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Closing the Circle News

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Special Issue:
Sustainable Environmental Stewardship

We dedicate this issue of our *Closing the Circle* newsletter to the topic of sustainable environmental stewardship. In it, we seek to describe the big picture and some of the many, but often seemingly unrelated, efforts that represent the Federal community's commitment to improving the stewardship of our natural resources.

Our office's mission is "to promote sustainable environmental stewardship throughout the federal government." Because "sustainability" is not a word in most American's vocabulary, we frequently get asked what we mean by that.

First, it's part of "sustainable development." Sustainable development, a concept with many definitions, varies across national borders, across time, and across many subject areas. It could be something that's just a bit better than it is today, or it could be a whole new world in which everything we do works to actively restore and improve our environment, economy, and social condition. The heart of sustainable development for us, though, is advancing communities in a way that positively balances the social, economic, and environmental needs of current and future generations.

Second, recognizing that we're the Office of the Federal Environmental Executive, we focus primarily on the environmental aspects of sustainability. In our interagency role, we look for those concepts, strategies, tools, practices, and approaches that lead to environmental improvement in a manner that is sustainable over time, that considers the long-term effects in addition to the immediate impacts, and that contributes positively, even if indirectly, to social and economic advances.

Third, we focus principally on the Federal government's, not others,' stewardship. That primarily means we're working on how Federal facilities, regions, agencies, departments, and programs can improve their environmental stewardship for the long-term good at their facilities, on their property, and in their communities. The Federal government has so many examples of innovation and success (only a few of which are we able to highlight here), but too frequently we don't share those stories, recognize them as best practices, or deploy them strategically.

Fourth, we recognize that the actions of the Federal government impact many others — through procurement, building, training, employment, transportation, research, and more. Even though our focus is on our own stewardship, we realize we need to better learn from and work with our communities to help them achieve their goals.

As we put together this issue, we wrestled with many of the same issues others have struggled with regarding sustainable development: what is it, what should it include or exclude, how should it be structured, and how should it be realized. This issue of *Closing the Circle* reflects these struggles, some of the range of views of what is sustainability, and identifies a few of the efforts the Federal government is taking to make its own operations sustainable.

As you read this issue, we hope you will recognize the Federal government's leadership in the field of sustainable environmental stewardship, identify other opportunities for integration and improvement, and join with us in working to achieve this mission.

John L. Howard, Jr.
Federal Environmental Executive

Defining Sustainability

Excerpt from speech by John Howard, FEE, at Fort Lewis' 2003 Sustainability Day

The word "sustainability" does not flow from most Americans' lips because its meaning is frequently too distant and too amorphous. Frequently, insiders get bogged down in the academic discussions about what might or might not be "sustainability." Yet sustainability, in a broad sense, is a fundamental expectation of the American people, who really just want to know whether we're headed in the right direction and whether our quality of life is going to improve.

The American people expect the Federal government, more now than in many years, to fulfill our particular mission. To do that, we need to be more efficient and effective than we are today. We must to look to the long-term and not just the short-term. And, we need to be more multi-talented and willing to work with others than before. In short, we need to focus on sustainability.

Every day, Federal employees are called upon to meet many challenges, to hurdle those obstacles, and to fulfill important missions that strive to improve our quality of life. Because the American people expect great things from us, we each have the opportunity and the responsibility to lead by example, to be a good steward of the resources with which we have been entrusted, to be a good neighbor in our communities, and to do all that we do with excellence – in sum, to operate sustainably in doing our job every day.

We've Made Incredible Progress

Each of us faces obstacles every day. Too frequently, though, we fail to remember that we already have hurdled similar obstacles. We have made significant environmental progress in America during the last 30 years. EPA recently released a draft comprehensive report on environmental progress in America. Today, we know that environmental improvement and economic prosperity go hand in hand.

Sustainability in America

Around the world, the U.S. believes sustainable development is dependent on, and integral to, the existence of a stable, peaceful, and secure state that respects human rights, combats corruption, supports the rule of law, opens markets, protects resources, and promotes private enterprise.

At home, the U.S. government's own domestic agenda – recognizing that we already have many of the foundational elements others are still striving for – contains many aspects of a more advanced sustainability. It's helpful to remember that the National Environmental Policy Act of 1969 (NEPA) was way ahead of its time in giving us a useful compass for sustainability. Congress, 34 years ago, wrote:

"[I]t is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations – to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans."

Five Strategies for Advancing Sustainability

Consistent with our focus on promoting sustainable

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The Federal government also has made significant improvements in its own stewardship:

- Since 1985, our buildings' energy intensity (Btus per square foot) has dropped nearly one-quarter (23%)
- Since 1985, we have cut our greenhouse gas emissions by 2.8 million metric tons (equivalent to taking 2.1 million cars off the road in a year)
- And just in the last two years, we've tripled our purchase of electricity from renewable energy sources, to 632 gigawatt hours, enough to serve 60,000 households for a year.

Since 1970, our economy has grown 164%, our population grew 39%, and our energy consumption increased 42%. Yet we've made incredible progress:

- Key air pollutants have decreased by 25%
- We have doubled the number of citizens who benefit from modern wastewater treatment (from 86 to 165 million)
- Energy usage grew at only one-fourth our economic growth
- Renewable energy generation is up 30%
- Releases of 300 toxic chemicals has dropped 48% (since 1988)
- And life expectancy has increased to an all-time high, 77.4 years.

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environmental stewardship, we see "integration" as the fundamental essence of sustainability. If we are integrating environmental issues together, environmental issues into our mission, issues across jurisdictions, decision-making across time, and our environmental professional work into our personal lives, then we will be on the path to sustainability.

Towards this end, we propose the five strategies the Federal government is trying to use to move down the road to sustainability.

Sustainability Strategy No. 1: Integrate our environmental work.

Of course, as a bare minimum, we have to comply with the existing environmental laws. From the President and the Cabinet secretaries to all those in the field, we know we need to do this.

Compliance is not enough, though. Environmental compliance is not efficiency or effectiveness or excellence. Environmental compliance is not integrated with mission. We need to be proactive and identify opportunities for improvements and adhere to the highest standards before they become requirements and impact our ability to achieve our mission.

Sustainability Strategy No. 2: Integrate environmental issues into the mission.

We need to move the issue of "environment" away from its current position as a separate program or office, and integrate it into a facility or agency's main operations – into its mission.

Sustainability Strategy No. 3: Integrate environmental issues across jurisdictions.

There have been many great successes in the Federal community. However, we do a poor job of sharing those successes. We hardly share them within any particular facility, let alone across agencies, with state or local governments, or with our communities.

It's important to lead by example and to use our resources wisely. To fulfill our mission, we cannot just look inward. We also have to be a good neighbor – we have to work together with others in our Federal family and with our hometowns. Being a good neighbor was a lot easier 50 or even 10 years ago than it is today, with communities right up to the fenceline of more and more Federal facilities. We need those Federal facilities and the operations and training that they support. There are very few, if any, alternatives. After all, an important piece of the sustainability picture is improving the quality of life.

Sustainability Strategy No. 4: Integrate decision-making across time.

The traditional approach, in the government and elsewhere, is to ask only how much does it cost to build or make something, and ignore until later how much it costs to operate and maintain, handle, treat, dispose, and maybe even clean up something. Moreover, we're recognizing, though, that we need to ask and answer those long-term questions upfront – about costs and about impacts. The first step is to look at the life-cycle – to assess the impacts of a proposed building, of a product you need to buy, or of a new class of ships, from their creation to their disposition – and to determine the costs of various options over the life of the project. Ultimately, we need to expand those inquiries to cover even more distant generations.

Sustainability Strategy No. 5: Integrate sustainability into our own lives.

Before we can get others to do all these wonderful things, we know that frequently we first have to do them ourselves. We all – as individuals, as employees, as citizens – have opportunities to lead by example. To meet our commitment to sustainability, we need to make a personal commitment. What we do at work should also become part of the rest of our lives.

Many Federal facilities participate in Federal, state, and local voluntary partnerships to tackle environmental and other community concerns – from litter cleanups to mentoring children. Through these and other opportunities, Federal employees can be an integral part of their communities. We need to continue to offer ways for Federal employees to link the important issues of their work, their community, and their personal lives.

