, construction and operation of our buildings that can reduce our environmental impacts while creating effective places for people to work and for the government to conduct its business. Perhaps of greater importance is our obligation to provide the leadership, as we have so ably demonstrated in the past, to lead the building industry—in this case to deeper shades of green. Documented and compelling evidence supports our need to do this. Buildings in the United States account for 68 percent of all electricity consumed, 39 percent of all energy used, 38 percent of carbon dioxide emissions and 12 percent of the total water consumption (source: Environmental Protection Agency (EPA)). Building-related waste from construction and demolition accounts for nearly 60 percent of all non-industrial waste (136 million tons annually). These numbers oblige us to recognize that changing the way buildings are created and operated can make a huge and immediate impact in addressing important global issues including the threats of climate change.

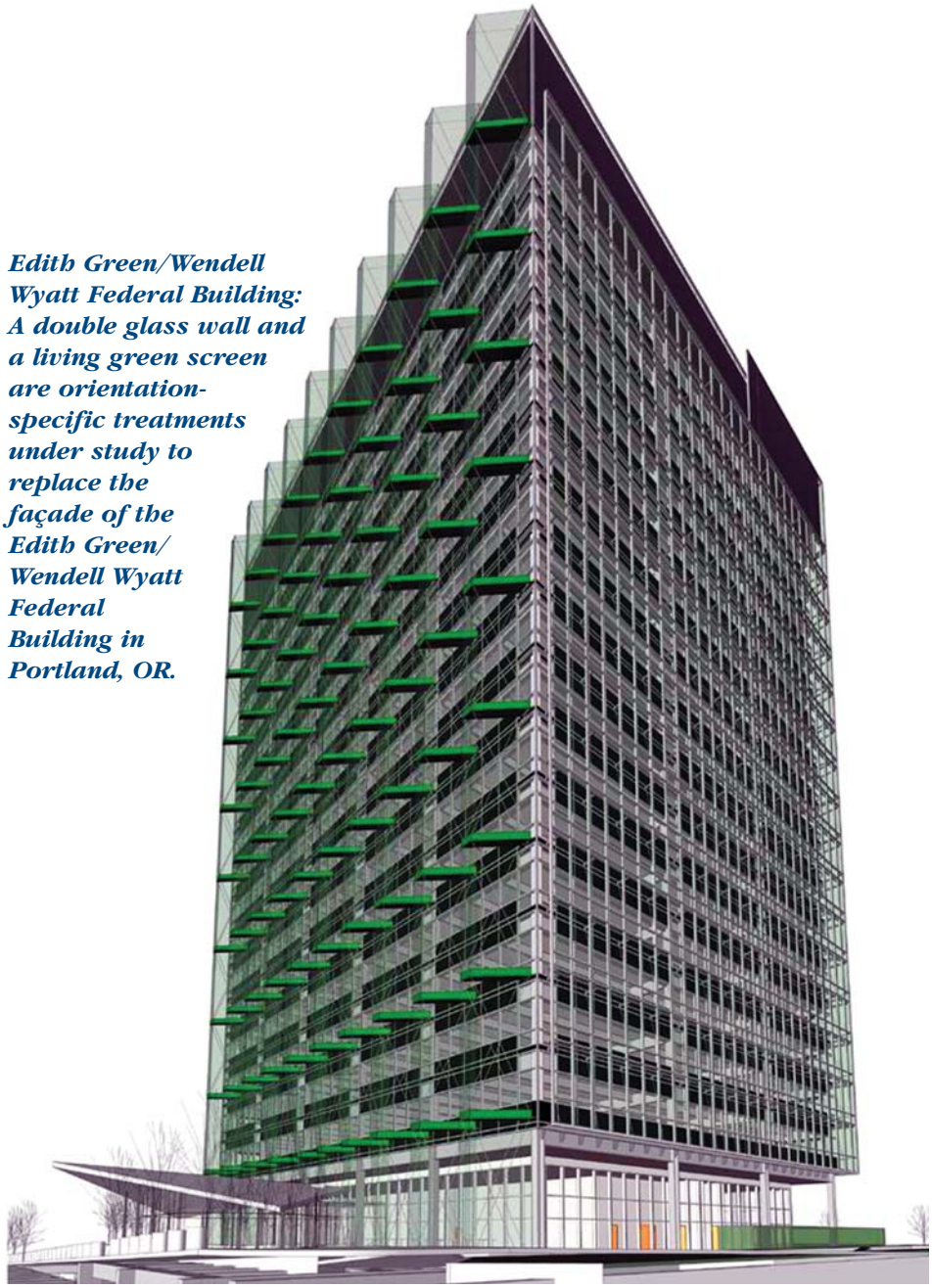
GSA has a long history of investing in energy efficient building solutions and we have historically met > > >

Land Port of Entry, Warroad, MN: This Border Station as well as others must consider sustainable design solutions such as on-site renewable power, rainwater collection, and wastewater treatment.

> > > or exceeded our energy reduction goals. Now, energy reduction is necessary but not enough. As we have learned, mechanical systems and efficient building operations are important facets but not the whole solution to energy efficiency. Similarly, energy efficiency alone does not answer the quest for sustainable solutions in the built environment.

This sentiment has become widely acknowledged, with Congress passing and the President signing into law on December 19, 2007, the Energy Independence and Security Act of 2007. This new law sets ambitious goals for Federal agencies and the building industry as a whole, not just in the area of energy efficiency but in other related resource areas as well. The mandates for Federal agencies present immediate and identified challenges in sustainable design, lighting efficiency, energy efficient products, renewable energy, energy reduction, and demonstration projects to name a few. Significantly, Federal buildings designed in 2030 will be required to be carbon neutral. Mandates for GSA include a requirement to establish the Office of Federal High Performance Green Buildings to set standards for, coordinate activities and publicize information related to high-performance green buildings across the government.

As the singular focus of simply reducing energy consumption evolves toward goals for using non-fossil fuel energy, developing and using renewable energy, and achieving sustainable high-performing buildings, our approach must expand to consider building design holistically. Successful strategies to address energy, water and other resources must integrate location and use factors. This includes building orientation, climate considerations, envelope characteristics mechanical and lighting systems, and the mission and work requirements of our customers. Though we have begun this effort with considerable success, we must increase our commitment to bring the entire building delivery team - client, designers, engineers, project managers, and building operators into an integrated design process at the outset. In addition, we must agree on a set of performance metrics at the outset that will be verified at building delivery and on an ongoing basis after occupancy.



Edith Green/Wendell Wyatt Federal Building: A double glass wall and a living green screen are orientation-specific treatments under study to replace the façade of the Edith Green/ Wendell Wyatt Federal Building in Portland, OR.

Moving Forward

In moving forward, listing requirements and platitudes to do better is simply a mental exercise. The more important challenge is communicating data that is persuasive and incontrovertibly demonstrates that green buildings are, in fact, better; and that high

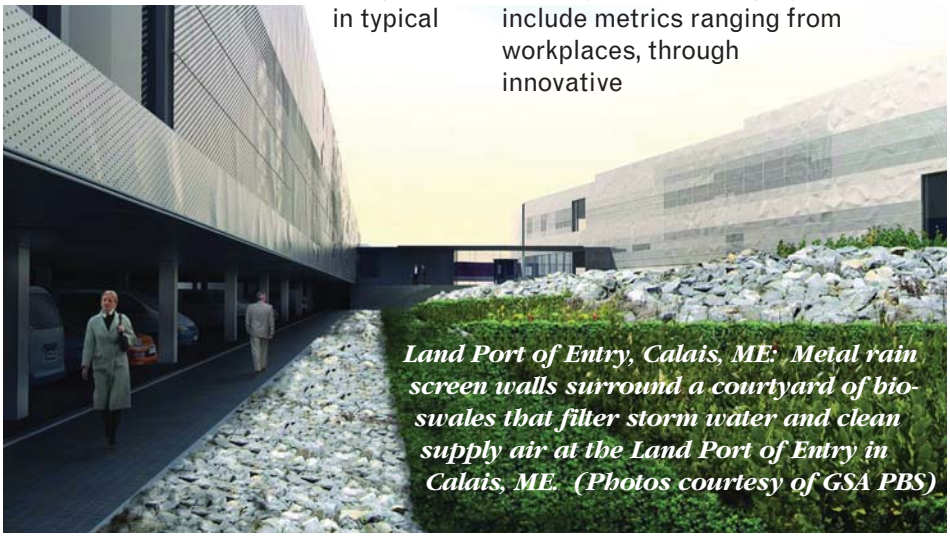
performing green buildings are the inevitable future of the building industry.

Initial data speak to energy performance, and, as found in a 2007 study by the New Buildings Institute of 121 buildings nationwide, LEED® Certified buildings perform 25-30 percent better than average non-LEED® buildings, LEED® Silver perform 35 percent better, and LEED® Gold and Platinum buildings perform 45 percent better.

Similarly, GSA conducted a study in 2007 of 14 GSA buildings, both owned and leased, located in half of its regions to compare energy, water, maintenance and operations, waste, recycling, transportation, and occupant satisfaction metrics against industry standard performance. This whole building performance approach examined actual measured data from several years of operation. GSA's sustainably-designed buildings investigated under the study cost less to operate, have excellent energy performance, and have occupants that are more satisfied with the overall building than the occupants in typical commercial buildings. Several of GSA's early LEED® buildings were not designed from an integrated design perspective and interestingly, were not energy efficient. It is not clear if the lack of energy efficiency followed the lack of an integrated design for the early buildings. However, observations from the study confirmed the common belief: buildings that intentionally incorporate energy considerations into design deliver better energy performance.

This study is only one piece of a larger body of research and data that needs to be pursued by the building industry and communicated to the real estate community and its stakeholders. Efforts to continue such exploration are not only encouraged and applauded, but also mandated by the Energy Independence and Security Act of 2007.

As perceptions of building performance widen, we must find performance data addressing infrastructure, customer needs and human health and comfort. Measuring the performance of recently constructed projects must include metrics ranging from workplaces, through innovative technologies and practices, to whole building performance.



Land Port of Entry, Calais, ME: Metal rain screen walls surround a courtyard of bio-swales that filter storm water and clean supply air at the Land Port of Entry in Calais, ME. (Photos courtesy of GSA PBS)

The data gathered will help us relate the value of the investment in sustainable design to the benefits realized. As a corollary, we can better determine those design features that offer the best return on investment and value to GSA. This should drive us to better, more holistic (more harmonious with the environment/more prosperous for the inhabitants) designs for new buildings and renovations. Conventional thinking would have you believe that there is a trade-off — that better technology costs more and as a result, less technologically advanced buildings are built. However, this outmoded thinking needs to be countered with creative design, creative procurement methods, and creative financing. Then, a wealth of possibilities will open up.

For GSA, as both a property developer and a property manager, designing and constructing sustainable buildings is just the first step. To fully realize the performance of a green building we must improve our operational practices. Continued research will provide data that can help advance green building design and construction features and practices so that we can optimize building operations and maintenance.

A New Vision

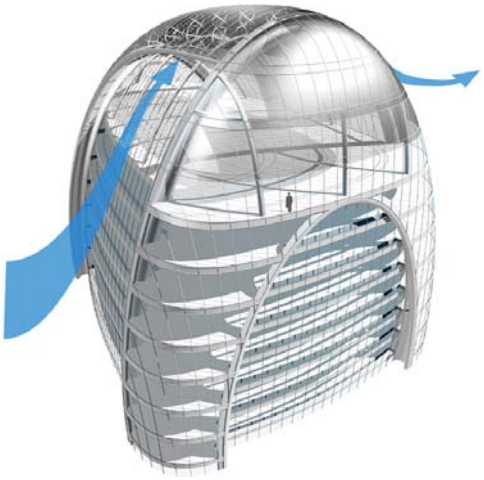
In April 2005, GSA, with support from the Rockefeller Brothers Fund, convened a workshop comprised of leading sustainable design practitioners and thinkers. Participants explored avenues in the building process and in the integrated design process that > > >

> > >
could inspire and propel revolutionary change.

The following excerpts from a GSA publication, ***"Expanding Our Approach to Sustainable Design: An Invitation,"*** set the stage for examining the larger context and posing deeper questions for project teams.

"Our current approaches are focused on reducing negative impacts. They can be characterized as 'doing less damage' or 'doing damage less quickly.' They beg the question, is achieving even 100 percent less damage good enough?

Current green building goals are typically characterized in terms of relative improvement over conventional practice, as in '30 percent energy savings compared with an ASHRAE (American Society of Heating, Refrigerating, and Air Conditioning Engineers) 90.1 baseline.' Beyond this relative improvement model, is a vaguely understood idea of sustainability, where any negative impacts from our projects are somehow within the capacity of natural systems to absorb and mitigate indefinitely. But even that goal has two



questionable implications: 1) that the current state of natural systems is good enough, and should be sustained; and 2) that the built environment will always exist in opposition to natural systems. Are we really constrained by these implications?

As practices evolve, we need to be looking further ahead, toward a vision for the built environment that is not limited by the paradigms of the current building industry. This vision must expand beyond the idea of a building as a fixed end-point, toward a more fluid understanding of project design, construction, and operation as they relate to sustainability and regenerative relationships."

IN SUMMARY ... it is easy for us to leave everyone to just ponder this vision of the built environment, the natural environment and the human environments not only co-existing, but also contributing to one another. But it is much harder for us to ask each person, each customer, each GSA associate to embrace the vision of a sustainable future. Yet, that is what we are asking and we implore each of you - in the words of Mahatma Gandhi, ***"You must be the change you wish to see in the world."*** ■

Smith+Gill's Clean Technology Tower: Building form is used to harness the power of the wind and sun to create a carbon neutral building in Smith+Gill's Clean Technology Tower, Chicago, IL.

4. ECO-FRIENDLY CONFERENCING

CANADA'S OEAQ CONFERENCE TO BE A "GREEN" TRAILBLAZER

(provided by the Office of the Chief Appraiser, Public Works and Government Services Canada (PWGSC))

The Ordre des évaluateurs agréés du Québec, or OEAQ (Quebec's association of professional appraisers) wants to help reverse the trend by making its October 2008 conference as eco-friendly as possible. Every aspect of the OEAQ conference — location, meals, products, guest speakers — is being planned to have a minimal environmental impact. The 250 to 300 valuation professionals who gather at the Lac Leamy Hilton Hotel in Gatineau, Quebec, next October, will have a chance not only to learn about the latest in the valuation field but also to contribute to sustainable development.

The initiative has been spearheaded by an organizing committee of seven OEAQ members, including André Morin, Manager, Real Property Advisory Services, Public Works and Government Services Canada (PWGSC). The committee is concerned about the dangers of global warming and is keen to promote green practices within the valuation community. The greening of conferences is increasingly being promoted within government and other organizations, but the concept is still new in the professional and business world.

The OEAQ conference organizing committee is working hard to ensure the October 2008 event will be a trailblazer. Some proposed ideas for cutting waste and conserving resources at the conference include:

- Choice of a central location (Gatineau, Quebec) to minimize travel distances for participants.
- Rebates on registration fees for delegates who car-pool.
- Use of tap water, glasses and pitchers instead of bottled water.
- Meals featuring as much local food as possible (foods trucked from afar entail a high consumption of fuel).
- Use of china instead of Styrofoam® or paper plates and cups.

> > >

Conferences are an important part of modern professional life but they can be hard on the environment. Think of the fossil fuels burnt to bring delegates to an event. Consider the energy consumed and waste produced by all those plastic water bottles, Styrofoam® cups, reams of paper, and other throwaway items.

> > >

- Reducing paper by offering conference presentations on portable memory sticks.
- Use of recycled paper and other products.
- Encouraging delegates to reduce, re-use and recycle.
- Turning off lights and machines when not in use.
- Inviting guest speakers from Quebec's and Canada's environmental movements.
- Workshop sessions on green valuation (appraisal of "green" buildings) and information on green buildings.

All these measures will reduce the conference's environmental "footprint" and save money too by cutting down on waste and consumption of energy. Delegates will become more aware of what individuals and groups can do to protect our environment. Important too will be the leadership example shown to other organizations.

"All these measures will reduce the conference's environmental "footprint" and save money too by cutting down on waste and consumption of energy."

The organizers are well aware that one eco-friendly conference is just a small step in the battle against global warming. But small steps can lead to more steps and to the proliferation of grassroots action. Such action on many fronts will be needed to keep the earth hospitable for future generations. ■

4. ORGANISATION DE CONFÉRENCES ÉCOLOGIQUES

LE CONGRÈS DE L'OEAQ AU CANADA EST UNE PREMIÈRE ÉCOLOGIQUE

(fourni par le bureau de l'évaluateur en chef, Travaux publics et Services gouvernementaux Canada (TPSGC))

L'Ordre des évaluateurs agréés du Québec ou l'OEAQ veut aider à renverser la tendance en faisant en sorte que son congrès d'octobre 2008 soit le plus écologique possible. Chaque aspect du congrès de l'OEAQ — lieu, repas, produits, conférenciers — est planifié de sorte à avoir une répercussion minimale sur l'environnement. Les quelque 250 à 300 professionnels de l'évaluation qui se réuniront à l'hôtel Hilton Lac-Leamy à Gatineau (Québec) au mois d'octobre prochain, auront l'occasion non seulement de découvrir les nouveautés dans le domaine de l'évaluation mais aussi de contribuer au développement durable.

L'initiative a été mise de l'avant par un comité organisateur composé de sept membres de l'OEAQ, dont André Morin, directeur des Services Immobiliers, Travaux publics et Services gouvernementaux Canada (TPSGC). Le comité s'inquiète des dangers du réchauffement de la planète et est déterminé à promouvoir des pratiques écologiques dans le domaine de l'évaluation. L'écologisation des congrès est de plus en plus favorisée par le gouvernement ainsi que d'autres organismes, mais l'idée ne fait que commencer à se répandre dans les milieux professionnels et des affaires.