Closing Comments

We are heading in the right direction and improving our environmental stewardship all the time. We still have work to do, especially in integrating environmental issues into other areas of our lives. We look forward to working with each of you as we move forward together. ■

OFEE Enhances Website to Address Sustainability

Edwin Piñero, Deputy Federal Environmental Executive
Cherie McClam, GSA Agency Representative, OFEE

The Office of the Federal Environmental Executive (OFEE) website (http://www.ofee.gov) provides visitors with two central elements that unfold the nature of our work: our mission "to promote sustainable environmental stewardship throughout the Federal government" along with our methods for accomplishing these goals, and our six focus areas within the environmental stewardship framework. In maintaining our pledge to encourage sustainable practices, we now offer an enhanced webpage on sustainable environmental stewardship that effectively shows how our integrated strategies support OFEE's mission.

First, we define sustainable environmental stewardship to include those concepts, strategies, tools, practices, and approaches that lead to environmental improvement in a manner that is sustainable over time, considers the long term effects as well as the short term, more immediate effects, and contributes positively, even if indirectly, to the social and economic condition.

Second, we explain the relationship between sustainable environmental stewardship and "sustainable development," the more commonly known term. Sustainable development is a concept with definitions that vary not only across national borders, but has changed over time. Most definitions concur that the essence of sustainable development includes the advancement of societies in a way that balances the social, economic, and environmental needs of current and future generations.

Third, we recognize the use of Environmental Management Systems (EMS) as a core area and management framework or tool, where all other environmental and sustainability goals can be managed. More specifically, EMS supports an organization's activities, efforts, commitments, and goals related to environmental improvement. The new webpage provides a link for Environmental Management Systems (EMS), the primary management approach to determining, prioritizing, implementing, and improving upon those environmental issues that will lead to sustainable environmental stewardship. We include tools such as life cycle assessment (LCA) and industrial ecology (IE) as links too.

Next, OFEE incorporates a sustainable practices component to each of its other core areas, integrating the concepts of sustainable development: Waste Prevention/Recycling, Green Purchasing, Electronics Stewardship, and Sustainable Buildings. These are practices, technological applications, and methodologies that not only improve the environment, but go beyond and do so in a way that is more long term in thinking and implications, and that apply the tools (EMS, LCA, IE). We provide links to learning more about these practices in the work of other Federal entities, as well as links to our own website areas that discuss the core sustainable practices focus areas of OFEE.

Finally, we provide links to speeches and articles given by many leaders who work in the area of sustainable environmental stewardship, both from within the Federal community as well as from outside communities. Similarly, we supply links to networks of organizations (Federal and non-Federal) that share the road on this journey towards sustainable environmental stewardship. These networks link to agencies and councils addressing national policy issues as well as parts of agencies where practices are daily implemented.

Undeniably, OFEE views sustainable environmental stewardship as the overarching "concept and philosophy" of what we do. Committed to sharing quality information and making connections with useable and updated networks that the Federal community can use, OFEE's webpage will:

- Reflect (and direct to) sources of policy decisions such as the President's Council on Environmental Quality and the State Department,
- Provide links to other agencies' related activities, and
- Direct visitors to appropriate relevant non-Federal sources.

For more information on OFEE's sustainability page, contact Ed Piñero on (202) 564-0188 or visit http://www.ofee.gov and click on "sustainable environmental stewardship" to locate additional resources. The page is being enhanced constantly, so visit frequently.

Environmental Management Systems and Sustainable Federal Operations

John Coho, Office of the Deputy Under Secretary of Defense (Installations & Environment)

Robin Day Hirschhorn, Department of Treasury Representative to OFEE

Since Executive Order 13148, "Greening the Government Through Leadership in Environmental Management," was issued in April 2000, Federal agencies have been moving forward with the implementation of environmental management systems (EMSs) in ways consistent with their respective mission requirements. As a whole, the Federal government has learned much about EMS, but one concept has risen to the top in terms of relevance to Federal agency leaders: an EMS that is effectively implemented and properly used can provide benefits in terms of both mission and environmental performance.

The concept of improving the mission and environmental performance of Federal agencies is entirely consistent with Administration priorities, as reflected in the following quote from the President's Message in the FY2002 President's Management Agenda:

"In the long run, there are few items more urgent than ensuring that the Federal government is well run and results-oriented. This Administration is dedicated to ensuring that the resources entrusted to the Federal government are well managed and wisely used. We owe that much to the American people."

This quote clearly links the concepts of Federal agency performance and effective management of resources. An equally important concept that is not evident in the above quote, but is nevertheless integral to the President's Management Agenda, is that Federal agencies are expected to accomplish their respective missions successfully for many years to come. If we are to meet this expectation, we must work to achieve "Sustainable Federal Operations," or more generally, Sustainable Operations.

Because of the various interpretations of the term "sustainable" or "sustainability," it is important to clarify what we're really talking about when we refer to "sustainable operations." For the purpose of this article, Sustainable Operations are operations conducted in a manner that preserves the resources (e.g., human resources, natural resources, man-made resources-facilities, equipment, financial, and community support) that are necessary to conduct successful mission operations indefinitely into the future. Since the concept of sustainable operations has a long-term focus, a sustainability initiative must consider not only a current mission, but reasonably anticipated future mission requirements. Significantly, the management focus in a sustainability initiative is not compliance; rather, it is the implementation of actions to prevent resource depletion or degradation greater than of the capacities of natural, human and man-made systems to recover fully on a time scale consistent with mission-driven resource demands.

A number of Federal facilities have undertaken sustainability initiatives. These initiatives are on-going in conjunction with governmentwide EMS implementation activities under E.O. 13148. The concurrent execution of sustainability initiatives and EMS implementation activities has generated considerable discussion (and some confusion) regarding their inter-relationships. The purpose of this article is to shed

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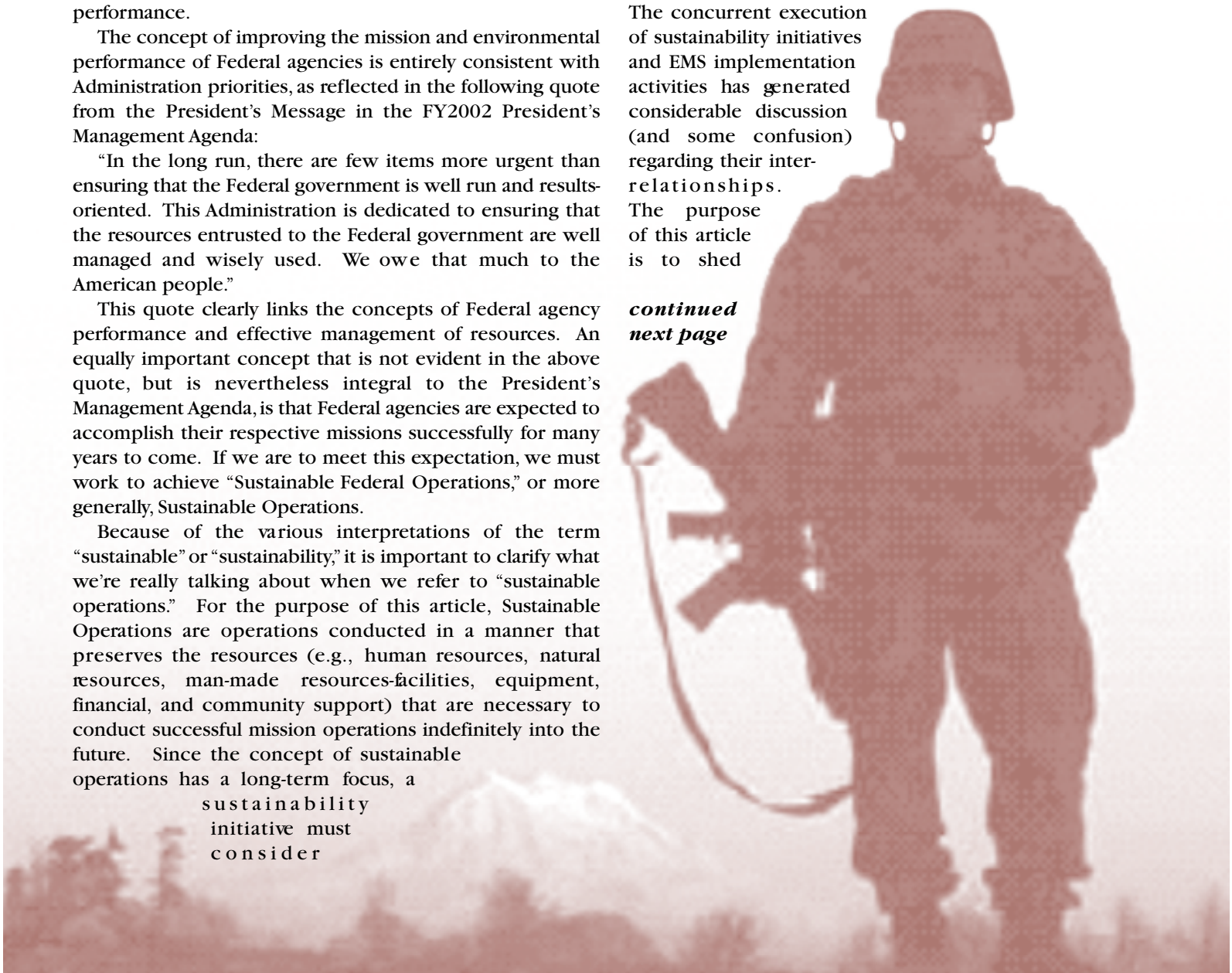

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some light on this issue. Put very simply, achieving sustainable Federal operations is a long-term undertaking with many underlying goals.

The EMS is a tool to provide the consistency of management structure and organizational purpose and direction to achieve these goals, over time, through a continual improvement process. For example, both Fort Lewis and Fort Bragg have sustainability initiatives that include 25-year sustainability goals developed with input from regional stakeholders. These installations also developed intermediate, five-year objectives to support each of the sustainability goals. Both installations are using the management system structure as a means to obtain the long-term strategic goals.

Whether a facility chooses to refer to their management system as an EMS or a "Sustainability Management System" (SMS), it is the management system that provides the framework necessary to achieve long-term sustainability goals. Sustainability goals often contribute to economic and social progress, as well as environmental performance. They may incorporate concepts of life cycle management or industrial ecology. Goals of this scope and magnitude can be achieved, however, through a series of small, planned, incremental steps over a longer period of time. The long-term attainment of strategic goals requires well-structured management that provides consistency of purpose and direction, a continual improvement process, and teamwork across the organization (not limited to the "environmental shop"). A well-designed and implemented EMS provides a framework in which an organization can develop and effectively employ these management attributes.

A management system based on the framework of ISO 14001 provides for or enables:

- Leadership involvement: When it's important to the leadership, things get done.
- Identification, within all operational areas, of opportunities for improvement relevant to sustainability goals.
- Logical and objective prioritization of opportunities to improve mission and environmental performance.
- Setting and maintenance of objectives and targets responsive to current mission priorities as well as long-term sustainability goals.
- Definition of roles, responsibilities, and management structure: What actions need to be taken, and by whom, to achieve targets, objectives and goals.
- Placement of accountability for operational control in the hands of those with direct authority over operational practices.
- Worker-level awareness of the environmental impacts of daily operations.
- Teamwork approach to achieving sustainability goals: Mobilization of employees to control mission activities in a manner conducive to attainment of targets, objectives, and sustainability goals.
- Improved communication (internal and external).
- Focus on mission activities versus compliance requirements.
- Use of measurement to gauge progress towards goals.

Continual improvement

The list above is not intended to be a comprehensive set of the elements or attributes of a management system; rather, it is designed to highlight some select elements of the EMS relevant to attaining the long-term goals inherent to Federal sustainability initiatives.

Additionally, the integration of external stakeholders and involvement of local communities in the EMS is instrumental in ensuring meaningful and equitable participation. An organization must reach out and develop more effective partnerships and improved relationships with the community to attain a cooperative approach to sustainability beyond an organization's own borders.

But in the end, the success of using an EMS to achieve sustainable operations hinges on the importance of linking the performance objectives of the EMS to the larger goals of sustainable operations. These performance objectives are then in turn supported by all the other EMS elements. In this way, the EMS structure ensures future success and the achievement of environmental performance, and sustainable operations for Federal facilities over the long term. ■

For more information, contact John Coho on (703) 604-1630 or send email to John.Coho@osd.mil.

EPA and Sustainability

Dr. Alan Hecht and Anita Street, EPA

EPA has long recognized sustainability as an integral part of its mission to protect human health and safeguard the environment. Many EPA offices and regions already support and promote the principles of sustainability through various geographic and sector-based initiatives with states, local governments, and communities. In the last ten years, EPA's Office of Research and Development has pursued both intramural and extramural research pertaining to sustainability in areas such as global climate change, socio-economics, watershed management, industrial ecology, environmental justice, emerging technologies, and green engineering and chemistry.

In 2003, EPA reaffirmed its commitment to sustainability by creating a new position in the Office of Research and Development to:

- Develop a greater understanding of the interactions between nature and society
- Foster multi-disciplinary collaborations that contribute to the growth of sustainability
- Provide access to tools and communicate information that encourages sustainable practices at all levels of society
- Initiate pilot studies that produce practical solutions to cultivate transitions to sustainable systems at all levels of society
- Coordinate Agency sustainability activities both here and abroad

In addition to building on existing work with its many partners, the Office of Research and Development is embarking on new innovative efforts aimed toward integrating sustainability into research, policy development, and decision-making. A suite of pilot projects that will explore and demonstrate the practical dimensions of sustainability is being developed in cooperation with EPA Regional and Program Offices. In March 2004, EPA will launch its "Sustainability Portal" which will be available at www.epa.gov/sustainability. The website will provide access to information regarding the many available EPA programs and tools that will assist individuals and institutions meet their sustainability goals.

EPA has also a launched new educational initiative P3–People, Prosperity and the Planet: a student design competition-which will provide grants to teams of college students to research, develop, and design sustainable solutions to environmental challenges. P3 highlights the three pillars of sustainability incorporating new ideas, methodologies and processes with pollution prevention concepts including new production alternatives for improved industrial efficiency, integrated health and ecosystem valuation, life cycle analyses and others. See:

http://epa.gov/ncer/p3/

Questions on EPA's sustainability activity can be addressed to Dr. Alan D. Hecht, Director for Sustainability, Office of Research and Development, Washington, DC (hecht.alan@epa.gov)

EPA Announces Opportunity for Student Design in Sustainability

"The Environmental Protection Agency and its partners from industry, NGOs, and other government agencies, launched the P3 Award, a national student design competition for sustainability, to respond to the scientific and technical challenges to sustainability in both the developed and developing world. P3 focuses on the three components of sustainability, people, prosperity, and the planet. P3 provides grants to interdisciplinary teams of college students to research, develop, and design sustainable solutions that achieve the mutual goals of economic prosperity while protecting the natural systems of the planet and providing a higher quality of life for its people."

The P3 Award Competition involves two phases. In Phase I, EPA funds approximately 50 student design projects from around the country during the 2004-2005 academic year for research and development of their sustainable design. In Phase II (Spring 2005), the invited P3 grant recipients compete in Washington, D.C. for the P3 Award, which affords additional funding for further design development and implementation. closes on March 25, 2004.

For Technical information, contact Julie Zimmerman on (202) 564-1589 or send email to zimmerman.julie@epa.gov. For Eligibility information, contact Thomas Barnwell on (202) 564-0824 or send email to barnwell.thomas@epa.gov. Visit http://es.epa.goov/ncer/p3/designs_sustain_rfp.html.

GSA: Sustainable-Environmental Stewardship

Cherie McClam, GSA Agency Representative, OFEE

GSA fosters environmental stewardship through its core mission to help Federal agencies better serve the public by offering, at best value, superior workplaces, expert solutions, acquisition services, and management policies. One GSA core objective is to carry out social and environmental responsibilities as a Federal agency.

GSA recognizes that developing in a sustainable manner means concurrently pursuing economic prosperity, environmental quality, and social equity goals. The agency deems that green building and sustainable design and operation impact employee morale and productivity in a positive manner.

Following are some examples of GSA's efforts.

- Commissioner of Public Buildings Service (PBS), F. Joseph Moravec, noted that green building is the ***right*** thing to do and the ***right*** business thing to do. Fundamental and indivisible from its mission, PBS drives its environmental stewardship efforts by incorporating green guidelines into its documentation, from the procurement process to lease documents.
- Developed by PBS, ***WorkPlace 20.20*** drives "green" decisions about work strategies and processes, space, furniture and technology based on an organization's mission, business goals, and the nature of work. ***WorkPlace 20.20*** continues to advance sustainable solutions to meet unique workplace challenges. The basis of the ***WorkPlace 20.20*** Program is the notion that all aspects of the workplace, including its environmental features, reinforce a worker's effectiveness. "Green" decisions on workplace configuration, and materials and systems selections reinforce ***20.20's*** basic philosophy because issues such as air quality, ventilation and off-gasing affect workers and ultimately, the organization's mission.