Le comité organisateur du congrès de l'OEAQ travaille d'arrache-pied pour que ce congrès d'octobre 2008 soit une première. Voici quelques idées proposées en vue de réduire les déchets et d'économiser les ressources pendant le congrès :

- Choix d'un emplacement central (Gatineau, Québec) pour minimiser le déplacement des participants.
- Offrir des rabais sur les frais d'inscription aux délégués qui covoiturent.
- Fournir de l'eau du robinet, des verres et des pichets au lieu de bouteilles d'eau.

> > >

Les congrès sont une composante importante de la vie professionnelle moderne, mais ils peuvent néanmoins avoir des répercussions néfastes sur l'environnement. Songez aux combustibles fossiles brûlés lors du déplacement des délégués. Songez à l'énergie utilisée et aux déchets produits par toutes ces bouteilles d'eau en plastique, ces verres en Styromousse^{MD}, ces rames de papier et autres objets jetables.

> > >

- Proposer des repas préparés avec des aliments de la région (le transport des aliments sur une longue distance entraîne une grande consommation d'essence).
- Utiliser de la vaisselle au lieu d'assiettes et verres en Styromousse[MD] ou en papier.
- Réduire la consommation de papier en fournissant la documentation des exposés sur des cartes-mémoires flash.
- Utiliser du papier et d'autres produits recyclés.
- Inciter les délégués à réduire leur consommation, à réutiliser et à recycler.
- Éteindre les lumières et les appareils quand ils ne sont pas utilisés.
- Inviter des conférenciers des mouvements environnementaux du Québec et du Canada.
- Tenir des ateliers sur l'évaluation verte (évaluation des immeubles verts) et fournir de l'information sur les immeubles verts.

Toutes ces mesures réduiront l'empreinte écologique du congrès et engendreront aussi des économies en réduisant les déchets et la consommation d'énergie. Les délégués seront plus conscients des mesures que les individus et les groupes peuvent prendre pour protéger l'environnement. De plus, le congrès servira d'exemple aux autres organismes.

« Toutes ces mesures réduiront l'empreinte écologique du congrès et engendreront aussi des économies en réduisant les déchets et la consommation d'énergie ».

Les organisateurs savent bien que tenir un congrès écologique n'est qu'un petit geste dans la lutte contre le réchauffement de la planète. Mais des petits gestes peuvent mener à de plus grands et à la prolifération de mouvements de masse. De tels gestes sur de nombreux fronts seront nécessaires pour que la planète puisse abriter les générations futures. ■

5. FEDERAL PERSPECTIVE

GSA: THE GOVERNMENT'S LANDLORD—A LEADER IN SUSTAINABLE DESIGN

POLICYSITE

(by David Winstead, Commissioner, Public Buildings Service, General Services Administration)

Compelling Benefits of Going Green: High Performance Building Perspectives and Practice

Rocky Mountain Institute (RMI) and the U.S. Green Building Council (USGBC) have partnered to produce a compelling film, "High Performance Building Perspectives and Practice," that documents the business case for building green. Thirteen LEED® projects (including the General Services Administration's (GSA) San Francisco Federal Building) are profiled. This film features interviews with the CEOs, business executives, developers, school administrators, government officials (including Commissioner David Winstead of GSA's Public Buildings Service), building managers, and design professionals who recognize the real benefits of going green. Visit the website www.bet.rmi.org/video to view the video. ■

The General Services Administration (GSA) Public Buildings Service (PBS) is a leader in "Building Green" not only because of its place in the U.S. real estate market—we own, lease and manage over 350 million square feet of space—but because of our level of commitment to incorporating principles of sustainable design and energy efficiency into all of our actions, whether building new Courthouses or Land Ports of Entry, operating buildings at ever lower levels of energy consumption and cost, or ensuring that cleaning products we use are non-toxic. The result is an optimal balance of cost, environmental, societal and human benefits—providing high-quality workplace solutions to a million Federal civilian workers in 2,200 American communities.

GSA has an opportunity–and a responsibility—to lead by example and to demonstrate how we can create sustainable buildings and reduce energy consumption by intelligently integrating energy efficiency into building designs while still creating places where people can work effectively.

The Sustainability Challenge

Since the early 1970s, sustainability has been an evolving theme for PBS beginning with energy efficiency initiatives as a result of the oil embargo. Shortly thereafter, the public became broadly aware of how important buildings could be in the health of their occupants when guests at the Bellevue Stratford Hotel in Philadelphia contracted a then-unknown ailment called "Legionnaires' Disease." GSA, working with the Centers for Disease Control, helped develop many building protocols for dealing with indoor air quality. In the early 1990s GSA created the first program for reducing the toxicity of building cleaning products - what the world today knows as "green cleaning." In 2001, GSA was the first Federal agency to join the U.S. Green Building Council, and continues to be an active participant, including sponsoring the pilot program for Leadership in Energy and Environmental Design (LEED®) for Commercial Interiors, or LEED®-CI rating system. By 2005, GSA had reduced its energy consumption by 30 percent from a 1985 baseline, and was operating buildings with 12 percent less energy cost than comparable private sector buildings.

We cannot rest on our laurels, though. Three recent events—the enactment of the Energy Policy Act of 2005, the President's issuance of Executive Order 13423, "Strengthening Federal Environmental, Energy and Transportation Management," > > >

> > > and the Energy Independence and Security Act of 2007—have raised the performance bar.

Under a newly created Office of High Performance Green Buildings, PBS is required to incorporate sustainable design practices into all new construction and major renovation projects as well as into 15 percent of the existing Federal inventory by the year 2015. All new buildings and major renovation must be designs that reduce fossil-fuel consumption by 55 percent by 2010. Also by 2010, all leases must be in buildings earning the Energy Star® label. We must reduce energy consumption by 30 percent in just 10 years, and every new building must out-perform the ASHRAE (American Society of Heating, Refrigerating and Air Conditioning Engineers) energy standard by at least 30 percent.

In order to accomplish this mandate, we integrate sustainable design principles as seamlessly as possible into the design, construction and renovation of our buildings and build-to-suit leases through GSA's Design Excellence program. We also adhere to the Guiding Principles for Federal Leadership in High-Performance and Sustainable Buildings. They provide a common set of sustainable principles for all Federal agencies to follow. The principles are:

- Employ Integrated Design Principles,
- Optimize Energy Performance,
- Protect and Conserve Water,
- Enhance Indoor Environmental Quality, and
- Reduce Environmental Impact of Materials.

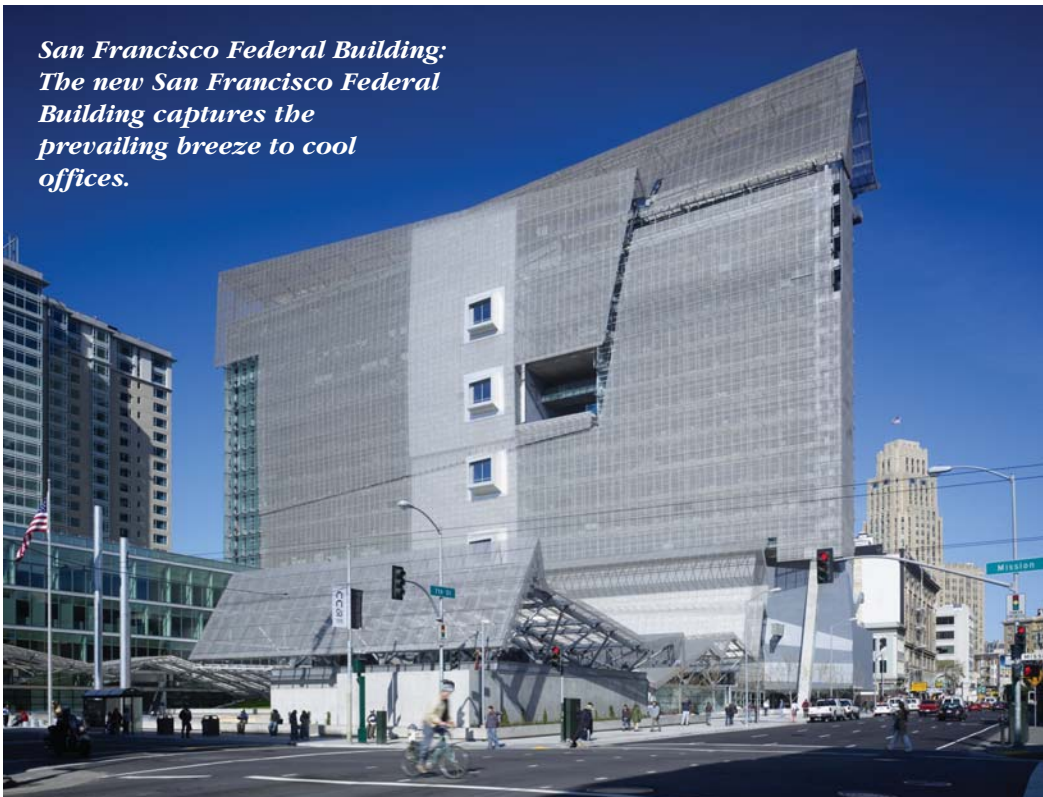
Changing mindsets to embrace a whole building, integrated design approach is a challenge, but this collaborative process allows creative solutions that are economical, environmentally sound and innovative. GSA has done just that, both internally and with the consultant teams we hire. GSA continues to expand its approach to sustainable design to think beyond current rating system constraints. "Expanding Our Approach," published by GSA in 2006, encourages thinking outside the box. The value of this approach is reflected in our numbers, in our buildings, and in the ratings of GSA's performance by our tenants.

Federal Building Construction

To measure how well we are incorporating sustainable design, PBS uses the U.S. Green Building Council's LEED® rating system, and since 2003 GSA has required that all GSA new construction projects and substantial renovations be LEED® certified targeting a Silver rating. We have found that LEED® is the most credible and appropriate sustainable buildings rating system available in the United States. It is the nationally accepted benchmark for the design, construction and operation of high performance green buildings.

To date, PBS has earned a LEED® rating for 23 new buildings: 10 are government-owned buildings; 13 are build-to-suit leased buildings. Of these, seven achieved the "Silver" level and 10 achieved "Gold." PBS has registered another 70 buildings under the LEED® system; upon project completion, these will be eligible for certification.

In San Francisco, GSA completed a remarkable new Federal building, the first Federal building in the United States to use natural ventilation instead of mechanical systems to cool and circulate air. It is a project that captures PBS's culture of action, high performance and accountability to sustainability. Simply put, its design is a good fit with its location. This building was designed to exceed the most stringent energy code in the country, California's Title 24 (Title 24, Part 6, of the California Code of Regulations: California's Energy



San Francisco Federal Building: The new San Francisco Federal Building captures the prevailing breeze to cool offices.

Efficiency Standards for Residential and Nonresidential Buildings) by 20 percent. Eighty percent of the building takes advantage of natural light. This is an important achievement for any office building, where electric lighting typically represents 35 percent of total energy used. The building's shape and orientation maximize natural airflow for cooling and ventilation. And, it was designed to use only 27,000 BTUs (British Thermal Unit) per square foot per year rather than 77,029 BTUs, which is PBS's 2003 average energy use for Federal buildings, or nearly 89,000 BTUs per square foot per year which is the commercial average.

Existing Federal Buildings

Building reuse and historic preservation are key PBS sustainable strategies. In 2002, PBS initiated a four-year design and construction process to modernize the Byron G. Rogers U.S. Courthouse in Denver, CO.

Over the past 40 years, little had been done to upgrade this building's systems, functions, or appearance. Prior to enhancing public service and security of this aged-but-sturdy structure, the Denver courthouse needed to undergo asbestos abatement as well as replacement of its entire fire protection system. All materials covered with lead-based paints were removed, and GSA upgraded all the courthouse's mechanical, electrical, security and technology systems. Other sustainable features include: a 100 percent wind power purchase, increased open space with native or adapted vegetation, reduced light pollution from low cut-off fixtures, and use of environmentally friendly

Byron Rogers Courthouse in Denver

landscape maintenance practices to protect the habitat for urban wildlife.

This $45.8 million courthouse renovation project earned a LEED® for Existing Buildings (LEED®-EB) Gold rating from the U.S. Green Building Council in 2007. This project was the first LEED® Gold building for GSA and our first LEED®-EB rated building.

Leased Buildings

In Denver, GSA worked with the developer, OPUS, and the Environmental Protection Agency (EPA), on a lease construction project for EPA's regional headquarters office. This was a sustainable success story and "win-win" for all parties. The building is designed to use one-third less energy and water than a building of similar size and received the first LEED® Gold rating for a new building in downtown Denver. Some of the outstanding examples of sustainable design include: a green roof, high efficiency and waterless plumbing fixtures, forty-eight solar panels mounted to the building exterior, and a heating and cooling system designed for energy and ventilation efficiency.

GSA's recent experience in the market is showing that the added cost of building green often just is not there. We routinely procure LEED® Silver-rated buildings for the same cost as non-rated buildings. With increases in choices from manufacturers and more supply of green materials coupled with increasing experience and > > >

> > > abilities in the building industry, costs of building responsibly are coming down.

Energy Management Practices

PBS encourages energy efficiency by using sustainable design principles, purchasing cost-effective utilities, and promoting renewable energy in the planning, design, construction, operation, and maintenance of all Federal buildings and in the lease provisions of commercial properties. By meeting all of these goals and excelling at customer service, GSA has become the benchmark in energy programs that other real estate organizations strive to keep up with. Since PBS's energy program's inception in 1973, cost avoidance and energy conservation measures have produced more than $2.25 billion in savings.

Our Commitment

Sustainability in building design, construction and operation is fundamental to and indivisible from our core agency mission of providing superior workplaces for Federal customer agencies, economically to the American taxpayer. Our goal is to lead other agencies of government and the private sector by example. We want to be part of transforming society's perception of building green so that it becomes the standard way of doing business. From excavation through construction, to occupancy and use, GSA's Public Buildings Service is committed to creating workplaces that reduce the negative impacts on the environment, while enhancing the health and comfort of the building occupants. For more information, please visit our site at www.gsa.gov/sustainabledesign. ■

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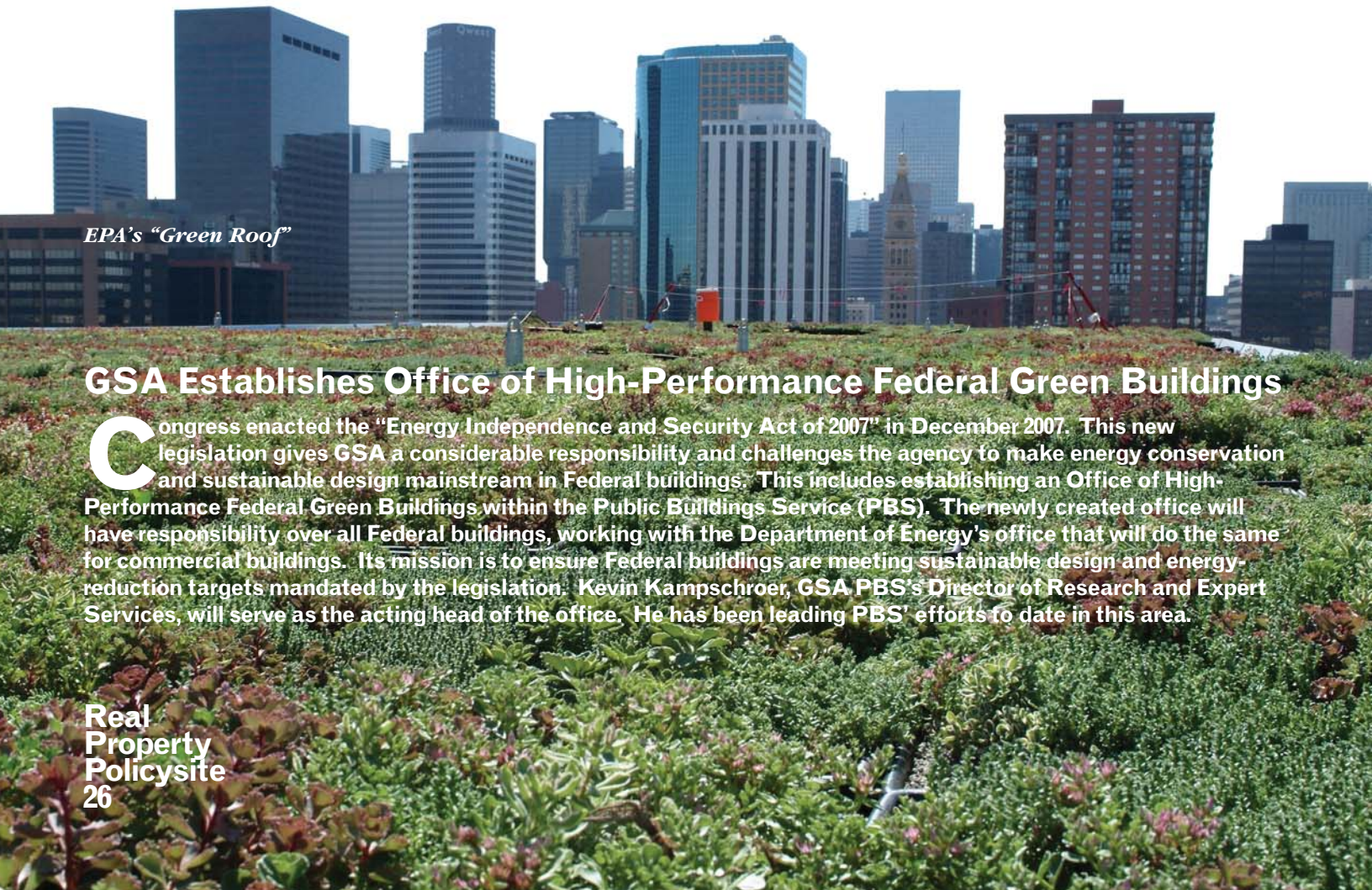


EPA's "Green Roof"

GSA Establishes Office of High-Performance Federal Green Buildings

Congress enacted the "Energy Independence and Security Act of 2007" in December 2007. This new legislation gives GSA a considerable responsibility and challenges the agency to make energy conservation and sustainable design mainstream in Federal buildings. This includes establishing an Office of High-Performance Federal Green Buildings within the Public Buildings Service (PBS). The newly created office will have responsibility over all Federal buildings, working with the Department of Energy's office that will do the same for commercial buildings. Its mission is to ensure Federal buildings are meeting sustainable design and energy-reduction targets mandated by the legislation. Kevin Kampschroer, GSA PBS's Director of Research and Expert Services, will serve as the acting head of the office. He has been leading PBS' efforts to date in this area.