Within PBS, the Office of Business Operations' Environmental Business Strategies Divisions works with the PBS building professionals to apply green building design to GSA buildings. Additionally, the Office of the Chief Architect provides architectural, engineering and construction services while the Office of Realty Services offers a Green Leasing program.

GSA's Office of Governmentwide Policy (OGP) offers integrated solutions to make the Federal Government more sustainable by making available guidelines that inform and support partnerships between Federal, state, local, and private entities to further sustainability goals. Jonathan Herz, AIA and leader of OGP's Office of Real Property's Sustainable Development Initiative, notes, "sustainable development integrates decision-making processes that builds on the creativity of all your employees across your organization, so that every decision is made with an eye to the greatest long-term benefits."

Herz indicates that "in using the ideas of sustainable development, we can create safe, healthy and productive workplaces inside and outside of the traditional office, while maintaining and operating them at the lowest, real cost."

Undoubtedly, GSA strives to think green in its provision of superior services to the Federal community – now and for the future. ■

GSA Contacts

- ***Kevin Kelly***, Subject Matter Expert WorkPlace 20.20, (202) 208-7656 or send email to kevin.kelly@gsa.gov; ***Jonathan Herz***, Integrated Workplace Program and Sustainability, (202) 501-3476 or send email to jonathan.herz@gsa.gov.
- For more information on WorkPlace 20.20 and Sustainable Design, cut and paste www.gsa.gov/sustainabledesign and www.gsa.gov/workplace2020.
- For further information on OGP Sustainable Development Initiative, cut and paste http://www.gsa.gov/realpropertypolicy. Select the buttons on the left for "Sustainability" and "Integrated Workplace."

Office of the Federal Environmental Executive

- Cathy Broad, GSA Agency Representative, (202) 564-1078 or send email to broad.cathy@epa.gov.

Incorporating Sustainability at USDA

Ed Murtagh, P.E., C.E.M.,
U.S. Department of Agriculture, Office of Operations

USDA Complex, Washington, DC. View from the Washington Monument. USDA Photo by: Bob Nichols

USDA's headquarters facility is working to be more sustainable. Located at 14th Street and Independence Avenue in downtown Washington, D.C., the complex is made up of four buildings covering approximately 3,000,000 square feet (gross). Over the past several years, the Office of Operations has been working to: modernize the South Building (the largest of the four-buildings), rewrite construction specifications to include evaluation criteria that emphasize sustainability in our service contracts, implement energy and water management programs, and promote procurement of environmentally preferable supplies and services.

South Building Modernization - The South Building Modernization is a multi-phase renovation that will bring the building into the 21st Century. To ensure sustainability in this renovation, we are using the Leadership in Energy and Environmental Design (LEED) System as a guide. Through the use of the LEED system, we have established goals of achieving a high performance ("green") building that will enhance the environment and be less costly to operate with the lowest life-cycle cost, as well as being LEED certified.

In reaching these goals, the design Architectural/Engineering (A/E) team includes a sustainability sub-contract with Natural Logic. With regard to rewriting construction specifications, we have been working with the U.S. Environmental Protection Agency's Pollution Office of Pollution Prevention, and Toxic Pollution Division in preparing environmentally focused construction specifications. As well, concerning Energy and Water Management Programs, USDA Headquarters implemented a successful energy and water management program that was a case study for the National Institute for Building Sciences (NIBS). The energy management program includes the implementation of thermal ice storage systems, a solar hot water pre-heater for the South Building kitchen, lighting retro-fits, building tune-up programs, and direct digital controls. We are currently working with an energy contractor to survey and implement energy management projects in our facility by using the savings in our utility bills to pay for improvements, resulting in no out of pocket expenses to USDA.

Sustainability in our Service Contracts - In FY 2003, we procured the services of a new operations and maintenance (O&M) contractor and a new A/E firm. As we modernize the South Building, install energy and water efficient equipment throughout the complex, and install computer controls on the building systems, we have also been working to ensure that our Operations and Maintenance staff and programs are ready. For example, the new O&M contract now requires individuals with extensive computer automation training on staff and implementation of a computerized maintenance and management system, and procurement of energy efficient products.

One of the criteria used in selecting our new A/E firm was their commitment to sustainability. The A/E firm provides design and construction management services for the USDA Headquarters Complex, and are critical in implementing sustainability in the renovation work in the facility. The A/E firm selected has many of LEED certified engineers and architects, and a track history of incorporating sustainability in design.

Environmentally Preferable Procurement (EPP) - Over the past few years, the USDA headquarters has been using the procurement program to encourage use of environmentally preferable products. Currently, we are working on updating our food services and janitorial service contracts to include EPP. With many tourists using our cafeteria, we are hoping to use our cafeteria food service contract to showcase environmentally preferable products, including bio-based food service products. Additionally we are looking to include in the new janitorial contract, the procurement of low toxic products (including bio-based products) and paper products with high-recycle content. Our architects have recently started specifying bio-based carpet backing and millwork. ■

For further information on USDA Sustainable Development, contact Edward B. Murtagh, P.E. Mechanical Engineer on (202) 720-5961 or send email to ed.murtagh@usda.gov. For information on USDA's energy and environment programs, visit http://www.usda.gov/energyandenvironment.

The Tennessee Valley Authority

The Tennessee Valley Authority (TVA) is a public power company, but it does much more than generate power. It supports economic development and manages the natural resources of the Tennessee River Basin through integrated resource management. TVA strives to balance and optimize the competing demands of river navigation, flood control, power supply, land use, water quality and recreation.

TVA's eleven watershed teams strive to maintain good environmental stewardship practices throughout the 290,000 acres of public lands, including 11,000 miles of shoreline in the Tennessee River Basin. Watershed teams exercise a broad mission: improve and protect water quality, guide shoreline development and improvement, provide recreational opportunities, while ensuring both economic development and environmental protection.

Watershed teams communicate with stakeholders when developing and implementing land management plans for TVA reservoirs. These plans direct where development and environmental protection is most appropriate in order to sustain the balance. The Reservoir Operations Study is another example of how TVA is listening to stakeholders and reevaluating its policies on managing the river system.

TVA also participates in partnerships to improve water quality across the Valley. With 50 initiatives located throughout the Valley, TVA targets efforts where it will accomplish the most benefit for stakeholders by making resource improvements, protecting existing resources, and anticipating growth.

The Tennessee Growth Readiness Program and the Tennessee Valley Clean Marina Initiative help communities learn how land use decisions affect water quality and supply, comply with regulatory requirements, and make informed decisions about managing growth. Since 1999, TVA has not received federal appropriations but has funded environmental stewardship activities through power revenues. TVA provides power to large industries and 158 power distributors that serve 8.3 million consumers in seven southeastern states.

The Tennessee Growth Readiness Program helps local communities within the TVA seven-state region learn how land management decisions impact water quality and how to make informed choices about growth and development. TVA manages the program for the Tennessee Department of Agriculture, and works with the University of Tennessee Water Resources Research Center and the Southeast Watershed Forum to deliver training, materials and support to planners and public works officials.

The Tennessee Valley Clean Marina Initiative (CMI) is a regional, voluntary certification program developed by TVA Resource Stewardship and its watershed partners to promote sound, environmentally responsible marina and boating practices along the 11,000 miles of shoreline in the Tennessee Valley. The Initiative improves water quality through non-regulatory, collaborative P2 and other source reduction strategies with marina operators, other regulatory agencies, watershed organizations and the marine industry. ■

TVA'S Current EMS Results

- Reduced 457 environmental training courses to 84 through standardization saving $4 million per year
- Saved $5.7 million and $3 million annually by standardizing items like absorbents, adhesives, and hand cleaner
- Reduced internal audit findings an additional 50%
- Reduced internal repeat audit findings an additional 92%
- Reduced reportable environmental events an additional 35%
- Lowest S02 and NOx emissions in 27 years

For more information about TVA and its stewardship initiatives, contact Buff Crosby at TVA, (423) 751-7687 or visit TVA's website at http://www.tva.com.