6. ENERGY METERING

ENERGY METERING AND NATIONWIDE MONITORING

POLICYSITE

(by Mark Ewing, Energy Center of Expertise, GSA Public Buildings Services, mark.ewing@gsa.gov)

"Advanced Energy Metering" - Savings for the Future

As the electric utility industry restructures, standard supply side electric utility services have changed dramatically. The General Services Administration (GSA), as a retail customer can now buy electricity from a number of power marketers or directly from the system operator. In this environment, GSA can shop around for the lowest price electricity. Unfortunately, there is a catch. Shopping around means that you have to become an educated consumer.

The emerging electricity market will be similar to long distance telecommunications after it was deregulated. Today's long distance callers have to do more work to get the best service. First, you must know your usage patterns. Second, you must compare various company programs and determine the best value. Finally, you have to stay within the optimal conditions of your plan. Energy companies will market services the same way.

Remember the long distance telecommunication company that packaged a special rate around a customer's small circle of most frequently called friends and family? There are also programs just for weekend usage. In essence, the long distance calling companies are requiring you to know your usage patterns and are offering reduced rates reflecting your commitments to these patterns. These programs serve a dual purpose of serving the customer and the provider. In a similar fashion, power marketers operating under the new competitive environment will market to smarter customers who are exercising greater energy usage discretion than ever before. There will be many programs, all of which require the energy consumer to know more about their consumption needs.

This is where advanced metering comes into play.

Under the new marketplace, Power Marketers (the new electricity salesperson) will prefer to have customers with stable power requirements that do not fluctuate, or in the case of office buildings, avoid peaking at midday. Office buildings with sharp peak requirements typically have what the electric industry refers to as low or poor load factors. Power Marketers prefer selling to facilities that require consistent amounts of energy over 24 hours so they can predict production. This is because power generators can no longer fall back on State controlled Public Utility Companies (PUC) to bail them out when they make bad operating decisions and lose money. This new vulnerability has had unfortunate consequences. Without PUC support, utilities become direct competitors for customers and are increasingly > > >

"In the long run, advanced meters will save money...

> > > avoiding investments that hurt their competitiveness. In addition to building new generation plants, examples of stranded costs include maintenance of transmission and distribution lines and generating excess power capacity when there is little actual demand from customers. Currently, utilities are required to have enough power capacity on line all year to meet everyone's potential power needs on the hottest day in August and rates were established by the PUC to cover these costs. Under the new environment, the marketplace will dictate the capacity available and the price at which it will be offered. Under this environment, a building's electrical consumption profile becomes extremely important in terms of attracting the best value price.

In response to this new reality, GSA's Energy Center modified its energy efficiency investment strategy to favor technologies that improve a building's load profile while still reducing energy consumption.

While there are similarities in the various State programs, significant differences are emerging in terms of the competitive rules specifying customer eligibility according to size, duration, flexibility, billing, and metering. An important feature of GSA's advanced metering implementation plan is that our demand-side management investments provide an overarching strategy to deal with this problem.

Historically, utilities have cooperated with each other to supplement power requirements, but recent developments associated with restructuring have caused utilities to view each other as competitors. As newfound competitors, the nation's electric utilities stop working together, and coordination to maintain the electric grid breaks down. Deregulated states are reacting to this problem by establishing market exchanges that attempt to manage the grid by posting prices for a kilowatt-hour (kWh). When demand is high and near capacity, a high price is posted to either curtail load or encourage generators to risk bringing on more capacity. The only problem with this solution is that customers find themselves under what the industry terms real-time pricing. This pricing structure poses a serious problem to office building operations. To avoid tremendously expensive hourly rates, buildings must be able to curtail load during the most popular hours between 10:00 AM to 2:00 PM.

In general, all Federal agencies are operating under tight budget restraints and cannot afford to have utility bills fluctuate dramatically. In the past, GSA has been proud of the fact that our buildings outperform our industry counterparts in terms of utility costs per square foot. Realizing that fluctuating utility budgets are a significant possibility under electric restructuring, the Energy Center has moved to keep this performance within acceptable levels.

GSA is currently in the second year of its Advanced Metering Implementation Plan.

This plan provides advanced metering capabilities for physically large facilities to reduce energy costs by taking advantage of demand response programs.

Advanced metering is a necessary component of market-based demand response programs. This technology provides real-time information to facility operators, letting them know when to curtail energy consumption. This capability helps GSA overall to minimize its financial risks due to

high energy costs. GSA can also take advantage of utilizing financial incentives from energy companies for reducing energy demand at opportune times.

GSA could save $58.2 million by participating in market-based demand response programs that are emerging due to deregulation of the electricity industry. In order to provide necessary information to facility managers and to account for/document participation, advanced meters will be necessary.

GSA has opted to utilize a centralized approach to data collection, analysis and reporting of advanced metering data which is collected every five minutes. This approach will simplify these functions and allow for a uniform reporting appearance to individual users and regions. Most importantly, system users will be able to monitor a building's electricity usage in real time from any location and/or organizational level of GSA.

The system selected provides individual users quick access to customized screens, delivering up-to-the-minute data consistent with their needs. The system will utilize the existing wide area network (WAN) infrastructure to transmit data from field devices to the server(s). Data storage and warehousing will be handled by the GSA National Capital Region's information technology staff under an agreement with the Energy Center of Expertise.

Field devices will be funded by the Energy Center on a prioritized schedule, using funds approved for metering in GSA's annual budget. The priorities will be established based on three factors: (1) total annual cost of electricity (most recent 12-month period); (2) annual electricity use per GSF (gross square foot); (3) annual electricity consumption. Similar to investments in energy projects, the funds will be provided to the regions for this purpose.

The system will be integrated with the GSA Energy Usage Analysis System (EUAS) in order to provide a familiar reporting engine with up-to-date information. By integrating the databases, GSA will have an automated bill verification system that will alert the government to billing discrepancies.

The system will be deployed over several years, with completion occurring in fiscal year 2012. The end result will be a fully functional energy information system for all levels of associates.

Conclusion

In conclusion, the Energy Independence and Security Act of 2007 directs GSA to install advanced metering devices for steam and natural gas in addition to electricity consumption. We will be doing that over the next few years, depending on funding. We started installing advanced meters in the Washington, D.C. and New York areas even before the law required us to do so. In the long run, advanced meters will save money by allowing us to manage power consumption more strategically. For example, GSA was able to contribute to the electrical management in the Washington area last summer by "shedding load" – sometimes allowing buildings to get a little warmer and more humid in the late afternoon – and thus, we helped avert major brown-outs in this area. Perhaps more importantly, advanced metering will help us buy power at better prices, because we will know our use patterns. ■

...by allowing us to manage power consumption more strategically."

7. GREEN ROOFTOPS

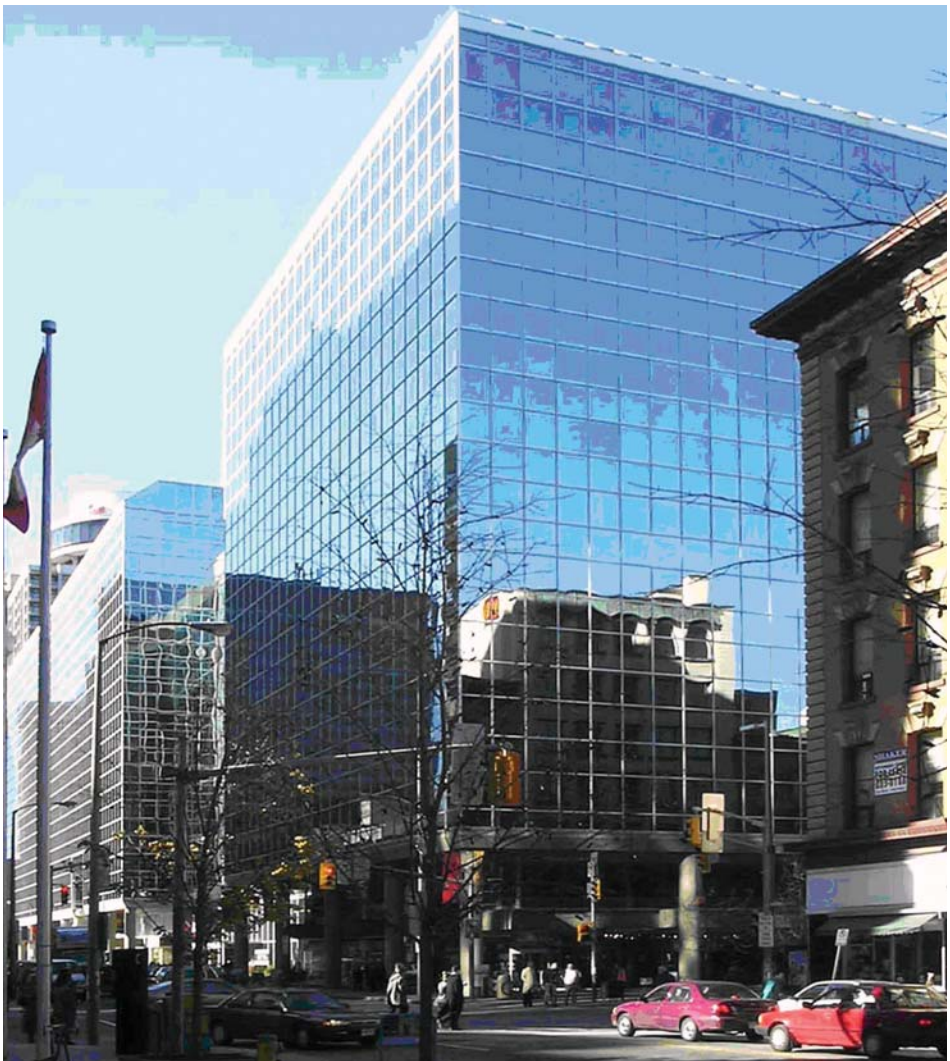
POLICYSITE

CANADA'S PWGSC TAKES GREENING GOVERNMENT OPERATIONS TO "NEW HEIGHTS"

(provided by Jean-Claude Grant, Project Manager, Public Works and Government Services Canada (PWGSC))

As the buyer and property manager for the Government of Canada, PWGSC plays a leading role in sustainable development and is committed to ensuring a cleaner environment. This commitment was taken to new heights by greening the rooftop of the CD Howe Building in downtown Ottawa.

The CD Howe Building, a 30-year-old, 13-story office and retail complex that occupies a full city block, provides accommodation for more than 3,500 employees. It is the corporate headquarters for Industry Canada and the Office of the Auditor General and Commissioner of the Environment and Sustainable Development of Canada. PWGSC and the building owner, Tempest 240 Sparks Inc., are currently mid-way through an eight-year integrated recapitalization program of works comprising base building upgrades, office space modernization and retail space renewal with sustainability as



The CD Howe Building is a 13-story 148,400 m2 (1,597,364 square feet) office and retail complex that occupies a full city block in downtown Ottawa. Built in 1977, this lease purchase asset is one of the Crown's major office holdings, providing accommodation for more than 3,500 employees. It is the corporate headquarters for Industry Canada and the Office of the Auditor General and Commissioner of the Environment and Sustainable Development of Canada.

Project team members at the The Real Property Institute of Canada Best Practices Award. (from l-r) John Verity, Guylaine Tessier, Don Lacelle, Jean-Claude Grant, Chris Jalkotzy. (Not pictured: Miao Tsai)

a prime driver in project planning and delivery.

When PWGSC and Tempest evaluated the replacement of the 6,000 m2 (square meter) (64,583 square feet) roof, a green roof was recommended. The roof now grows indigenous flowers, grasses and shrubs and manages to achieve that delicate harmony between urban and environmental needs. In fact, more than 30 percent of the roof is landscaped and another 30 percent uses green roof technology. The new green roof not only addresses a wide range of environmental concerns including energy conservation, storm water management, biodiversity and air quality, but it also provides the occupants new landscaped, tranquil outdoor spaces and even wildlife refuge!

The project was completed within its approved budget of $3.5 million, within its original scope and within its nine-month schedule in an occupied building. It is the first office building green roof in downtown Ottawa and thus contributes to making the Federal government a model of environmental excellence in its own operations. PWGSC Minister Fortier mentioned during the official opening on June 6, 2006, "It can serve as a model for future roof renovations".

The CD Howe Building green roof has generated much interest and enthusiasm from building occupants and visitors alike. Two rooftop gardens offer relaxing green space - hard to find in the concrete core of downtown. "This roof is a very nice place to take a break from the hectic workday, and it's good for the environment. I wish our building had one too", said one visitor. The CD Howe Building green roof project has been featured in local newspapers and PWGSC's publications.

In 2006, the CD Howe Building green roof project team was honored with the PWGSC Greening Government Ministerial Award for their commitment to environmental sustainability. The Real Property Institute of Canada also recognized the uniqueness of the project with its Best Practices Award. ■

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Public Works and Government Services Canada (PWGSC) is dedicated to reducing the environmental footprints of its buildings.

7. LES TOITS VERTS

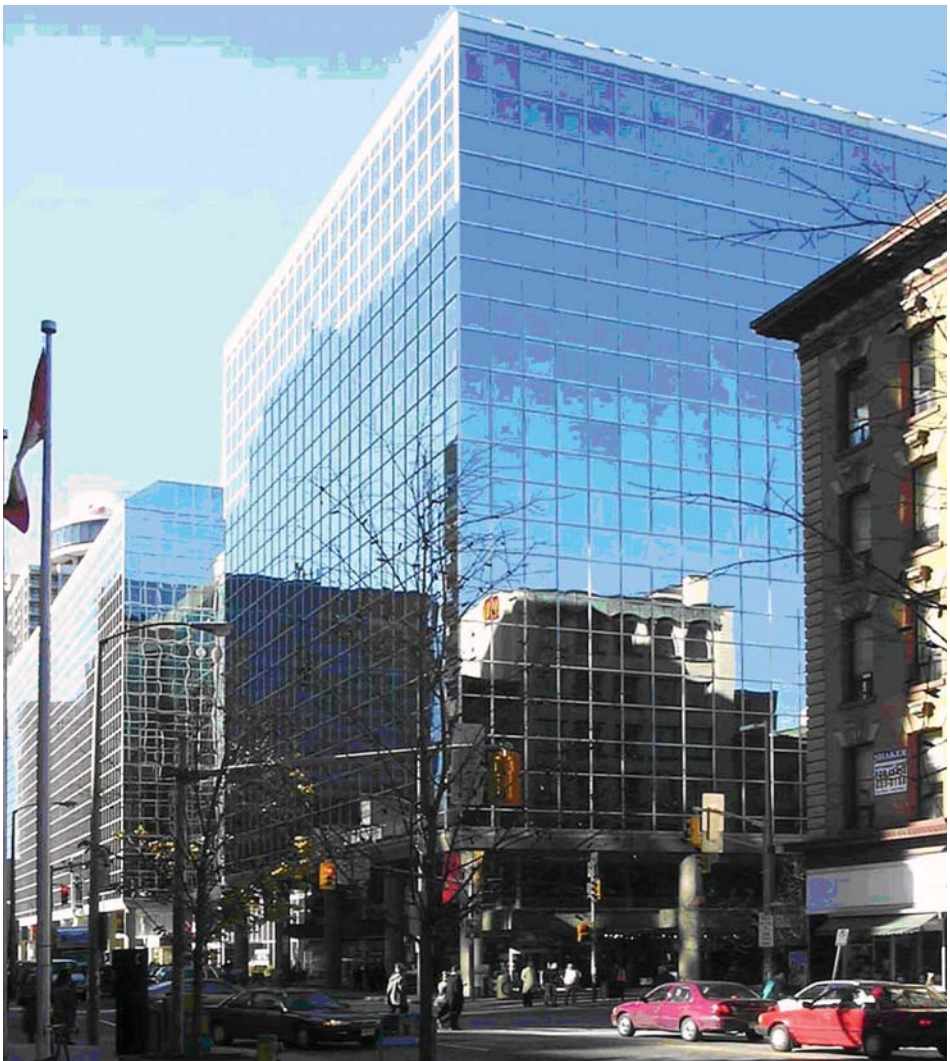
POLICYSITE

TPSGC DU CANADA PORTE L'ÉCOLOGISATION DES OPÉRATIONS GOUVERNEMENTALES VERS DE « NOUVEAUX SOMMETS »

(fourni par Jean-Claude Grant, chef de projets, Travaux publics et Services gouvernementaux Canada (TPSGC))

A titre d'acheteur et de gestionnaire immobilier du gouvernement du Canada, TPSGC joue un rôle de premier plan dans le domaine du développement durable et s'engage à offrir un environnement plus propre. Cet engagement a été porté vers de nouveaux sommets avec l'écologisation du toit de l'immeuble CD Howe au centre-ville d'Ottawa.