For more information about the Tennessee Growth Readiness Program, please call Joel Haden at TVA, (865) 632-2132, or visit the program's website at http://www.tgr.utk.edu.

For more information about this initiative contact Linda Harris at (423) 876-4178 or visit TVA's web site at: http://www.tva.com.

TVAís Environmental Management System (EMS) is also an example of the organizationís commitment to being proactive. Not only is it one of the early success stories in the Federal community, but it is unique in that TVA created a "corporate EMS." Those type of management systems use a centralized, headquarters-based approach to overall policy and direction, but allows individual sites flexibility and autonomy in managing their own unique issues.

For updates on TVA's Environmental Management System continuous improvements, visit http://www.ofee.gov/ems/training/powerpoint.htm.

Cradle to Cradle Design Challenge for E-Commerce Shipping Packaging

Angie Leith, EPA

EPA's Office of Solid Waste (OSW), in partnership with McDonough Braungart Design Chemistry (MBDC), sponsored a national design competition for e-commerce shipping packaging in 2003. The design challenge was a new approach for EPA and one that acknowledged the critical role of design in addressing environmental issues.

The goal of the design challenge was to encourage the development of sustainable packaging solutions and the elimination of packaging waste through design that is environmentally mindful throughout the product life cycle. The challenge asked participants to rethink and redesign e-commerce shipping packaging and logistics for environmentally sound, cradle-to-cradle life cycles. Entries were submitted by students, educators, packaging and industrial designers, and manufacturers from North America and Europe.

Cradle-to-cradle is an approach to environmental sustainability and enhanced business value which proposes that industrial activity can be redesigned to have only positive environmental impacts, following principles found in the systems of nature. This includes viewing materials and products as healthy nutrients to be safely reused and circulated in the metabolism of either industry (a technical metabolism) or nature (the biological metabolism). The principles of cradle-to-cradle design have been pioneered by William McDonough and Michael Braungart, the principals of MBDC.

The winning professional entry represented a collaborative effort between Microsoft (WA), Allen Schluger Company (NYC), and Shorewood Packaging (NYC). A team of students from the Art Center College of Design (Pasadena, Calif.) also produced a winning entry in the student category called "Keep it Nature Friendly." Each design challenge winner received an award from EPA. In addition, Federal Express donated $5,000 which was given to the Art Center College team and teams from two other colleges who received *Recognition of Innovation* awards.

One of the direct results of the Design Challenge and related media attention is that the cradle-to-cradle approach is being explored by members of the packaging industry. Recently, members of the packaging industry formed the Sustainable Packaging Coalition, whose mission is to advocate a positive, robust environmental vision for packaging; and to leverage innovative, functional packaging materials and systems that support economic and environmental health. This is the type of follow-through that EPA is looking for - taking an innovative idea, which makes sense both financially and environmentally, and moving collaboratively between members of the packaging supply chain - to develop environmentally beneficial systems for the delivery of goods and services.

For more information, contact Angie Leith on 703-308-7253 or send email to leith.angie@epa.gov. For more information on the challenges, visit http://www.epa.gov.oswer/docs/iwg/cradle.pdf and http://www.mbdc.com/challenge.

Winning Award: Bevelope

Nutrient Type

- Technical and Biological Nutrients
- 100% post-consumer recycled content paperboard
- Biodegradable inks and adhesive

Recovery Strategy

- Reuse
- Municipal paperboard recycling stream (technical metabolism)
- Composting (biological metabolism)

Description

The key feature in the design of the Bevelope is the 'bevels' that help the package expand to accommodate products with different thicknesses. The adaptability of the Bevelope starts with just a few cleverly placed scores, creating bevels that make it possible to adjust the Bevelope's thickness to accommodate the slimmest paperback book, a molded DVD case, or a very thick manual. The bevels also help hold the products within the center of the packages, providing a protective cushion around the edges of the items during transit. ■

Material Flow Accounts: A Tool for Measuring Sustainability

Derry Allen, EPA's Office of Policy, Economics, and Innovation

The National Research Council/National Academy of Sciences recently issued a new report, Materials Count: The Case for Material Flows Analysis. The report draws a clear connection between the challenge of sustainability and our need to understand more about how materials flow through our economy:

Rising population and industrial growth are placing increasing strains on a variety of material and energy resources and the global environment. Understanding how to make the most economically and environmentally efficient use of materials will require an understanding of the flow of materials from the time a material is extracted, through processing, manufacturing, use, and its ultimate destination as a waste or reusable resource. It will also require knowledge of the environmental and societal impacts of the flows. These considerations are key to the overall application of sustainable development in practice.

The report discusses why the United States needs to do more to develop Material Flow Accounts (MFA).

MFA track the flows of material resources (minerals, fiber, etc.) from extraction through product manufacture, product use, product reuse/recycling and disposal (see Figure 1). Although most of the information necessary to assemble MFA is already collected for other purposes (e.g., EPA's Toxic Releases Inventory, waste/recycling information; USGS mining data), it is not routinely assembled into material flow accounts in the U.S. or other countries.

Over the past decade, the U.S. and various other countries (including Japan and several European countries) have prepared prototype material flow accounts. EPA has supported a major MFA project with the World Resources Institute for the past several years. Largely due to this work, the U.S. appears to be somewhere in the middle of the pack on developing MFA - ahead of some countries and behind others.

These prototypes have demonstrated that material flow accounts are a relatively inexpensive tool that can help us gain insights not apparent from the raw information from which they are assembled. These insights can be useful in understanding how to prevent waste before its creation. Therefore, EPA and other agencies support the development of MFA. In addition, many companies have found that MFA fits with their corporate goals: generating less waste often increases profitability.

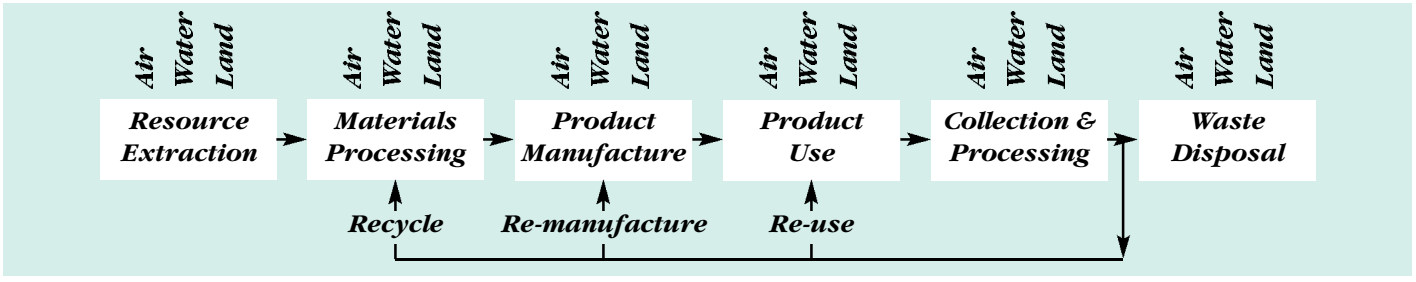
Material flow accounts do not necessarily lead to any particular types of policies. Thus, those involved in the development of MFA routinely stress that each user (e.g., company, government agency, country) should employ the tool as they see appropriate.

In the U.S., it appears that MFA could be quite useful in at least three major areas of government policy:

- Improve economic, technology development, trade and national security policy by enhancing our understanding of the materials bases of the economy.
- Improve natural resource policy (minerals, fiber, energy) with system-wide information on the status and trends of materials sources and uses, and other aspects of supply and demand.
- Improve environmental policy and develop better strategies to prevent pollution by helping to identify categories of pollution sources, develop materials-based and product-based environmental strategies and promote reuse of what is currently discarded.

Following the publication of the Academy report, a group of eight agencies has begun discussions on how best to pursue its recommendations. These agencies include the Office of the Federal Environmental Executive, the Council on Environmental Quality, the Environmental Protection Agency, the U.S. Geological Survey (Department of the Interior), the U.S. Forest Service (Department of Agriculture), the Bureau of Economic Analysis (Department of Commerce), the Department of Energy, and the National Science Foundation.