L'immeuble CD Howe, un complexe de bureaux et un centre commercial de 30 ans, comptant 13 étages et occupant un pâté de maisons entier, héberge pour plus de 3 500 employés. C'est le siège social d'Industrie Canada et du Bureau du vérificateur général et du commissaire à l'environnement et au développement durable du Canada. TPSGC et le propriétaire de l'immeuble, Tempest 240 Sparks Inc., en sont actuellement à la moitié d'un programme intégré de réfection de huit ans qui prévoit des travaux comprenant des mises à niveau d'immeuble de base, la modernisation d'espace de



L'immeuble CD Howe est un complexe de bureaux et un centre commercial de 13 étages et de 148 400 m2 (1 597 364 pieds carrés) qui occupe un pâté de maisons entier au centre-ville d'Ottawa. Construit en 1977, cet actif en location-acquisition est l'un des complexes de bureaux les plus importants de la Couronne, hébergeant plus de 3 500 employés. Il abrite le siège social d'Industrie Canada et du Bureau du vérificateur général et du commissaire à l'environnement et au développement durable du Canada.

Les membres de l'équipe de projet à l'Institut des biens immobiliers du Canada recevant le prix Pratiques exemplaires. (de la droite vers la gauche) John Verity, Guylaine Tessier, Don Lacelle, Jean-Claude Grant, Chris Jalkotzy. (Ne figure pas sur la photo : Miao Tsai)

bureau et la rénovation de centres commerciaux avec la durabilité comme premier vecteur de la planification et la livraison du projet.

Quand TPSGC et Tempest ont évalué le remplacement des 6 000 m2 (mètre carré) (64 583 pieds carrés) du toit, ils ont conseillé un toit vert. Maintenant sur le toit, poussent des fleurs, des graminées et des arbustes indigènes et l'harmonie délicate entre les besoins urbains et environnementaux a été atteinte. De fait, plus de 30 pour cent de la surface du toit est paysagée et un autre 30 pour cent utilise la technologie du toit vert. Le nouveau toit vert répond non seulement à un large éventail de préoccupations sur l'environnement dont la conservation de l'énergie, la gestion de l'eau de pluie, la biodiversité et la qualité de l'air, mais il fournit également aux occupants de nouveaux espaces en plein air, aménagés et paisibles.

Le projet a été achevé conformément au budget approuvé de 3,5 millions de dollars, dans sa portée initiale, dans un délai de neuf mois et dans un immeuble occupé. C'est le premier immeuble de bureaux avec un toit vert au centre-ville d'Ottawa et qui par conséquent contribue à faire du gouvernement fédéral un modèle d'excellence environnementale dans ses propres activités. Pendant l'inauguration officielle du 6 juin 2006, le ministre du TPSGC, M. Fortier a mentionné : « celui-ci pourra servir de modèle lors de la rénovation du toit d'autres immeubles fédéraux ».

Le toit vert de l'immeuble CD Howe a généré beaucoup d'intérêt et de ferveur que ce soit des occupants de l'immeuble ou des visiteurs. Deux jardins sur le toit offrent un espace vert reposant - difficile à trouver dans le cœur de béton du centre-ville. « Ce toit est un très bel endroit pour faire une pause pendant une journée de travail intense et c'est bon pour l'environnement. J'aimerais que notre immeuble en ait un aussi », a déclaré un visiteur. Le projet de toit vert de l'immeuble CD Howe a été présenté dans des journaux locaux et dans des publications du TPSGC.

En 2006, l'équipe de projet de toit vert de l'immeuble CD Howe a été honorée en recevant le prix de l'écologisation du ministre de TPSGC pour son engagement envers la durabilité écologique. L'Institut des biens immobiliers du Canada a aussi reconnu la singularité du projet avec son prix Pratiques exemplaires. ■

Travaux publics et Services gouvernementaux Canada (TPSGC) s'engage à réduire l'empreinte écologique de ses immeubles.

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8. LEGISLATIVE REFORM

POLICYSITE

HIGH PERFORMANCE GREEN BUILDINGS LEGISLATION "RAISES THE BAR"

(by Haydee Iglesias, GSA Office of Real Property Management, haydee.iglesias@gsa.gov)

During the 110th Congress, energy conservation has been a priority and 12 bills, six in the Senate and six in the House, were introduced to help reduce America's dependence on oil including ways to improve the efficiency in the Federal government through the use of high-performance green buildings. On December 19, 2007, Congress enacted a comprehensive bill which was signed by the President: HR 6 - ***Energy Independence and Security Act of 2007*** (Energy Act) (Public Law 110-140).

This bill, in conjunction with Executive Order (EO) 13423 signed by President on January 24, 2007, to strengthen the environmental, energy, and transportation management of Federal agencies, will increase energy security and make this country stronger, safer and cleaner for future generations.

The Energy Act moves the United States toward greater energy independence and security by reducing our dependence on oil, expanding the production of clean renewable fuels, and confronting global climate. Additionally, the bill will impact the management of Federal buildings as it seeks to improve the energy performance of the Federal government through the establishment within the General Services Administration of the Office of High-Performance Green Buildings (OHPGB). The OHPGB will be managed by a Senior Executive Service Director to promote green building technology implementation in Federal buildings.

The newly created OHPGB will require its Director to: (1) report biennially to Congress on green building initiatives; (2) identify a standard most likely to encourage a comprehensive and environmentally-sound approach to certification of green buildings; (3) establish the Green Building Advisory Committee; (4) establish a national high-performance green building information clearinghouse; (5) develop a high-performance green building research plan; (6) implement a Federal facilities indoor air quality program to ensure occupant safety; and (7) analyze budget and contracting practices that affect high-performance green buildings, including barriers to green building life-cycle costing and budgetary issues.

For Federal buildings, the Energy Act specifically creates new energy efficiency standards; it sets as a goal to cut their energy use 30 percent by 2015, and requires new and renovated Federal buildings to significantly reduce their reliance on energy from fossil fuels. Compared with existing Federal buildings, Federal buildings built or renovated in 2010 must cut

their fossil-fuel dependency by 55 percent, and by 2030, new or renovated Federal buildings must eliminate their use of fossil fuel energy. The bill:

- Authorizes the use of Energy Saving Performance Contracts,
- Updates the authorization for the Department of Energy's Industrial Technologies Program,
- Authorizes a Commercial Building Initiative, and
- Contains new provisions to promote combined heat and power, recycled energy, and district energy systems.

On the ongoing efforts to enhance energy conservation and efficiency in Federal buildings, this bill also includes provisions to improve energy efficiency in lighting and appliances, as well as requirements for Federal agency efficiency and renewable energy use that will help reduce greenhouse gas emissions. To meet these new standards the bill will:

- Require all general purpose lighting in Federal buildings to use Energy Star® products or products designated under the Department of Energy's Federal Energy Management Program (FEMP) by the end of fiscal year 2013, and
- Update the Energy Policy and Conservation Act to set new appliance efficiency standards that will save Americans money and energy.

Finally, the Energy Act seeks to help reduce America's dependence on oil by setting out a comprehensive energy strategy for the 21st century which includes:

- Increasing the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard (RFS) requiring fuel producers to use at least 36 billion gallons of biofuels in 2022, and
- Reducing U.S. demand for oil by setting a national fuel economy standard of 35 miles per gallon by 2020 – which will increase fuel economy standards by 40 percent and save billions of gallons of fuel.

The implementation of energy savings in government and public institutions, improved vehicle fuel economy standard and vehicle technology, Federal fleet conservation requirement, increases in the production of biofuels, energy savings through improved standards for appliance and lighting, accelerated research and development in other energy forms, carbon capture and sequestration research will allow the United States to reduce projected CO2 (carbon dioxide) emissions by billions of metric tons and advance the country's commitment to climate change. ■

Raising the Bar: "This bill, in conjunction with EO 13423 ...will increase energy security and make this country stronger, safer and cleaner for future generations."

9. PERFORMANCE ASSESSMENT TOOLS

POLICYSITE

"GREENING OUR U.S. EMBASSIES"

Measuring and Reporting Compliance with EO 13423 and Other Federal Mandates - Agencies with Large Portfolios

(By Donna McIntire, Architect, LEED® AP, Sustainability Program Manager, Overseas Buildings Operations, Department of State, McIntireDM@state.gov)

Recent Federal mandates such as the Energy Independence and Security Act (EIS Act) of 2007, Executive Order (EO) 13423 - Strengthening Federal Environmental, Energy, and Transportation Management and the Federal Leadership in High Performance and Sustainable Buildings – Memorandum of Understanding (MOU) all call for the measurement and reporting of energy and water use by Federal buildings.

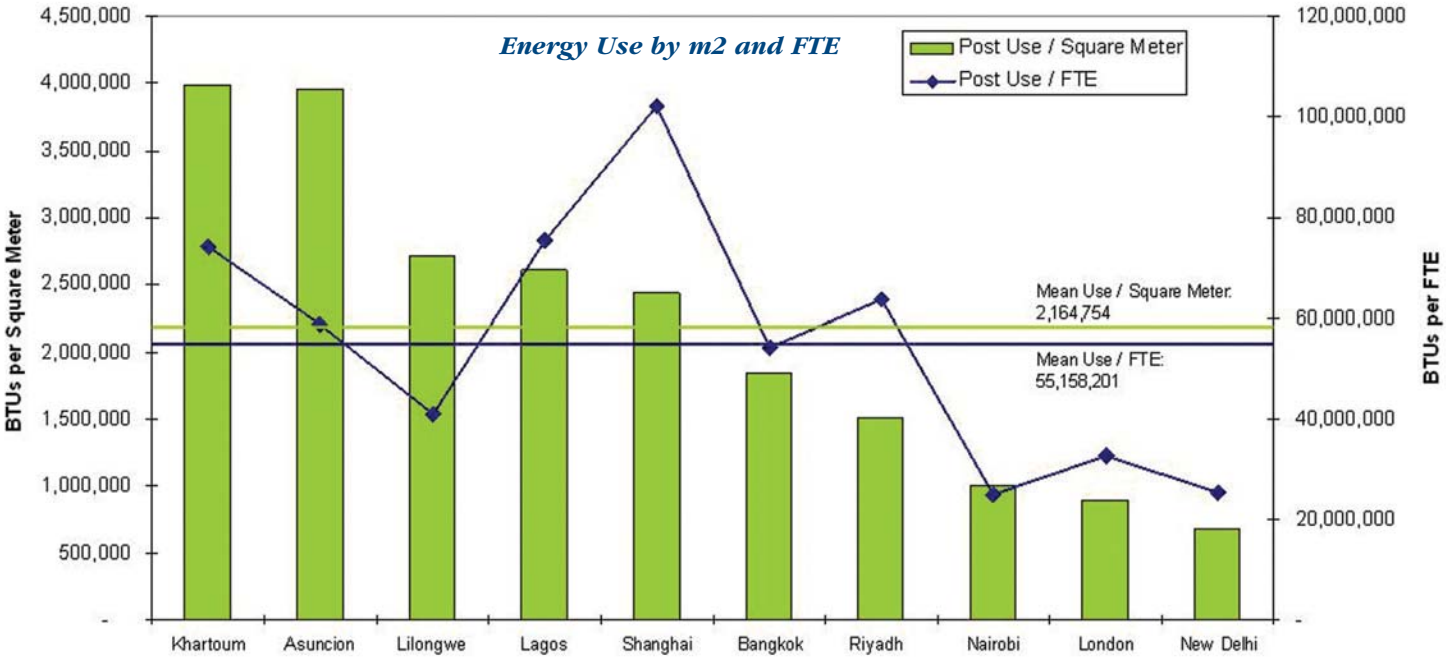
Many agencies are struggling to benchmark their facilities and comply with the targets set by these new mandates, and those agencies with large and diverse portfolios are particularly challenged. The Department of State is one such agency.

Embassy Panama City, Panama, Second LEED® Certified U.S. Embassy 2008

The Department of State's Overseas Buildings Operations Bureau (OBO) manages Federally owned and leased property in over 257 locations around the world in over 18,000 buildings totaling over 117 million square feet, in a very diverse set of building types ranging from embassies, consulates, and residences to warehouses and wastewater treatment plants. OBO established the Energy and Sustainable Design Program (GreenTeam) as a catalyst for compliance with the aggressive energy targets set by EO 13423 and EIS Act, such as 30 percent use reduction by 2015 and 100 percent by 2030.

How to begin? Create a tool to collect, store, and report on the portfolio.

Title IV – Energy Savings in Buildings and Industry, Subtitle C – High Performance Federal Buildings, Section 432 – Management of Energy and Water Efficiency in Federal Buildings of EIS Act, signed by President Bush on December 19, 2007, requires web-based tracking systems be used for monitoring compliance status. While many agencies may choose to use the Energy Star® Portfolio Manager to fulfill this requirement, OBO has developed its own database linked to the Real Property Database through building identification numbers, for



the purpose of identifying problem areas and for prioritizing of projects. To better understand energy expenditures and issues of sustainability within OBO's portfolio, a worldwide Sustainability Survey for fiscal year (FY) 2007 was conducted that included a myriad of questions ranging from reporting utilities' consumption and cost to issues of indoor air quality, recycling, and site flooding and erosion. Information will be gathered annually and deposited into the database. The FY 2007 report revealed which posts are using the greatest amount of energy and water and which are paying the most per BTU (British Thermal Unit) and per liter. The report shows consumption according to the number of square meters (m2) being supported and by the number of Full-Time-Equivalents (FTE) supported. These measures give OBO benchmarks, similar to those of Energy Star® Portfolio Manager, indicating which posts are above or below the mean use and cost. (See Chart above.)

How to measure? Individual building metering of utilities is required.

Section 432 of EIS Act requires that 75 percent of each agency's facilities be evaluated for energy and water use. This is to be accomplished on a rolling calendar with 25 percent evaluated each year. For OBO this translates to 193 posts (75 percent of 257) and 48 posts per year (25 percent of 193). Many of OBO's compounds have multiple buildings with only one meter. Section 103 of the Energy Policy Act of 2005 requires individual building metering for all utilities to support accurate reporting for EO 13423 and EIS Act. OBO is initiating a systems metering program to increase building metering worldwide.

How to fund improvements? Funding doesn't have to come from capital appropriations.

Section 432 of EIS Act specifically states that private financing through Energy Savings Performance Contracts (ESPC) or Utility Energy Service Contracts (UESC) are acceptable funding options. ESPCs allow private companies to pay for the project's first cost and be reimbursed through the savings realized from the success of the project over a period of time. Once the project is paid for, then the owner reaps the benefits of the savings directly. ESPCs have been used by OBO for a decade, on such projects as:

- ***Mexico City*** ($578,000 lighting 1999) nine-year contract completed in 2006;
- ***Seoul*** ($12,500,000 geothermal 2001) 19-year contract required $750,000 buy-down;
- ***Santo Domingo*** ($721,000 lighting 2005) 10-year contract; and
- ***Dhaka*** ($725,000 gas turbine generators 2007) 11-year contract.

Implementing this type of contract overseas has the unusual obstacles of exchange rate fluctuations, utility rate instability, and bi-annual rotations in posts' management. The Department of Energy's Federal Energy Management Program (DOE/FEMP) offers agencies support with ESPC development and use of their pre-competed, indefinite quantity contractors specifically approved as energy service companies. OBO is looking to substantially increase the use of ESPCs to meet the targets of the Federal mandates. ■

ENVIRONMENTAL PERFORMANCE ASSESSMENT TOOLS THAT IMPROVE BUILDINGS' LIFE CYCLE MANAGEMENT

(provided by Vanessa Martin, Communications Advisor, and Jenna Craig, Sustainable Development Officer, Public Works and Government Services Canada (PWGSC))

PWGSC a "LEEDer" in Sustainable Construction

Public Works and Government Services Canada (PWGSC) is working to incorporate sustainable development considerations into the very fabric of its business, and relies on two assessment tools, developed and embraced by industry, to improve the way it manages and operates its portfolio of office buildings: the Canada Green Building Council's (CaGBC) Leadership in Energy and Environmental Design (LEED®), and the Building Owners and Managers Association (BOMA) Canada's Go Green Plus.

The department's environmental commitments for buildings are comprehensive in scope, encompassing new construction, major renovations, existing office buildings, leased space and heritage buildings. The tools are used in all of those structures to assess key environmental aspects. They provide an effective and consistent framework for gauging sustainable design and performance, and help guide the decision-making process during the design, operation and maintenance phases, leading

Greenstone Building
Photo credit: PWGSC

Photo credit:
Manasc Isaac Architects Ltd

to a more environmentally friendly portfolio.

Canada Green Building Council's (CaGBC) Leadership in Energy and Environmental Design (LEED®)

LEED® certification distinguishes building projects that meet the highest performance standards in five key areas: sustainable sites; water efficiency; energy and atmosphere; materials and resources; and, indoor environmental quality. The certification process is flexible enough to apply to a wide range of building projects, and PWGSC has committed to meeting CaGBC's LEED® Canada-NC (New Construction) Gold standard for new construction and long-term leases and LEED® Canada-NC Silver standard for major renovations. By doing so, the department also committed to integrating environmental considerations into the decision-making process behind each new construction or renovation project it carries out.

Building Owners and Managers Association (BOMA) Canada's Go Green Plus

PWGSC's interest in BOMA Canada's Go Green Plus stems from its ability to integrate environmental considerations into the management of a building portfolio. Since April 2007, PWGSC has been using the tool to evaluate the environmental performance of Federally-owned office buildings in six key aspects: energy; water; resources (waste reduction and recycling); emissions, effluents and other impacts; indoor environment; and, environmental management (purchasing policy; tenant awareness). All Federally-owned office buildings will have been assessed within three years.