For additional information on the *Materials Count: The Case for Material Flows Analysis*, visit http://books.nap.edu/0309089441/html/index.html. Additional interest is welcome. Please contact Derry Allen at allen.derry@gsa.gov. ■



Strengthening the Case for Sustainability through Partnership

Dr. Gregory Crosby, USDA's Cooperative State Research, Education, and Extension Service

Increasing human population and resulting consumption place extreme pressures on our natural resources and the environment that we rely upon to grow food, and make a living. Future generations may be at risk of losing this vast capacity for economic security, quality of life, and environmental stability if we don't develop our strategies to educate and promote sustainability.

Based on the premise that economic vitality, environmental resilience, and quality of life are closely linked through the global ecosystem, sustainable development is a science-based process focused on human commerce, and the social and environmental consequences that result. Moreover, sustainable development factors the cost of development in terms of environmental degradation, provides alternatives to avoid such costs, and offers technology for restoring and maintaining a viable economic capacity for future generations.

Scientists and educators deploy innovations that discover new research methods and applications, educational content, and extension programs needed to account for and address the interactions between natural resources, the environment, and human economic activity in the areas of agriculture, forestry, and communities. The use of new information and communication technology help build networks and more effectively deliver information and education about sustainability.

The Cooperative State Research, Education, and Extension Service (CSREES) Science for Sustainability Working Group, composed of national program leaders from programs across government, promotes such discussions to (1) expand the research and development agenda about sustainability, (2) strengthen the infrastructure and capacity for conducting and applying science to sustainability, and (3) connect science and policy to more effectively pursue a transition toward sustainability. This group visualizes an educated and informed public, which includes young people, willing to adopt new practices, apply appropriate technology that better meets the economic, environmental, and social needs of the present without compromising the resource of future generations.

The CSREES Sustainable Development Program mission is to incorporate the principles of sustainability into the policies, practices, and programs of research, education, and extension systems so all Americans and Citizens of the world may benefit from sustainable development. ■

For further information, contact Gregory L. Crosby, Ph.D., National Program Leader for Sustainable Development/Environmental Education, USDA Cooperative State Research, Education, and Extension Service on (202) 401-6050 or (202) 401-1706. Send email to gcrosby@csrees.usda.gov. The new CSREES website, http://csrees.usda.gov, is currently under construction. ■

Informal EPA Network Collaborates on Sustainability

David Schaller, EPA Region 8

For the past year, an informal network of staff from various EPA offices have held bi-monthly conference calls to share ideas and information about activities related to sustainable development. The network has representation from national program offices in Washington, D.C., along with a number of regional offices and at least one EPA national laboratory. The goal of the network is to help develop an awareness within EPA of key sustainability principles and to find approaches to integrate them wherever appropriate in EPA's numerous regulatory, research, education, and voluntary programs.

Several initiatives have emerged from the network's calls, including an effort to create a sustainable development web page for EPA, a framework for a proposed sustainability training course for EPA staff and managers, information exchanges on upcoming conferences that might be open to presentations on sustainability activities within EPA, and general updates among the network members on activities within EPA that may lend themselves to a sustainability focus. ■

Those interested in more information on the EPA sustainability network can contact anyone of the following EPA staff:

Diana Bauer, Office of Research and Development, on (202) 564-6932, or send email to bauer.diana@epa.gov.

David Schaller, Region 8 (Denver) on (303) 312-6146, or send email to schaller.david@epa.gov.

Anita Street, Office of Research and Development, on (202) 564-1569, or send email to street.anita@epa.gov.

From INNOVATIVE WORKPLACE STRATEGIES, a U.S. General Services Administration, GSA Office of Governmentwide Policy, Office of Real Property publication. December 2003

The Sustainable Workplace: An Overview

Jonathan Herz

Jonathan Herz, AIA, is a registered architect with experience in both the public and private sectors. Since joining GSA's Office of Governmentwide Policy in 1998, he has been an active contributor to its Integrated Workplace Program, as well as the leader of the Office of Real Property's Sustainable Development Initiative.

Introduction

We all know that sustainable development is important, but do we really know what it is and how it applies to our work and our workplaces?

Sustainable development is an integrated decision-making process that builds on the creativity of all your employees across your organization, so that every decision is made with an eye to the greatest long-term benefits. In other words:

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." The Brundtland Commission ("The Hannover Principles," 1983 United Nations' World Commission on Environment and Development)

The Hannover Principles, developed in 1992 by architect William McDonough, FAIA, and the chemist Michael Braungart, were among the first to comprehensively integrate the fundamental ideas of sustainability with the built environment. The Principles encourage all of us - you, your organization, your suppliers and customers - to link environmental considerations with ethical responsibility and to recognize our mutually dependent relationship with nature and our responsibilities to protect it. When you make decisions in your organization, remember these essential ideas from the Hannover Principles:

- ***Recognize interdependence.*** Everything you do interacts with and depends upon the natural world, at every scale, both locally and across the globe.
- ***Eliminate the concept of waste.*** Consider the full, life-cycle consequences of what you create or buy.
- ***Understand the limitations of design.*** Nature is a model, not a thing to be evaded or controlled.

Using the ideas of sustainable development, we can create safe, healthy and productive workplaces inside and outside of the traditional office and maintain and operate them at the lowest, real cost. Sustainable workplaces can answer today's needs – more productive and healthier work environments – and respond to today's needs without imposing additional costs upon future users.

An important first step is the creation of sustainable facilities. The Minneapolis Federal Reserve Bank, designed by HOK, and completed in 1998, minimizes its impact on the environment by emphasizing energy conservation, low maintenance landscaping, water conservation, indoor air quality, environmentally preferable materials selection, and construction waste recycling.

The 618,000 square foot facility's material selection was based on source sustainability, the amount of embodied energy, recycled content, ability to be recycled, and effect on indoor air quality. Materials with enhanced durability, low maintenance and from predominantly local sources were used, reducing transportation impacts. Exterior materials include stone quarried less than 100 miles from the site and local brick. Interior materials include low-VOC (volatile organic compounds) paints and adhesives, formaldehyde-free wood products, and many products with high-recycled content. All wood used in the building is from certified sustainable sources. About 70 percent of the construction waste materials were separated and recycled.

Sustainable development is a fundamentally optimistic concept. Sustainable development doesn't mean giving up the paint that protects and enhances our buildings. It means reexamining 100-year-old formulas and replacing toxic ingredients with more environmentally friendly ones. It doesn't mean giving up the carpet and furniture that presently enhance our offices and eventually end up in landfills. It means leasing carpet and furniture and the services they provide, rather than simply buying them for a finite period, disposing of them, and starting all over again. Leasing the services of products such as carpet, furniture, elevators, and cooling means that your real needs are met and—since the products themselves remain the manufacturer's property—that they will be designed to be recycled at the end of their useful lives.

How Do We Begin To Transform Our Way Of Thinking?

Sustainability will come as an evolution, not a revolution, and will be achieved through a series of steps. What are the critical factors involved in implementing a sustainable development strategy?

- Executive leadership must understand sustainability and commit to its principles.
- Establish a vision and mission and translate it into specific long-term improvement objectives and targets with high-level visibility throughout all levels of the organization.

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- Implement a formalized process for identifying the environmental aspects and impacts of an organization's operations, products and services.
- Provide training to raise awareness, skills and knowledge for transforming the organization into a sustainable development culture.
- Measure progress by incorporating metrics into day-to-day management systems.

The most successful organizations have an established vision and mission that gets translated into specific long-term improvement objectives and targets, with high-level visibility throughout all levels of the organization. Ray Anderson, a pioneer in sustainable development, describes how his entire company, Interface, Inc. (the world's largest manufacturer of commercial floor coverings) was transformed. Anderson changed his company's way of doing business by shifting the paradigm of what the customer wants and what a business can provide.

In his 1998 book, "Mid-Course Correction," Anderson developed a comprehensive set of guidelines to move every aspect of his company toward sustainability. Through a detailed set of principles around "People, Product, and Place," he brings together ideas for living and working sustainably and uses them to define the company's mission. For example:

People

- ***Employees and Management:*** Engage the creativity of all employees. Educate them on the corporate sustainability vision and ask them to commit to improving environmental impacts of their job. Establish top management commitment to long-term environmental strategy.
- ***Customers:*** Provide honest information about the known environmental impacts of your company.
- ***Suppliers:*** Share your corporate vision for sustainability with suppliers.
- ***The Public:*** Develop auditing mechanisms open to public disclosure.
- ***Metrics:*** Measure all material and energy flows in physical and monetary units.
- ***Keeping the enthusiasm:*** Set reasonable goals and always celebrate your accomplishments.