BOMA Canada's Go Green Plus complements PWGSC's efforts to improve the environmental performance of its building portfolio. The assessments provide real-time feedback on a building's current performance, identify areas where improvements could be made, and can provide a projected outcome of those improvements. Assessment results can also be used to compare portfolio performance with Canadian industry benchmarks and establish a relative understanding of where the performance ranks. PWGSC will be able to forecast the reduced environmental footprint of its buildings and adapt operation and maintenance-related activities at any point in the building's life cycle to achieve the desired performance results and improve ranking.

Here are two examples of how PWGSC uses these tools to improve the environmental performance and life-cycle management of its building portfolio:

Greenstone Building, Yellowknife, Northwest Territories (NWT)

(LEED® Canada-NC 1.0 Gold – July 31, 2007)

This four-story office building in Yellowknife, NWT, was the first office building north of the 60th parallel to achieve LEED® Canada-NC 1.0 Gold certification. By designing the building with that target in mind, specific environmental factors were integrated into the design and construction phases, including a south-facing photovoltaic exterior curtain wall to generate energy; water-saving urinals, toilets and showers; and, diverting over 80 percent of construction waste > > >

Photo credit: PWGSC
Alvin Hamilton Building

> > > from landfills through recycling.

The aim of attaining LEED® certification was the driving factor behind other decisions too. A life-cycle analysis was carried out during the design phase and a green education program was developed for use throughout the life of the building. Features such as water-efficient landscaping, thermal comfort monitoring and a commitment to energy consumption savings of 53 percent will help ensure that the building is managed in an environmentally friendly way for the duration of its life.

Alvin Hamilton Building, Regina, Saskatchewan

(LEED®, Canada-NC 1.0 Silver – July 19, 2007)

Originally built in 1968 as a retail establishment, this building has undergone a dramatic transformation and is the Federal government's first major renovation project to achieve LEED® Canada-NC 1.0 Silver certification. The goal of achieving LEED® Silver certification drove the project from planning to completion. Plans focused so significantly on reducing, reusing and recycling that 78 percent of the original structure and shell were re-used in the new building, and 77 percent of the onsite construction waste was diverted from landfills. Replacing the old windows and walls with high-efficiency ones guarantees reduced heating and cooling loss, while water-saving toilets and urinals provide a savings of more than 47 percent over standard practice. For the longer term, there is a Green Housekeeping Policy requiring tenants to only use environmentally friendly cleaning products that reduce the environmental footprint of the building's operations. Best of all, green power sources meet 50 percent of the building's needs, ensuring this building is one of the greenest in PWGSC's portfolio. The LEED® tool and its incentive to set the bar high are directly responsible for these environmental performance factors playing such a key role in this renovation project. ■

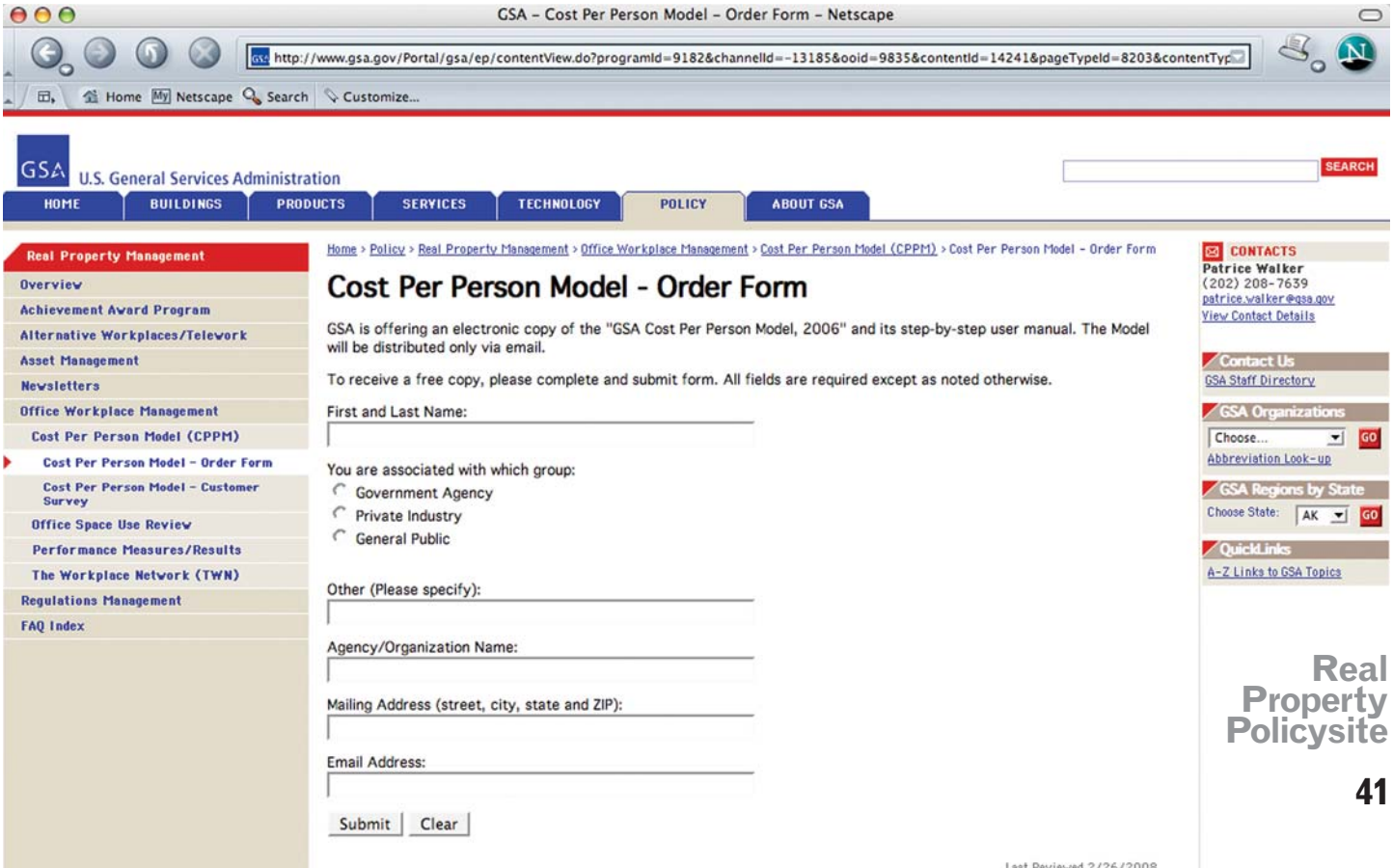
Photo credit: PWGSC

GSA COST PER PERSON MODEL

The General Services Administration (GSA) is the Federal Government's advocate for comprehensive sustainability and asset management. Across the Federal Government, managers have implemented asset management and sustainability programs to support these efforts. As a result of this continuous effort, the GSA Cost Per Person Model (CPPM) was created.

What is the Cost Per Person Model? The GSA Cost Per Person Model is a Microsoft Excel-based planning tool that assesses workspace policy and identifies cost savings opportunities in the areas of workspace, information technology, telecommunications and alternative work environments (such as telework). The CPPM also enables users to analyze the cost trade-off between greater use of telework and reduced office space in a facility. By encouraging its users to consider cost factors beyond the traditional cost per square foot paradigm, the CPPM facilitates more informed decision-making and increased cost savings.

How can you receive further information? For further information and to obtain a FREE copy of the CPPM, visit our website at gsa.gov/cppmodel or contact Nadine Burns at nadine.burns@gsa.gov. ■



9. OUTILS D'ÉVALUATION DU RENDEMENT

POLICYSITE

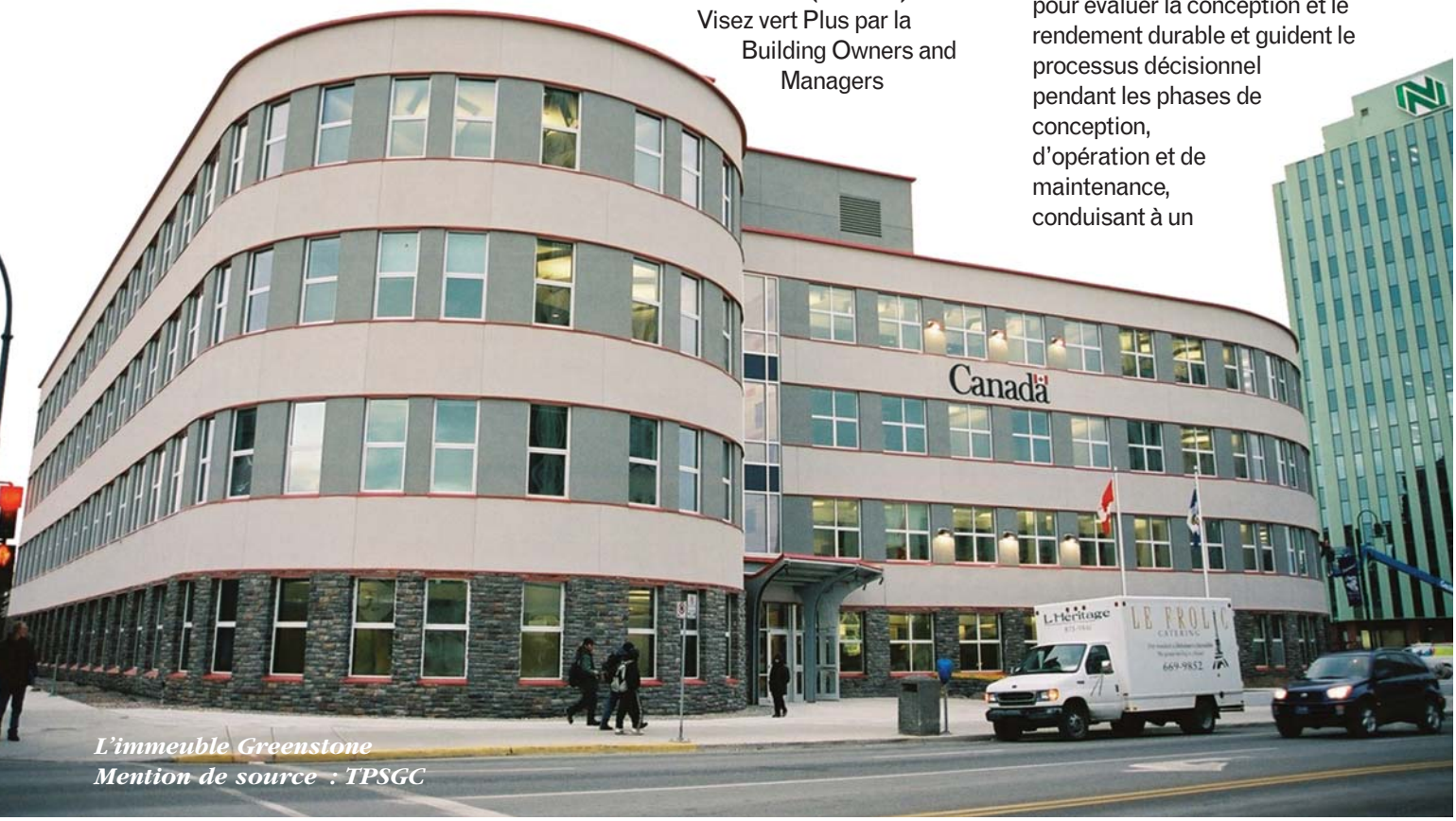
OUTILS D'ÉVALUATION DU RENDEMENT ENVIRONNEMENTAL QUI AMÉLIORENT LA GESTION DU CYCLE DE VIE DES IMMEUBLES

(fourni par Vanessa Martin, conseillère en communication et Jenna Craig, agente de développement durable, Travaux publics et Services gouvernementaux Canada (TPSGC))

TPSGC un "LEEDer" en construction durable

Travaux publics et Services gouvernementaux Canada (TPSGC) essaie d'incorporer des composantes liées au développement durable au sein même de ses activités et s'en remet à deux outils d'évaluation, élaborés et adoptés par l'industrie, pour améliorer la manière de gérer et d'exploiter son portefeuille immobilier : Le LEED[MD] (qui signifie Leadership in Energy and Environmental Design) par le Conseil du bâtiment durable du Canada (CBDCa)[MD] et le Visez vert Plus par la Building Owners and Managers Association (BOMA) du Canada.

Les engagements en matière d'environnement du ministère pour les immeubles ont une portée globale, englobant les nouvelles constructions, les rénovations importantes, les immeubles de bureaux existants, les locaux loués et les édifices patrimoniaux. Les outils sont utilisés dans toutes ces structures pour évaluer les principaux aspects environnementaux. Ils fournissent un cadre efficace et cohérent pour évaluer la conception et le rendement durable et guident le processus décisionnel pendant les phases de conception, d'opération et de maintenance, conduisant à un



L'immeuble Greenstone
Mention de source : TPSGC

Mention de source :
Manasc Isaac Architects Ltd

portefeuille inoffensif sur le plan écologique.

Le LEED[MD] (qui signifie Leadership in Energy and Environmental Design) par le Conseil du bâtiment durable du Canada (CBDCa[MD])

La certification LEED[MD] distingue les projets d'aménagement d'immeubles qui répondent aux normes de rendement les plus rigoureuses dans cinq aspects clés : sites durables, efficacité de la consommation de l'eau, énergie et air, matériaux et ressources et qualité de l'environnement à l'intérieur. Le processus de certification est suffisamment souple pour s'appliquer à une vaste gamme de projets d'aménagement d'immeubles, et TPSGC s'est engagé respecter les normes « LEED Gold »[MD] Canada-NC (Nouvelle Construction) du CBDCa pour les nouvelles constructions et les locations à long terme et aux normes « LEED Silver »[MD] Canada-NC pour les rénovations importantes. Ce faisant, le ministère s'est aussi engagé à intégrer des considérations environnementales dans le processus décisionnel de chaque nouveau projet de construction ou de rénovation qu'il réalise.

Visez vert Plus de Building Owners and Managers Association (BOMA) Canada

L'intérêt de TPSGC dans le programme Visez vert Plus de BOMA Canada découle de sa capacité à intégrer des considérations environnementales dans la gestion du portefeuille d'immeubles. Depuis le mois d'avril 2007, TPSGC a utilisé l'outil pour évaluer le rendement environnemental des immeubles de bureaux fédéraux sur six principaux aspects : l'énergie, l'eau, les ressources (réduction et recyclage des déchets), les conséquences des émissions, des effluents et autres, l'environnement à l'intérieur et la gestion de l'environnement (politique d'achat, connaissance des locataires). Tous les immeubles de bureaux fédéraux seront évalués d'ici trois ans.

Le programme Visez vert Plus de BOMA Canada est un complément aux efforts entrepris par TPSGC pour améliorer le rendement environnemental de son portefeuille d'immeubles. Les évaluations fournissent une rétroaction en temps réel du rendement actuel d'un immeuble, identifient les aspects à améliorer et peuvent fournir le résultat attendu de ces améliorations. Les résultats des évaluations peuvent également servir à comparer le rendement du portefeuille aux points de repère de l'industrie canadienne et à établir une compréhension relative du classement du rendement. TPSGC pourra estimer la réduction de l'empreinte écologique de ses immeubles et adapter les activités d'exploitation et de maintenance à n'importe quel moment dans le cycle de vie de l'immeuble, afin d'atteindre les résultats désirés en matière de rendement et d'améliorer le classement.

Voici deux exemples sur la manière dont TPSGC utilise ces outils pour améliorer le rendement environnemental et la gestion du cycle de vie de son portefeuille d'immeubles :

L'immeuble Greenstone, Yellowknife, Territoires-du-Nord-Ouest (T.-N.-O.)

(« LEED[MD] Gold » Canada-NC 1.0 – 31 juillet 2007)

Cet immeuble de bureaux de quatre étages situé à Yellowknife, T.-N.-O., était le premier immeuble de bureaux au nord du 60e parallèle à recevoir la certification « LEED Gold »[MD] Canada-NC 1.0. En concevant l'immeuble avec cet objectif en tête, des facteurs environnementaux spécifiques ont été intégrés dans les phases de conception et de construction, en outre un mur de > > >

Mention de source : TPSGC
L'immeuble Alvin Hamilton

>>> courtine avec un module photovoltaïque extérieur sur le côté sud pour générer de l'énergie; des urinoirs, des toilettes et des douches économes en eau; et détournement de plus de 80 pour cent des déchets de construction des sites d'enfouissement en pratiquant le recyclage.

L'objectif d'atteindre la certification LEED[MD] était aussi le facteur déterminant qui a motivé d'autres décisions. Une analyse du cycle de vie a été réalisée pendant la phase de conception et un programme éducatif vert a été élaboré en vue d'être utilisé tout au long de la vie de l'immeuble. Des caractéristiques telles que l'aménagement paysager économique en eau, un suivi du confort thermique et l'engagement à l'égard des économies d'énergie de l'ordre de 53 pour cent permettront de s'assurer que l'immeuble est géré d'une manière écologique durant toute sa vie.

L'immeuble Alvin Hamilton, Regina, Saskatchewan

(« LEED[MD] Gold » Canada-NC 1.0 – 19 juillet 2007)

Construit à l'origine en 1968 à titre d'établissement commercial, cet immeuble a subi une transformation dramatique et est le premier projet de rénovation importante du gouvernement fédéral visant à atteindre la certification « LEED[MD] Silver » Canada-NC 1.0. L'objectif d'atteindre la certification « LEED[MD] Silver » a motivé le projet de la conception jusqu'à la fin. Les plans se concentraient de façon si importante sur la réduction, la réutilisation et le recyclage que 78 pour cent de la structure et de la carcasse d'origine ont été réutilisées dans le nouvel immeuble et 77 pour cent des déchets de construction ont été détournés des sites d'enfouissement. Le remplacement des anciennes fenêtres et des anciens murs par de nouveaux murs hautement efficaces garantit réduction de la perte du chauffage et du refroidissement, alors que les toilettes et urinoirs économes en eau fournissent une économie de plus de 47 pour cent par rapport aux pratiques habituelles. À long terme, il y a une politique d'effet de serre exigeant que les locataires n'utilisent que des produits de nettoyage écologiques qui réduisent l'empreinte écologique de l'exploitation de l'immeuble. Mieux encore, les sources d'énergie écologiques satisfont 50 pour cent des besoins de l'immeuble, ce qui permet de s'assurer que cet immeuble est l'un des plus écologiques du portefeuille deTPSGC. L'outil LEED[MD] et son incitative qui consiste à se fixer des objectifs audacieux sont directement responsables de ces facteurs de rendement environnemental jouant un rôle clé dans ce projet de rénovation. ■

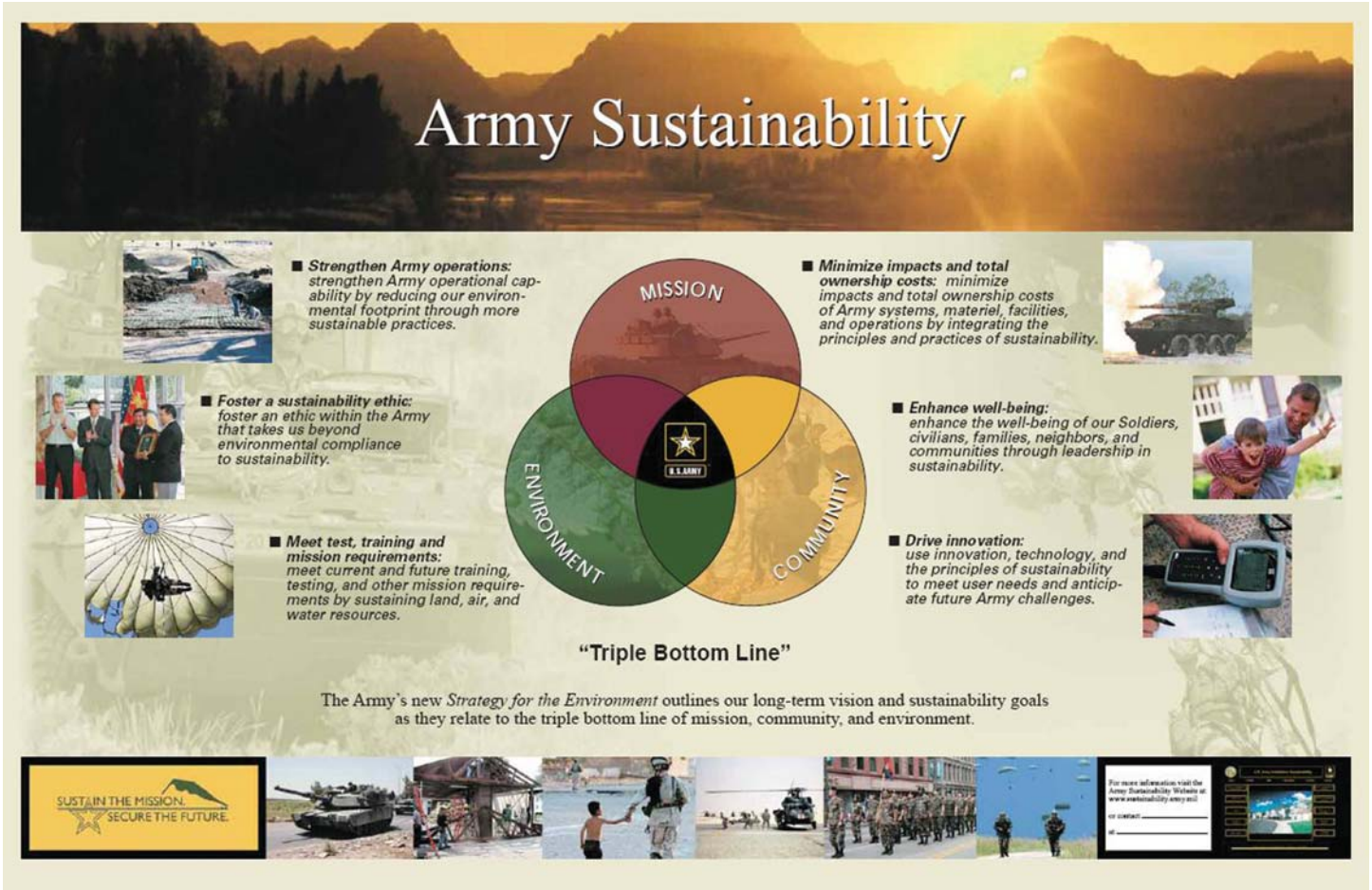
Mention de source : TPSGC

10. SUSTAINABLE PLANNING

CREATING SUSTAINABLE, VIBRANT, LIVABLE ARMY COMMUNITIES

(by Andrea Wohlfeld Kuhn, AICP, Master Planning Team Associate, US Army Corps of Engineers, Andrea.W.Kuhn@usace.army.mil)

Military installations are essentially small towns, and in some cases have populations that exceed those of townships. Similarly, many have the full spectrum of land uses that towns or small cities do, including residential, commercial, industrial, retail, educational and recreational uses, among others. The Army is creating communities on military installations that offer opportunities to live, work and play in a more sustainable manner, while minimizing impacts to the environment, creating a sense of community, and offering alternatives to reliance on personal autos.



Fort Belvoir, VA "Community"

The Army places an ever increasing emphasis on sustainability, and is now focused on its applicability to planning. The Army's definition of sustainability has three components: mission, environment, and community (see "Triple Bottom Line" illustration).

The Army Strategy for the Environment states that "A sustainable Army simultaneously meets current as well as future mission requirements worldwide, safeguards human health, improves quality of life, and enhances the natural environment." Army policy is that all new construction must meet the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED®) Silver standards.

Planning Trends

Throughout the country, new communities are being designed and older ones are being revitalized to embrace "mixed-use development," "new urbanism" or "traditional neighborhood development." Regardless of the terminology, the intent is the same — creating communities that have a sense of place and promote livability, quality of life and protection of the environment.

Rather than segregate uses, as traditional zoning practices dictate, these new communities integrate a variety of uses. Mixed-use development purposely consolidates multiple uses, such as retail, office, commercial and residential. Interconnectivity through pedestrian access or public transportation provides the necessary interconnectivity.

Army master planners are taking their cues from popular "town centers" that have sprung up across the country in recent years and that have existed in Europe for centuries. These centers, built around a central courtyard or square, typically contain retail and commercial businesses on the ground floor, with residential uses above or within walking distance. They are characterized by the proliferation of gathering places, ranging from restaurants or cafés with outdoor seating to public open spaces for congregating and recreating. These areas are often served by public transportation and are easily accessible to pedestrians.

Current research indicates that most people would rather live in a small town than a large city or a suburban environment. Most appealing are the convenience of neighborhood stores, the safety of a well-defined area where people know each other, the local availability of goods and services and recreational amenities, and the overall sense of belonging. A winning combination appears to be an element of nostalgia (small town or old-world ambience) blended with modern conveniences and necessities, resulting in sustainable, livable communities.

Not only do these concepts meet sustainability goals, but they are also essential in achieving the Army's four imperatives:

1. Sustain soldiers, families and civilians;
2. Prepare soldiers for success in current operations;

3. Reset to restore readiness and depth for future operations; and
4. Transform to meet the demands of the 21st century.

These goals and those of our soldiers and families can be met by changing the way the Army plans its installations. Sustainable, mixed-use developments can provide several benefits.

Quality of Life, Health

These concepts are of particular relevance in sustaining the military community. While monetary bonuses provide a powerful incentive to encourage enlistment or recruitment, a critical factor relating to service longevity is the quality of life soldiers and their families experience when they live on military installations. In fact, the Army has placed added emphasis on quality of life by signing Army Family Covenants to ensure that every installation provides soldier and family services that are standardized, predictable, and flexible.

Living environments such as housing, services, eating establishments, shopping centers, and recreational amenities that are planned appropriately can increase satisfaction with on-post quality of life. Availability of goods and services within walking distance is more convenient for residents, as well as providing environmental and health benefits. Americans have become more sedentary over time, resulting in greater incidences of obesity; in large part because our communities, including Army installations, are designed around automobile access, rather than pedestrian accessibility. "Walkable" communities offer numerous benefits, including sustainable ones such as energy savings, pollution minimization, and less dependence on private automobiles. In addition, they offer individual health benefits such as improved cardiovascular health, weight control, and asthma reduction.

Changing demographics are a key factor to keep in mind as the Army plans and designs the delivery of these services. Now that more than 60 percent of Army service members are married, master planners must change the way they plan installations to be able to meet the changing needs of soldiers and families.

Many families have dual-career military members, and both may be deployed or have overlapping deployments. Thus, quality-of-life factors become increasingly important to the well-being of service members and their families.

Land Use, Environmental Constraints

Development on military installations is becoming increasingly constrained by limited land availability; environmental, energy and security constraints; encroachment issues; and limited funding. Master planners can no longer simply identify empty, available parcels of land and then fit proposed developments into these parcels.

A more holistic approach to > > >

Fort Belvoir, VA "Community"

> > > planning is necessary, with thorough consideration of each of those factors. Environmental constraints such as limited natural resources, including air and water — and the need to conserve energy can actually help define and encourage mixed-use development.

More compact development can be designed to complement the natural environment or topography and create more usable open space, which can, in turn, be used for recreational purposes for an entire community. The effect will be fewer automobile trips, which will result in decreased auto emissions, better air quality and decreased requirements for parking lots and other impervious surfaces.

Sense of Community

Mixed-use development can be designed to provide necessary goods and services and to create a small town atmosphere with the positive attributes that so many people desire. Incorporating elements of local architectural design elements creates a sense of place and complements the surrounding community.

One example where the Army has embraced sustainability as well as new urbanism concepts is at **Fort Belvoir**, in Virginia (see photos). The newly constructed "main street," with retail shops at street level and residential units above, has proven extremely popular with soldiers and their families. Twenty-five townhouses were built over retail shops that include a dry cleaner, barber shop, day spa, convenience food market, coffee shop, and other stores. The mixture of uses compliments each other while meeting the needs of the residents. This complex and other newly constructed townhouses nearby reflect the traditional architectural style of the local area. Residents have noted that the design, which also incorporates common recreational areas, provides the sense of community they seek. The total build-out will include eleven villages with a variety of houses that meet Energy Star® requirements. In addition to new construction, existing houses (some of which are historic) were renovated, rather than demolished. Development of these villages creates a sense of place and even small-town communities within the larger community.

Additional Examples of Army Sustainable Planning and Development

As the Army continues to incorporate sustainability into master planning efforts at its installations, a few of the many notable examples include:

- Fort Bragg, NC, the first Army installation where LEED® Silver compliance was extended beyond the Army's requirements for new construction to include existing infrastructure. With more than 2,000 Federally owned buildings, the beneficial impacts to the environment will be extensive.
- Fort Bragg's conversion of used shipping containers into new buildings. Instead of sending the containers back as scrap metal to be melted down, integrating them into a new building creates an alternative use while conserving energy and resources.
- Fort Lewis, WA, where the planning vision states that "In support of the mission, our soldiers, and families, we will create a sustainable community of walkable neighborhoods with identifiable town centers connected by great streets." As the post undergoes expansion and revitalization, the vision calls for the following sustainable features:
  - Compact development
  - Mixed use, multi-storied buildings and houses within neighborhoods and town centers
  - Sustainable, walkable neighborhoods
  - Multi-modal transportation opportunities, including public transit, bike paths and lanes, connected sidewalks for pedestrian accessibility, on-street parking
  - Vernacular architecture, a town square, hidden parking, store fronts, landscaping, focal points and vistas, and preservation of historic structures

Conclusion

As the Army transforms installations to meet the changing needs of soldiers and families, and proceeds with a greater awareness of environmental stewardship responsibilities, the concepts of mixed-use development and creation of sustainable, vibrant communities will offer more secure, convenient, and livable neighborhoods with a multitude of benefits that meet the overall goals of the Army.

Point of Contact is Andrea Wohlfeld Kuhn, 202-761-1859 or andrea.w.kuhn@usace.army.mil. ■

11. SUSTAINABLE RESOURCES

POLICYSITE

THE WBDG: YOUR 'ONE-STOP SHOP' FOR SUSTAINABLE BUILDING

(provided by Dana Arnold, Chief of Staff, Office of the Federal Environmental Executive (OFEE), Arnold.Dana@ofee.gov, reprinted with permission by OFEE, from Winter-Spring 2007 issue, Closing the Circle Newsletter)

For those readers in the business of siting, designing, manufacturing, constructing, operating, maintaining, and/or renovating buildings—especially Federal buildings—the Whole Building Design Guide (WBDG), www.wbdg.org, is the 'holy grail' of 'how-to.'

In addition to information and resources covering project management, operations and maintenance, and the myriad of building-related policies, criteria, and mandates, the WBDG holistically and seamlessly weaves together the design objectives of building accessibility, productivity, cost-effectiveness, functionality, aesthetics, historic preservation, security, and sustainability. The WBDG is so thorough in its treatment of these complex and interrelated issues, in fact, that many Federal agencies, including all the Department of Defense services, have essentially closed down their own construction criteria websites in favor of contributing that content, as well as other tools and resources, to the WBDG.

In particular, the Sustainable Design Objective (SDO) section of the WBDG has grown exponentially in recent years, drawing attention and accolades. The SDO begins with an overview of the key principles of sustainable design as defined by Federal agencies in response to Executive Order (EO) 13123 (Greening of the Government through Efficient Energy Management). Those principles are:

- Optimize site potential
- Optimize energy use
- Protect and conserve water
- Use environmentally preferable products
- Enhance indoor environmental quality
- Optimize operational and maintenance practices

Within each principle category, more detailed sections called resource pages educate users on specific topics, such as daylighting, environmentally preferable products, and natural ventilation. These resource pages are written by > > >

WBDG
WHOLE BUILDING DESIGN GUIDE

The Gateway to Up-To-Date Information on Integrated 'Whole Building' Design Techniques and Technologies

> > > nationally renowned experts in their field, in the public and private sectors, as well as academia. Each resource page contains links, additional resources, and publications to explore the topic further and is updated on an 'as needed' basis.

Sustainable Building MOU Technical Guidance

Last year, in response to the commitments made by the signatory agencies to the Federal Leadership in High Performance and Sustainable Building Memorandum of Understanding (MOU), the ISWG (Interagency Sustainability Working Group) built on the SDO's content and created MOU Technical Guidance, www.wbdg.org/sustainablemou.

For each of the goals set forth in the MOU Guiding Principles, the Technical Guidance provides an introduction to the topic, clarification of the requirement, related mandates, additional recommendations and considerations; and, most importantly, direct links to the most appropriate resources and tools, including model contract and specification language. In addition, the ISWG recognized that agencies needed a number of other resources to assist them in programming sustainable building projects and addressing concepts included in the MOU. These supporting guidance topics are under development and will continually be expanded and revised.

As the MOU Guiding Principles are becoming the de facto Federal sustainable buildings policy, the significance of the WBDG SDO and Technical Guidance is reaching a new level. The ISWG and the Sustainability Subcommittee of the WBDG are committed to the continual improvement of these resources. If you would like to learn more about the WBDG and/or contribute to its expansion and updates, please contact Dominique Fernandez at dfernandez@wbdg.org. ■

Supporting Guidance for Implementing Sustainable Building Programs

- Model Sustainable Building Program Implementation Plans
- Renewable Energy and Green Power
- Operations and Maintenance
- Chemicals*
- Interior Noise
- Sustainable Sites/Smart Growth
- Creative Funding Strategies
- Making the Environmental Case
- Life Cycle Assessment
- EMS (Environmental Management System) Integration
- Selecting A/E (Architecture/Engineering) Contractors
- Minor Alterations*
- Security and Sustainability
- Addressing Green Building in Asset Management Plans*
- Guidance for Vendors
- Utilizing Rating Systems and Standards
- Meeting Needs with Space Optimization and Alternative Workplace Arrangements
- Reporting – The New EO and the OMB (Office of Management and Budget) Environmental Scorecard*

* Denotes that this supporting guidance is in the earliest stages of development

12. WORKPLACE/ALTERNATIVE OFFICING SOLUTIONS

SUSTAINABILITY AND WORKPLACE DESIGN

POLICYSITE

(by Kevin Kelly, AIA, Director, Center for Workplace Management, GSA Public Buildings Service, kevin.kelly@gsa.gov)

For starters, office buildings use a huge portion of the nation's energy and that's not counting the millions of car trips a year to get to those offices. The good news is that sustainable buildings do seem to make a difference to users. The Center for the Built Environment at the University of California in Berkeley, which maintains a large database of post-occupancy responses, recently reported that the mean score for the 39 workplaces in the database which had achieved Leadership in Energy and Environmental Design (LEED®) rating consistently outstrip the 284 non-certified buildings in their database, except on thermal comfort. On general satisfaction, LEED® buildings are way ahead.

Since fiscal year (FY) 2003, major renovation, and new, Government-owned, prospectus-level construction have been required to be LEED® certified, and in FY 2008, new lease construction over 10,000 square feet will be required to achieve LEED® Silver.