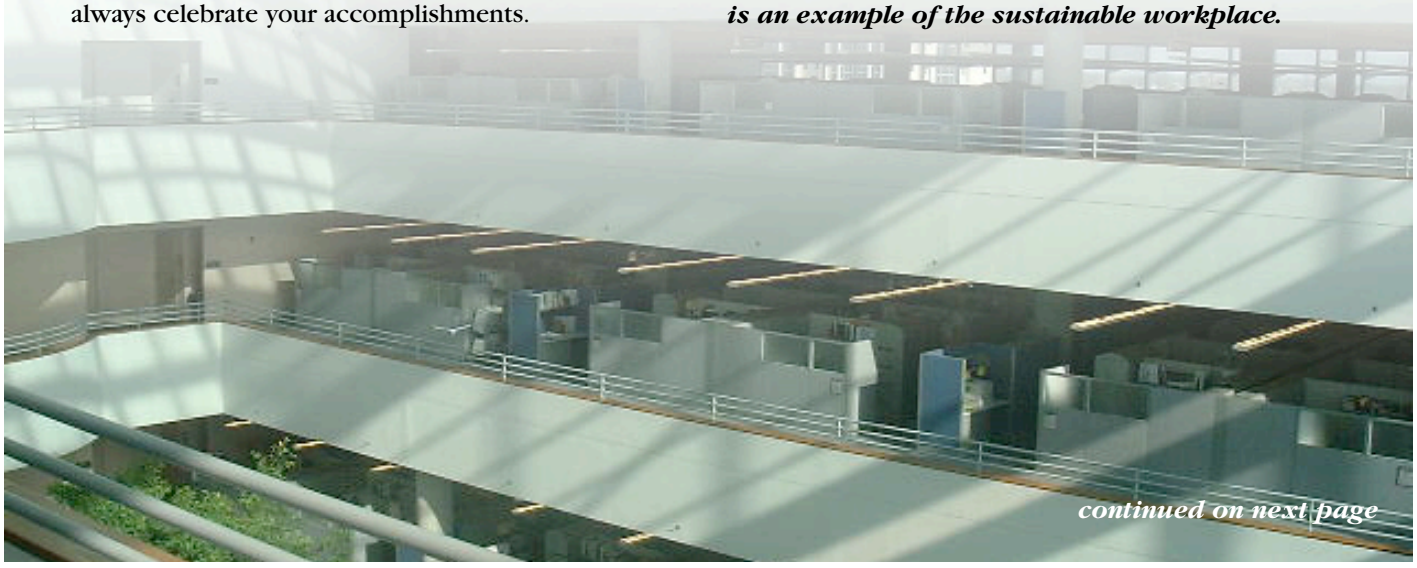
Product

- ***Design and Marketing:*** Redesign products to use fewer raw materials while delivering the same or greater value. Rent the service component of your products, e.g., warmth and light not electricity.
- ***Packaging,*** Manufacturing and Purchasing: Redesign packaging. Research and adopt alternative energy sources. Adopt a zero waste mentality. Establish a "Buy Sustainably" policy.

Place

- ***Facility:*** Design for maximum long-term flexibility and efficiency. Maximize use of natural ventilation, heating and cooling. Design with the natural flows of the site in mind.
- ***Landscape:*** Leave as much habitat and vegetation as possible undisturbed by construction.
- ***Maintenance:*** Invest in high quality systems maintenance to extend life and maximize efficiency.
- ***Transportation:*** Favor local products. Buy alternative fuel vehides. Allow employees to telecommute or work alternative hours.

Photo: The EPA Building in Walla Walla, Washington, is an example of the sustainable workplace.



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As part of the $2 billion overhaul of Ford Motor Company's Rouge River Plant in Dearborn, MI, William McDonough looked beyond the 1,212-acre complex to consider the entire $150-billion company. Ford asked him to talk to all the top executives, scientists, engineers and car designers to see how they might think differently about design of their cars, trucks, factories and office buildings. New metrics are being developed that consider the multiplier effect, creating the tools to measure things like: reduction of contingent liabilities, community relations, regulation costs, and marketing benefits. Every project should have goals such as these:

- Worker retention,
- Improving employee attendance,
- Reducing injuries and worker compensation claims, and
- "Celebrating" people as the company's most valuable asset.

How Do You Track Your Progress Towards Sustainability?

So how do we measure sustainable progress in the workplace? Today, we require new measurement paradigms, new performance models. As real property professionals have broadened their focus, providing not merely space, but providing "workplaces," our approach to measurement must also change.

The concept of the "workplace" is the result of the merging of the disciplines of facilities management, information technology, and human resources. GSA's Office of Real Property publication, *The Integrated Workplace: A Comprehensive Approach to Developing Workspace*, advocates a process to address the planning and design of innovative workplaces that encompass all of these ideas.

In our "Governmentwide Real Property Performance Measurement Study," we developed seven key performance indicators to assist Federal agencies assess the performance of their real property assets. Subsequently our "Workplace Evaluation Study" expanded our focus beyond the traditional ways of measuring facility or real estate performance, such as telecommunications, information technology, furniture and alternative work environments.

Performance measures will help managers to compare their operations to similar organizations in the government and private sectors; identify if the organization is meeting its goals; and address customer satisfaction issues.

Public Works and Government Services Canada (PWGSC), has developed and implemented management strategies that analyze, evaluate and report on real property program performance. Housing 167,000 government personnel is a major cost item to Canada; with approximately 3.98 million square meters of office space in 4,000 different sites, PWGSC uses an Asset Management Plan (AMP) to manage real property assets over their economic life. The plan provides the strategic framework for Canada's real property asset investment decisions.

Supplementing the AMP is an Asset Performance Management Policy (APMP) that provides measures on financial, operational and functional performance. The APMP looks annually at Return on Investment, unit costs, unit revenues and vacancy rates for Crown-owned properties. Other items include operational and functional performance. PWGSC's measures include:

- Cost per square meter for leased/leased purchased space and imputed rates for Crown properties.
- Space per person, that compares rentable space to persons housed.

We hope to add "green" metrics to the growing list of productivity measures. The fastest growing building metric is the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED™) Green Building Rating System™. The Navy, Department of State, and GSA have adopted the LEED Building Bronze™ as their building standard. LEED™ provides guidance in the areas of building development and design. Points are given for design features that lead to a truly sustainable building, including:

- Building commissioning, erosion control, indoor air quality, energy efficiency and thermal comfort, water conservation and quality, and a system for recycling occupant's trash.
- Building Materials, including low levels of volatile organic compounds (VOC's), use of local materials, advanced resource reuse, recycled content, eliminating persistent toxins, and construction waste management plans.
- Energy Efficiency, natural ventilation and advanced systems.
- Landscaping, including reducing heat islands, shade cover, and reflective roofing materials.
- Siting and Site Development, including infill and brownfields development.
- Water Conservation, including water-conserving fixtures and cooling towers, gray water recovery system, water efficient landscaping, surface runoff control, and biological waste treatment.

Other established environmental metrics include:

- ISO 14000 - ISO (International Standards Organization) enables an organization to control the impact of its activities, products or services on the environment, using a structured approach to setting environmental objectives, to achieving these and to demonstrating that they have been achieved.
- World Business Council for Sustainable Development

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(WBCSD) has a multifaceted Eco-efficiency Project that lays out general components of eco-efficiency connected to broad goals of pollution prevention and reduction of materials and energy use. They also include reducing and eliminating toxic dispersion, maximizing use of renewable resources and enhancing recyclability and durability.

What Are The Benefits To You And The Environment?

A healthier indoor environment, including the presence of natural light as well as fresh air, can greatly affect the health, safety and productivity of those who visit and work in your facilities every day. Commonly used furniture, carpeting and cleaning products often contain dangerous chemicals that "off-gas" directly into our workspace, contributing to an unhealthy indoor air environment.

At the Inglewood Center in Largo, MD, two Prince Georges County Government office buildings exhibited high rates of employee complaints and absenteeism. The building's indoor air quality was found to be a problem. Through a "Green Housekeeping Program," cleaning products were changed and training was provided to the janitorial staff on how to use the new products to clean more effectively. HVAC systems were also cleaned and balanced as part of the on-going scheduled maintenance program. The situation has significantly improved.