The issue of workplace and sustainability is one of several that the six year-old Workplace 20|20 Program has been studying in tackling the state of the Federal workplace. The Program advises clients on how their physical (and virtual) workplaces could better serve their organizations, including in the arena of sustainability. The Program observes the way space is used and advises on the amount of space and equipment that is optimal for the agency's work. Helping > > >

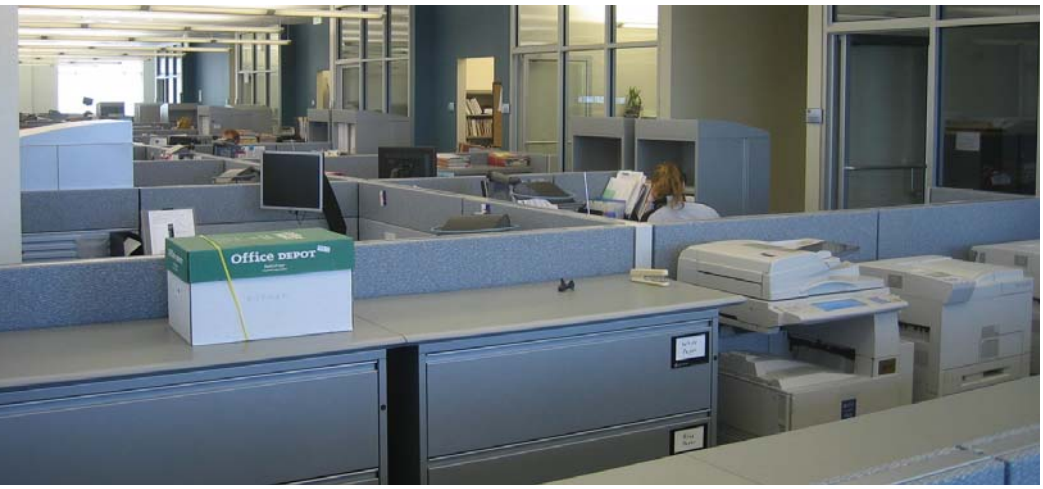
Above: VA office space, Reno, NV, "BEFORE" Photo

FEW THINGS AFFECT THE ENVIRONMENT AS OFFICE SPACE DOES.

Breakdown of an organization's expenditures. Based on Brill et al. (2001).

> > > Federal agencies accomplish their missions, and providing "superior workplaces at superior value to the taxpayer" is what the General Services Administration (GSA) is all about. But what are "superior workplaces" in a mobile and changing work environment? What is "best value" in the provision of space and furnishings, rather than just low cost, when employees represent such a huge portion of an organization's cost, and when employee satisfaction has been shown to be affected by satisfaction with the physical environment?

GSA's Workplace Program — has, from its inception, striven (to take liberties with the old saying) to "house two birds with one nest": making workplaces that support the work of organizations and that support workers' health and environment. In fact, the Program's first lease-construction building, a fruitful collaboration with the U.S. Department of Veterans Affairs (VA), has recently achieved LEED® Silver for the new VA office in Reno, NV and is one of the first lease-constructions in the country to do so. The post occupancy evaluation reports high satisfaction with the way the new space supports work. (See "before" and "after" photos of VA office space, Reno, NV).



Above: VA office space, Reno, NV, "AFTER" Photo (more open, flexible layout)

That satisfaction is particularly noteworthy, even for those for whom the bottom line is all that matters, because staff are 82 percent of the cost of any organization. Satisfaction with the work environment has been correlated positively with job satisfaction by Canadian researchers, and an April 2006 survey of 2,000 workers by Gensler found that 50 percent would work an extra hour a day if they were more satisfied with the office surroundings. Making staff even a bit more satisfied to make them a bit more effective due to occupant satisfaction is a very good investment indeed, since worker salaries are more than eight times the rent on a square foot basis and roughly 100 times more than utility costs according to the U.S. Department of Labor (See "An Organization's Costs" chart).

Beyond making the spaces better and more environmentally responsible, we need to go beyond — way beyond — the status quo and question how we work, where we work and what we work with on all levels. Even as the "Ozzie and Harriet" vision of a nine-to-five job in an office becomes less and less relevant, its static vision of work lives on in the minds of many decision-makers. The fact is that more of us are no longer tethered to any one space for our entire work week, and this allows us to take advantage of a second technological revolution: using technology not only to work better but to benefit the environment. We need to question how often we need to be in the office, and if we are there less, what is its new meaning to the organization, and what do we need to be effective.

Under-use of Resources — Build it and they will come? Always a dubious proposition, it is particularly untrue of modern office space. In fact, "Ozzie and Harriet's" typical suburb and 60 percent of typical U.S. office space, (both inside and outside of Government) have one thing in common. They are pretty much vacant on weekdays (see Occupancy Chart).

Regarding the Occupancy chart:

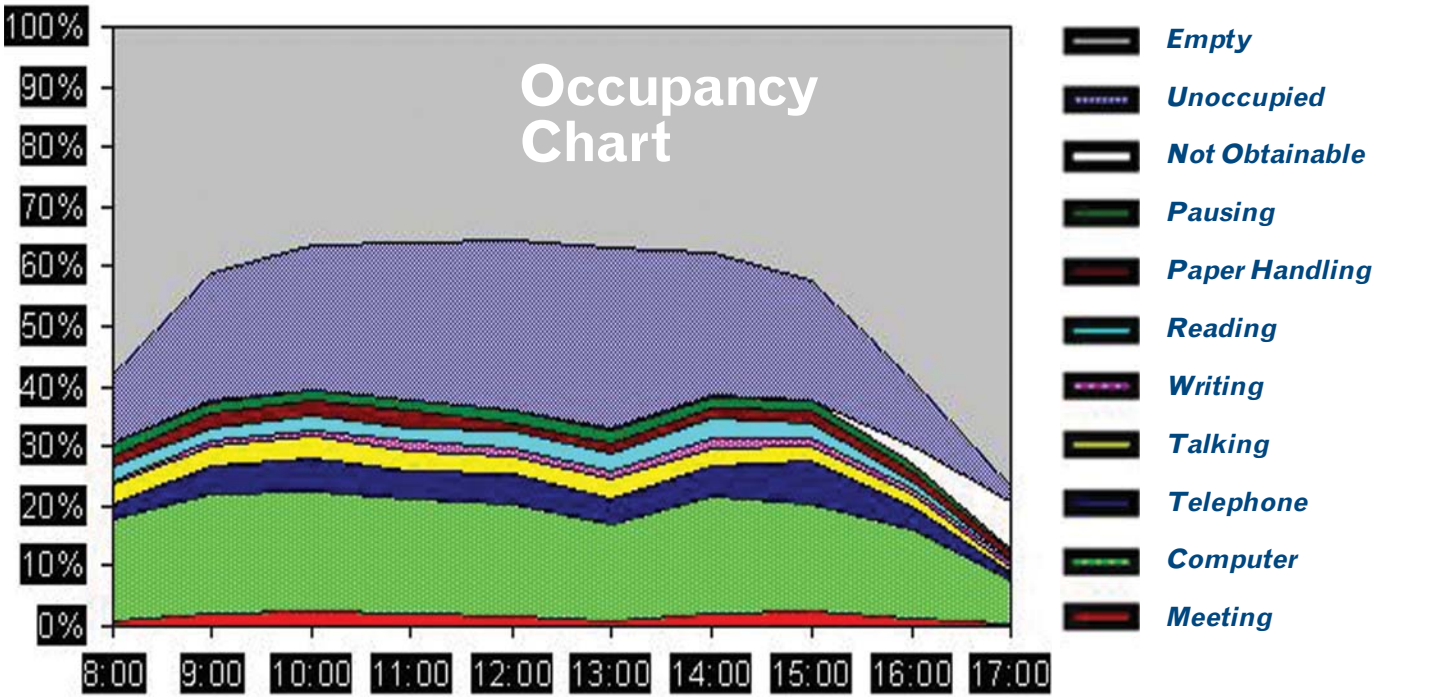
- Workspaces are temporarily unoccupied 23 percent of the time on average
- Consistent workflow throughout the day, minimal lunch dip
- Computer work is the dominate activity at the desk – approximately half the time

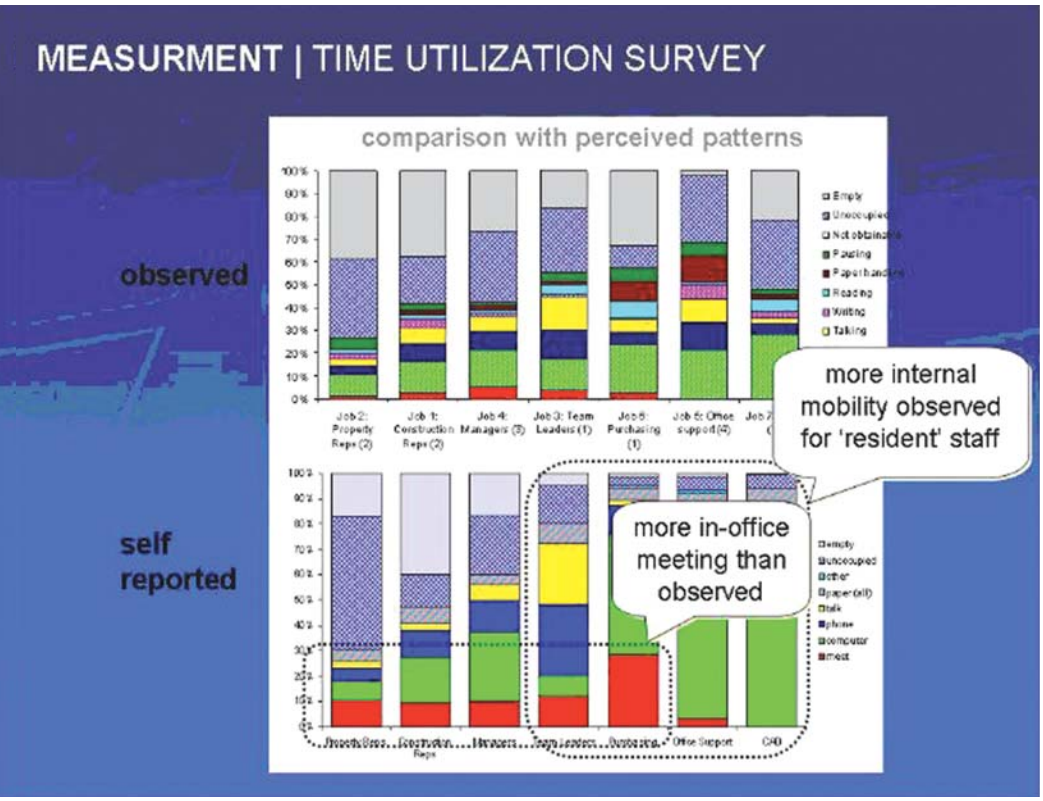
As the chart shows also, desks are vacant up to 60 percent of the time, even at times of the highest occupancy. Where are these workers? They are on site, at client agency offices, on travel – performing work the way work is done in the twenty-first century.

In addition, workers have a poor idea of how they are actually using their space. They may be using it far less and in different ways than they think (see "Measurement/Time Utilization Survey chart).

Both of these findings about actual space usage observations should prompt questioning of traditional programming that relies on self reporting about space needs and use. It has been shown time and again to be highly inaccurate in reporting organizational needs. The moral of the story: An organization may need far less "fixed" space than it currently occupies, and it almost certainly needs more flexible space.

As recently as the 1980's, that could be a cause for mass firings. Through a series of closely-studied projects, GSA's Workplace Program has documented that the under-use >>>





> > > of resources and application of "one size fits all" thinking are just two of many insights that have developed regarding the use of existing office space by private sector and academic leaders in workplace consulting and design. They note that these phenomena exist across the portfolio of American office space – not just the Federal arena. But in a world facilitated with technology like ours, it's a big mistake to assume that the workforce is hanging out at Starbucks or on the golf course when they should be working - just because they are not sitting at their assigned desks. In fact, they may be working at Starbucks (as your author is, dear reader, as he writes this). They may be elsewhere in the building or visiting clients. Some of your most skilled and valuable employees may not be sitting at their desks. We all know this to be the case, but seem to forget about it when we start planning the next office building. Those who doubt the proposition of overbuilding in the office environment may want to take a stroll around the typical open office space at 2:00 in the afternoon. They may find that it has all the liveliness of "Ozzie and Harriet's" suburb at the same time of day.

The "Future of Work" chart indicates the growth of this phenomenon, which is not expected to change any time soon.

The projected decrease of traditional, in-office only, "nine-to-five," Monday through Friday workers from 34 percent in 1997 to only eight percent in 2007 illustrates the dramatic change over the last decade.

In light of this, it is easy to see why there is such limited use of the expensive investment that workplace represents. The wide adoption of office technology, with its reliance on ubiquitous laptops, cell phones and PDA's (personal digital assistant), has introduced unprecedented mobility into the nation's work life. As a result, the meaning and use of the workplace itself has changed over the last two decades - even though many offices continue to be built-out with the same 1960's design assumptions that are the bases of the "one size fits all" workplace design commonly referred to as "Dilbertville." There are other similarities between "Dilbertville" and post-war suburbia: They both fill up available "real estate" with the maximum number of units and demonstrate little variety or differentiation that gives urban environments and well designed offices their interest while supporting their function. The result is utilitarian – and sterile. "It makes little difference how 'green' an office is if its design is dysfunctional and results in low user satisfaction and an ineffective organization."

"Dilbertville" — The term, "Dilbertville," of course, comes from the comic strip about bleak cubicle life. Moreover, it seems that every other month the New Yorker features a joke about the lack of responsive design in the workplace. The solution, of course, is not to throw every cubicle into the landfill, for it is not the cubicle itself that is the problem, though the WorkPlace 20|20 has identified significant possible improvements in the standard workstation. The workstation takes the rap for the mentality that believes laying out cubicles, rather

than design workspaces, results in effective work environments that workers might actually want to go and might actually support the work they do.

The loss of tenant satisfaction and productivity that poor workplace design represents, as well as the squandering of resources, is anything but funny - to say nothing of the impact on the environment. Empty offices, after all, require energy to build and maintain – in fact, buildings in the U.S., office buildings included, account for 1/3 of all energy consumed, according to the U.S. Green Building Council (USGBC). Inflexible office layouts add to the waste stream when poor configuration and ill-considered growth paints the organization into a corner: "Starting over" is the only alternative, with demolition of the ill-considered unable to be delayed any longer. Much of the discarded office materials land up in the landfill; in fact, USGBC indicates that 35 percent to 50 percent of building materials will eventually end up in a landfill, even as landfills across the country are filling up and the cost of dumping continues to mount. One can only speculate about how much of that is difficult-to-recycle gypsum board, ripped out of office buildings during a renovation!

Understand Before You Build — The moral of the story is that taking the time to understand the work of an organization at the beginning of a project – pre-design, as it is called by design professionals, pays huge dividends. That is why, since 2002, GSA has invested in a program called WorkPlace 20|20 to do just that. The alternative to designing without fully understanding the client is exemplified by the famous case of the Pruitt-Igoe, a massive housing complex in St. Louis. Finished in 1959, it was imploded in 1974 because it was based on design theory that had nothing to do with the people who lived there. One could say of the incessant modification, demolition and reconfiguration of office space all across America every day, necessitated as it often is by a lack of understanding of the organization, and the choice of inflexible systems and furnishings, that it is like Pruitt-Igoe in "slo mo." Like Pruitt-Igoe, much of it ends up in the landfill.

WorkPlace 20|20 highlights that — as a result of the worker mobility and the growth of more strategic, knowledge-based work that is, of its nature, less routine and more collaborative — the "cube farm" seems stuck in a time warp, poorly fitting the new ways we really work today, and designed for the fiction that all work is a solitary pursuit, and that it is done exclusively in an office. > > >

Type of Worker	1997	1999	2003	2007
Emergent Traveling/mobile unpredictable location	20%	22%	31%	52%
Migrating (moving back and forth with flexible schedule)	46%	49%	48%	40%
Traditional - in office 9-5	34%	29%	21%	8%

Source:
The Future of Work

WorkPlace 20|20 Project: In the Department of Energy (DOE) Richland, WA office project, cloistered offices gave way to open, interactive offices.

(Above left) DOE "BEFORE" office layout

(Above right) DOE "AFTER" office layout

WorkPlace 20|20 Project:

One of the Program's clients (Department of Energy, Richland, WA office)), for instance, had to reduce their real estate costs. After the workplace consultant studied the use of space, they worked with the architect to come up with a plan that reduced the number of floors occupied from five to three, while substantially improving light penetration and access to view. This was possible even though many enclosed offices were retained because of the type of work the agency does. (See "Before" and "After" images)

Findings of the WorkPlace 20|20 Program — To create a better fit between the work of a current, world class organization and its physical workplace, GSA instituted the WorkPlace 20|20 Program and it has identified the following major findings which ultimately relate to the environment:

- The built workspace is often under-utilized.
- The space available is often allotted in ways that do not support the work of the organization.
- Workers have a poor idea of how they really spend their time. Self reporting is a poor source of reliable programming. Third-party observation of the way space is used is a better source of programming.
- Inadequate allotment of space for collaboration and support, with over allocation of individual work space that is probably underutilized.
- The use of furniture systems in which the work surface is attached to supporting partitions, requiring specialized (and expensive) labor to reconfigure. An antidote to this is to procure furniture that is easily moveable by the users.
- The introduction of too many workstation or office types which are not modular and are difficult, if not impossible, to reconfigure.
- Poor attention to acoustics in open space, which contributes to frustration.
- There is a lack of awareness that some furniture systems and furnishings are far better for the environment though they may look similar. Greenguard® for furniture and the Carpet and Rug Institute should be referenced when procuring materials for the workplace.
- Cleaning and maintaining workplaces require strict adherence and monitoring of materials used. GSA has policies on green cleaning that must be continuously monitored.

WHAT DOES THIS HAVE TO DO WITH SUSTAINABILITY?

All of these factors affect the amount and type of space, furnishings, finishes and artificial lighting that an organization needs. Obviously, these factors also affect the use of resources and the environment.

While there will always be a place for the closed offices and open office that well-designed workstations and demountable partitions can provide, the layouts have to be consciously designed and informed by expertise in order to serve the organization well. One cannot order a 'worldclass workplace' out of a catalogue. Luckily, many furniture manufacturers are responding to the challenge with much better designs that are not only more sustainable, but are better suited for the kinds of work we do today. Nevertheless, for many organizations, the premise that 30-50 percent of the workstations will be vacant for the vast majority of the time may beg the (sustainable) question: Is this really a beneficial use of resources?

All of this indicates that building more space may not be the answer to an organization's overall workplace needs. Desk sharing, sophisticated desk and conference room scheduling systems may greatly reduce the amount of office space that is required while increasing its differentiation and flexibility.

Using What You Have — One should not get the impression that the office will disappear overnight. Nor should it. Face-to-face meeting can be a great source of information exchange. Certain types of jobs are not conducive to remote work due to confidentiality concerns, for instance. Just as the need for interior workplaces will not disappear in the foreseeable future, neither will the need for buildings. As we consider the need to build, however, we should think about the impacts of the materials, energy and pollution that would be generated to construct a structure for a user's needs. Building new is appealing and often necessary. It provides a blank slate for the user at a reasonably understood construction cost. Unfortunately, we do not typically account for the environmental impacts when we build new and these costs are not associated with our final price. There is often an overlooked way of providing for the needs of a user without constructing a new structure. Through building reuse and reorganization of work for the user, we can often provide space to meet their needs while minimizing our environmental footprint. While the appeal of the "clean slate" of a new facility is undeniable, it just may not be entirely reasonable, given the environmental challenges we face: The slate may not be so clean after all.

In advocating for using what we have, we must realize that we need to consciously modify a basic human desire. Since the beginning of history, building has been a primary human endeavor, serving psychic as well as functional purposes. > > >

Adaptive reuse at its best – Michelangelo's Campidoglio

> > > After all, what could be more optimistic than a new building, with its wish lists, visions and theories waiting to be fulfilled in the act of creation?

But as almost every practicing architect will tell you, it is far easier to start with the blank canvas of a new building than it is to work with an existing structure. The designer has to be more resourceful working with unexpected conditions, and with previously-made decisions towards redefining a structure to serve present day needs. GSA has some stellar examples such as the San Francisco Court of Appeals where modern offices and a library/conference center were inserted in a courtyard, for instance, or the renovation of the Cleveland Federal Courthouse. As in these instances, when adaptive reuse of existing structures or rehabilitation is done well, it sings with a creativity that is, in a sense, doubly creative, while putting less strain on the nation's rapidly-filling landfills, to boot. For an agency such as GSA, which controls over 350,000,000 square feet of existing construction, the opportunity for reuse is vast! Unfortunately, reusing what you have or deciding not to build at all by fulfilling programmatic needs in an alternative way (such as making strategic choices to foster more use of technology for telework instead of building a sub-optimally occupied facility) is often perceived as far less "glamorous" than making a "statement" through a new building.

History gives us many examples of creativity using what already exists. Perhaps the best, though not widely known, is Michelangelo's reuse of scattered and unrelated, asymmetrical Roman and medieval structures to create government "offices" - the **Campidoglio** (Rome, Italy), an architectural masterpiece that is one of the principal reasons that Bernini said that Michelangelo was "good as painter, great as a sculptor, but divine as an architect." For us, it's refreshing to remember that Michelangelo was both a civil servant and a great practitioner of adaptive reuse!

The Future of the Workplace — Isn't it unusual for a real estate organization such as GSA to talk about renting less space to customers in future? Perhaps, but workplace experts generally foresee a transformation of the workplace rather than its disappearance. Space that is consolidated by more effective floor plans may well be "backfilled" by other organizations. There are those in the workplace field that see the future of the office as something akin to the "clubs" of the nineteenth and early twentieth century where business people would gather to discuss business, have critical face-to-face encounters, and revitalize the organization's culture.

Typical office space will undoubtedly change in allocation, from private to more collaborative space and there will be a greater variety of spaces in which to work than there has been in the past. And of course, some jobs will be done in rather traditional office environments for the foreseeable future. Again, these are general trends. No workplace consultant worth his or her salt would want to prognosticate with a "one size fits all" statement. ■

The* WorkPlace Program *has developed technological tools that make customizing space to an organization much easier — so much that we say that it has developed ways to tailor workplace to organizations the way a good tailor does to a body and to do so cost effectively, with as little waste as possible!

FINLAND'S SENATE PROPERTIES: WORKPLACE MANAGEMENT AND SUSTAINABILITY

(by Ms. Päivi Hietanen, Architect, Finland Senate Properties, paivi.hietanen@senaatti.fi)

Sustainability is a pressing issue around the world and in Finland, too. Environmental concerns have prompted the Finnish real estate and construction business to study sustainable construction and reduction of the energy consumed by buildings. There is ample room for improvement as the real estate and construction business generates as much as one-third of Finland's CO2 (carbon dioxide) emissions. Because most of the environmental load generated by a building is caused by its use and maintenance, the key questions are whether to build new or repair old buildings, how much space do organizations need in the first place, and how do they use it.

Since 2003, Senate Properties, the largest property owner in Finland, has provided workplace development services to its clients in the public sector. In response to the success of this effort, the workplace approach is being increasingly applied across Senate Properties' operations and projects. It is now becoming increasingly clear that workplace development is closely related to sustainability issues too.

Workplace Development Gaining Ground in Public Sector

Workplace development combines the strategy, operations, facilities, information and communication (ICT) solutions and facility services of an organization. The service provided by Senate Properties, called ***strategic workplace development***, is a comprehensive process in which both the customer's operations and facilities are developed. The objective is to create a work environment that supports the organization's strategy, business and performance.

Senate Properties' policy is rather similar to that of the General Services Administration (GSA) in the United States. Workplace consulting services are procured for clients from external consultants. In addition to space planning specialists, development processes always involve professionals from other fields, too, including experts in process development, human resources or branding (designing physical environment to support the organization's brand). Various methods and tools are used > > >

SUSTAINABLE WORKPLACE SOLUTIONS FOR PUBLIC SECTOR FINLAND

PHOTOS: Strategic Workplace Development Case: Lappeenranta, Finland Tax Office

> > > in the process to provide measured and objective data for planning and decision-making. In addition, change management, communications and staff commitment play a key role; the aim is to mobilize the organization to develop its own workplace. Typically, these development projects are implemented in conjunction with modernization or new construction.

Workplace development also aims at supporting the government change process. As in other Western countries, the Finnish public sector is subject to change from productivity programs, structural development and reorganization. Other major challenges include an aging workforce and competition for skilled labor and what is more, operations and processes are influenced by new technologies and increasing e-services to citizens. All this has an effect on the physical environment that needs to be aligned with new needs.

In the public sector, dozens of development projects of varying scope have already been completed.

Most of the projects have been carried out in the office and university sectors but the approach has also been implemented in organizations using special facilities, such as research institutes and prisons. In 2005, workplace development was also adopted as a goal in the Government Premises Strategy launched by the Ministry of Finance (see photos).

The Win-Win of Workplace Development

Workplace development projects usually provide customers with a more efficient, flexible and diverse workplace solution. In the process, spaces are typically reallocated, space utilization rates improved and shared spaces and services increased. In most cases, the space efficiency is also improved; that does not only reduce the environmental load but also brings financial benefits. The biggest savings have been in the university sector: in the North Karelia University of Applied Sciences, for instance, the efficiency was improved no less than 10,000 square meters (107,630 square feet), which means an annual savings of EUR (euro) 1 million (about $1.57 million U.S.) in space rental and maintenance costs.

The performance of an organization is also supported by developing operations and processes and eliminating workplace obstacles, e.g. by relocating people and functions based on processes or adjacency needs. Modern workplace concepts are also designed to

Change Management and New Ways of Working Also Reduce Environmental Loads Because Instead of Walls, People and Furniture Move.

*(Opposite left) Lappeenranta Tax Office **BEFORE RENOVATION**: innovative workplaces can also be constructed within old shell.*

*(Opposite below) **AFTER RENOVATION**: new workspace is more open and diverse with small teamwork areas enhancing collaboration and knowledge sharing.*

enhance interaction and knowledge sharing between employees. Moreover, productivity can be promoted with solutions tailored for different functions and work styles with different needs.

Post occupancy evaluations show an increase in staff satisfaction with facilities as well as in collaboration and, interestingly, even in work spirit. Thanks to zoning and new customer service models, the security and quality of the service have also been improved. Diverse facilities are more flexible, as well as rapidly and easily reconfigured to satisfy changing needs.

For property owners, workplace development is a tool to provide customers with tailored solutions that meet their needs more effectively. For construction projects, these development processes often provide a more detailed and cost-effective workspace plan than conventional programming. In many projects, new construction has been avoided entirely and replaced by development of the existing premises. For Senate Properties, offering workplace services provides a competitive market edge, too. It also promotes an owner's business and customer commitment.

In addition to strategic workplace development, Senate Properties offers its clients the **Optimaze.net** system to manage their facilities and related costs. In collaboration with the World Wildlife Fund, Senate Properties now offers also the **Green Office** service, which reduces the environmental load from office work, such as lowering energy and paper consumption.

(Above) Lappeenranta Tax Office new layout: concentrated customer service model improves security and back office flexibility. (3D model by Hakanen-Yläoutinen Architects.)

Cooperation for the Benefit of Environment

Flexible and diverse workplace solutions, improving efficiency and avoiding new construction also reduce environmental loads. However, there is a great untapped potential in developing processes and exploiting technology in organizations, too. For instance, by implementing flexible home and teleworking concepts and advanced video and audio conferencing equipment the amount of required traveling can be reduced. Indeed, companies should take sustainability issues into consideration in all of their operations. More development and research in this field is obviously needed, too.

More than anything else, workplace development demands an open and unbiased attitude, an integrated approach and cross-functional collaboration; that is, forming new kinds of teams and networks >>>

> > > across organizational borders. This approach from multiple perspectives and multidisciplinary collaboration should also be adopted as an objective in resolving sustainability issues, both in individual businesses and in the real estate and construction business as a whole. ■

Note: The author, Päivi Hietanen, is an architect and works as a workplace strategy specialist for Senate Properties in Finland.

SENATE PROPERTIES (headquartered in Helsinki, Finland), is an enterprise under the Ministry of Finance and provides property services mainly to customers in the government. The premises managed by Senate Properties total some 11,600 buildings with a combined area of 8.2 million square meters (88.3 million square feet). Senate Properties procures almost all of its planning, construction and maintenance services from external service providers. It is the largest operator in the Finnish workplace development sector, too, and has signed partnership agreements with ten workplace consultancy firms. In Finland, workplace development services are offered mainly by architects' and designers' offices.

Helsinki, the capital of Finland, as viewed from the harbor.

TELEWORK AND THE ENVIRONMENT

(by Theresa Noll, GSA Office of Real Property Management, theresa.noll@gsa.gov)

In recent years, environmental issues such as global warming and greenhouse gas emissions have become increasingly important concerns. "The proportion of Americans citing environmental problems as a major global threat increased from 23 percent in 2002 to 37 percent in 2007." (Reference: The Economist, Special Report: America and the World, March 27, 2008.)

"In the U.S. (United States), our energy-related activities account for three-quarters of our human-generated greenhouse gas emissions, mostly in the form of carbon dioxide emissions from burning fossil fuels. More than half the energy-related emissions come from large stationary sources such as power plants, while about a third comes from transportation." (Reference: http://www.epa.gov/climatechange/basicinfo.html accessed April 6, 2008.)

The Environmental Protection Agency (EPA) publishes the official national inventory of U.S. greenhouse gas emissions, and the latest greenhouse gas inventory shows that in 2005 the U.S. emitted over 7.2 billon metric tons of greenhouse gases. Overall, total U.S. emissions have risen by 16.3 percent from 1990 to 2005.

According to the February 2008 Draft Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2006, (note: "Sinks" - vegetation and soils acting as naturally occurring buffers which act to store gases and prevent them from contributing to global warming) "... the 2006 total adjusted energy consumption across all sectors, including territories, and energy types, was 77,279.1 trillion British Thermal Units (BTU)."

Many daily activities produce greenhouse gas emissions. Individuals can produce greenhouse gas emissions directly by driving a car or burning oil or gas for home heating. Individuals can also produce greenhouse gas emissions indirectly by using electricity generated from fossil fuels. In the U.S., emissions per person vary depending on location, habits, and personal choices. For example, the types of fuel used to generate the electricity a person uses can lead to different levels of emissions. A power plant that burns coal emits more greenhouse gases per unit of electricity than a power plant that uses natural gas. How much a person drives, the vehicle's > > >

"We all make choices everyday that affect our health and the world's health. It's an ecosystem issue – if the world is falling down around us, we can't be healthy," says Liz York, Center for Disease Control, acting Chief Sustainability Officer.

"With Awareness comes responsibility, or knowing negligence" says New York Times Dot Earth author, Andrew C. Revkin.

> > > fuel efficiency, and the proportion of driving time spent idling in traffic also affect the level of emissions.

The greenhouse gas emissions from the transportation sector accounted for approximately 33 percent of total carbon dioxide emissions from fossil fuel combustion, the largest share of any end-use economic sector in 2005. Over 60 percent of the emissions resulted from gasoline consumption for personal vehicle use.

Telework's Role

Increased use of telework by Federal agencies would enable the Federal government to play a larger role in helping to reduce greenhouse gas emissions coming from 'transportation' in the United States. According to the latest Status of Telework in the Federal Government Report to Congress (December 2007) by the Office of Personnel Management (OPM), approximately 69 percent of the 1.8 million Federal civilian non-postal executive branch workforce were 'eligible' to telework in calendar year 2006. Of those eligible, less than 5 percent teleworked at least one day per week. (See http://www.telework.gov.)

Legislators and public policymakers in Washington, DC, understand the positive impact that telework can have on the environment. The House of Representatives introduced a bill, H.R. 4106, known as the Telework Improvement Act of 2008, to improve telework in executive agencies. The Senate has worked on similar legislation, such as S. 1000, the Telework Enhancement Act of 2007. It is clear that legislation to expand telework within the Federal sector will help the environment by reducing automobile emissions caused by personal vehicle trips. Telework serves to reduce overall traffic congestion, also, thereby reducing greenhouse gas emissions further by lowering vehicle engine 'idling' caused by too many cars on the road.

Telework is listed as an environment-friendly travel behavior in the "Healthy Climate Pledge" – an on-line commitment, which is part of American Public Health Association (APHA) 2008 National Public Health Week, observed April 7-13, 2008. This year's theme was: Climate Change: Our Health in the Balance. (Take the "Healthy Climate Pledge" at http://www.nphw.org/nphw08/08_pg_tools_pledge.htm.)

Action at home, at work, and on travel, can affect your greenhouse gas emissions levels. One step you can take to reduce your greenhouse gas emissions is to identify how much your daily commute contributes in terms of carbon dioxide emissions, and decide if telework can help lower your overall carbon footprint. (See calculators at: http://www.epa.gov/climatechange/emissions/ individual.html.) ■

By facilitating the increased use of telework by Federal agencies, legislators, agency managers and staff can help the Federal government play a role in reducing greenhouse gas emissions not only by reducing Federal commuter contribution to emissions but also by leading by example in encouraging all employers to follow suit.

2008 GSA Achievement Award for Real Property Innovation Recognizes Asset Management and Sustainability

Best Practices

The U.S. General Services Administration (GSA), Office of Governmentwide Policy recently announced the Twelfth Annual GSA Achievement Award for Real Property Innovation program. The Achievement Award program is a means to gather, and share, cutting-edge real property practices among those agencies striving to improve their real property asset management. The 2008 program will recognize exemplary practices in the categories of asset management and sustainability.

Judged by an independent panel of distinguished government and industry experts, GSA senior officials will recognize winning entries with a monetary award of $5,000 for an individual entrant or $10,000 for a team at the Awards Ceremony in Washington DC, in October 2008. All submitted entries will be published in the Office of Real Property Management's Best Practices Special Edition of Real Property POLICYSITE, a publication that encourages the adoption of best practices across the Federal government.

Originally established in 1997, the GSA Achievement Award for Real Property Innovation has enabled GSA to collect hundreds of real property practices from across the Federal government and share those practices among the Federal real property community. These real property practices have spanned a wide spectrum of real property areas, including business practices, asset management and planning, customer service, information systems, performance measures, security, sustainability, and workforce/human capital strategy.

For further information about the 2008 GSA Achievement Award for Real Property Innovation, visit the website (www.gsa.gov/realpropertyaward) or contact Patrice Walker at (202) 208-7639 or patrice.walker@gsa.gov. ■

BACK COVER PHOTO: Green Roof: GSA worked with EPA on its new Regional Office, Denver, CO (LEED® Gold rating) with sustainable design features including a green roof.

U.S. General Services Administration
GSA Office of Governmentwide Policy
Regulations Management Division (MPR)
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"Among the benefits of sustainable design are reduced operating costs, reduced waste, conservation of natural resources... and increased occupant satisfaction."

– David L. Bibb, GSA Acting Administrator and Senior Environmental Official, Federal Real Property Advisory Group (FRPAG) Meeting, September 11, 2007

EPA's "Green Roof" in Denver