A facility manager, owner and building professional's first priorities are safety and health. Sustainable practices can make the job easier, simplifying decisions and reducing costs. How and what you build and the manner in which you operate and maintain your facilities have a tremendous impact not only on the environment, but also your bottom line. Applying sustainable development principles will reduce waste and lower long-term maintenance and operating costs.

Equally important is the impact on your most valuable resource - your employees and your tenants' employees. In 1997, the Federal Facilities Council reported that, over the typical 20-year life of a facility, 90 percent of its cost can be attributed to the salaries of the people working there, while only 5 percent is attributed to initial construction costs and another 5 percent to operation and maintenance costs.

The greatest opportunity for workplace gains is in improving the performance of the people in the space, not in cutting the cost of building, operating and maintaining the workplace. If the cost of providing important facility attributes can be shown to provide even a modest increase in productivity, they can be more easily justified.

Conversely, a short-sighted approach of cutting the first cost by providing the wrong kind of space, inadequate space, or installing systems, furniture, and technology that only meet minimum standards and thus hamper work performance can have disastrous long-term effects.

Successful businesses know that environmental management and environmental functions are integral parts of their everyday operations and strategic plans. They are successful because they understand the environmental implications of their business functions. Environmental issues are considered essential components of business processes, rather than consequences of those processes.

Conclusion

What can you do to be more sustainable? Think about what today's leading companies and Government agencies are doing to position themselves for success in the new century, and ask yourself, your superiors, your co-workers and your employees to consider some of these important questions.

Are you:

- Providing leadership in your organization, demonstrating commitment to sustainable principles, and providing training to your employees?
- Establishing long-term improvement objectives, throughout all levels and measuring their effectiveness by examining your mission statements and strategic plans to identify the environmental aspects and impacts of your operations, products and services?
- Reducing building operations costs and lowering liability from potentially hazardous construction and cleaning materials and practices in the workplace?
- Creating livable environments, reducing negative transportation impacts, and enhancing your community's quality of life?

These steps will start you on your way to creating sustainable workplaces and sustainable business enterprises. You are probably already using some of the building blocks of sustainable development, including buying "green" products and services, using materials with recycled content in construction and managing construction waste. You may be using alternative fueled vehicles, Energy Star® equipment, and alternative energy sources. Finally, you may be ahead of the curve by implementing waste prevention strategies, increasing office waste recycling and the amount of property reused or donated, and training employees to think "sustainably." Reaching and maintaining sustainability is a continuous process of re-examination and re-learning. ■

For more information on the Integrated Workplace Program and Sustainability or to obtain a copy of the *Innovative Workplace Strategies* publication, contact Jonathan Herz on (202) 501-3476 or send email to jonathan.herz@gsa.gov.

Smart, Sustainable Design: Integrating Cradle-to-Cradle Tenets with the Principles of Green Engineering

Sonia Kassambara, EPA Agency Representative, OFEE

William McDonough, Architect, Principal, and Co-founder of McDonough and Braungart Design Chemistry, spoke to the group of Agency Environmental, Energy, and Transportation Executives in February. Mr. McDonough, a world-renowned architect, addressed the need to solve rather than alleviate problems. He pointed out in the presentation that we must be smart in our actions, and instead of trying to reduce our environmental footprint, we should concentrate more on what it actually is, and how to harmonize that footprint with natural systems. He also stated that to maintain American competitiveness in the global market, we need to recognize what resources we do have and use them wisely.

In an article written for Environmental Science and Technology magazine (December 1, 2003), William McDonough, Michael Braungart (McDonough and Braungart Design Chemistry), Paul T. Anastas (Assistant Director for the Environment at the White House Office of Science and Technology Policy, and Julie B. Zimmerman (Engineer in the Office or Research and Development at the U.S. EPA,) wrote the article, "Applying the Principles of Green Engineering to Cradle-to-Cradle Design." The following text is summarized from this article.

McDonough, Braungart, Anastas, and Zimmerman have created a new approach to design by focusing on the life cycle of a product and the materials used in its materials. They encouraged engineers and designers to ask themselves whether they are improving the right things when they design or re-design products. They advocate using three tenets–waste equals food; use current solar income; and celebrate diversity– which they term Cradle to Cradle (C2C) using C2C and Principles of Green Engineering as guides, they proffer an approach to "commercially productive, socially viable and ecologically intelligent realignments in design."

Sustainability is often equated with "reducing the human footprint" to slow the use of resources. For many, this can materialize as retrofitting existing equipment with more efficient components to maximize economic growth. In McDonough's view, this approach towards sustainability addresses the inherent flaws of mainstream modern design instead of the source and the practices and ultimate goals of the flawed system.

Nature runs on the bounty of solar energy, and it produces and regenerates. McDonough, Braungart, Anastas, and Zimmerman demonstrate how designers and engineers can adopt C2C tenets as their objectives. Waste equals food illustrates the cycles of life and examines the natural world's ongoing nutrient flow, from birth, decay and rebirth, from cradle to cradle. Likewise, with the understanding that all materials can flow through natural or designed metabolisms, designers and engineers can create closed loop cycles for the natural world and the technical world. Instead of the "cradle-to-grave" mindset where products have a beginning, or source, and end, or sink, one can envision the natural and technical cycles reusing themselves continually. In these cycles, materials like carpet yarns are made from synthetics, and can be `repeatedly depolymerized and repolymerized, providing high-quality, high-tech ingredients for generation after generation."

As plants use sunlight for food, humans can use current solar income directly or passively in building and manufacturing designs such as daylighting by piping natural light into an indoor space, or wind power by funneling sunlight into thermal flows. The city of Chicago, IL, for example, plans to buy 20 percent of its electricity from renewable resources by 2006, which has created a hub of local renewable energy development.

It follows that Chicago, known as "the windy city", should have a different approach to renewable energy technology than Death Valley, CA. Instead of a one-size-fits-all method that does not optimize the respective climates, or homogeneity that lacks adaptability, design solutions should celebrate diversity and strive for a fit within local natural systems and for their ultimate purpose. A key example of a successful design solution is the Gap, Inc. complex in San Bruno, CA, created with a soil, grasses and flower roof that mirrors the local terrain. In addition, the buildings feature windows that open, providing individually-controlled fresh air, daylighting, which provides natural illumination, and a raised-floor cooling system, allowing cool air to flow in at night and cool during the day. These features fit their surroundings and provide "ecological, social and economic value."

The 12 Principles of Green Engineering suggest ways that its users can reap the highest benefits by redefining the problem, answering "How do I do it?" Engineers will need to learn how to balance principles, often incorporating several at a time. Managing waste contrasts with the green engineering principles, which encourage engineers to "move away from managing liabilities and hazards and toward designing effective and ecologically intelligent materials, products and systems."

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There are several ways that one can design biological and technical nutrients. A U.S.-Swiss collaboration between Rohner textiles and DesignTex textile design company weeded out treatment chemicals and dyes, and identified 38 chemicals suitable for a material capable to feed soil as biological nutrients and meet all quality standards. The current carpet trimmings can be used as mulch for the garden whereas the old trimmings were deemed hazardous waste by the Swiss government.

Nike has made inroads to phase out the use of polyvinyl chloride PVC, and has taken its "Positive List" of safely metabolized materials or continually reusable materials a step further into the supply chain. It has successfully phased out PVC from all footwear and non-screen print apparel. Nike also influences companies to meet its demands for less hazardous, more sustainable use and reuse.

Herman Miller furniture company formed an interdisciplinary Design for Environment team that analyzed materials based on the McDonough Braungart Design Chemistry (MBDC) materials assessment protocol. The team includes a chemical engineer, who compiles a materials database, and a purchasing agent, a go-between for the purchasing team and supply chain. Together, the team measures environmental performance, and created assessment criteria for its materials and chemicals assessment methodology for its engineers and designers. A Herman Miller engineer stated that it helped fellow engineers understand the organization and prioritization of materials, and the company can compile data on materials flow that it previously did not track.

Ford Motor Company seeks ways to close the loop on the technical cycle by creating a Model U car. This company includes polyester upholstery fabric and car top made of corn-based biopolymer polylactic acid, which can be composted after use. Ford's Rouge River plant also uses a C2C approach with its 10-acre green roof that filters storm water runoff and creates a habitat for native flora and fauna that encourages diversity.

As McDonough Braungart, Anastas, and Zimmerman illustrated, green engineering achieves industry transformation using one part practicality and one part principle. The C2C and 12 Principles of Green Engineering together can meet the goal of a viable, beneficial, and smart sustainable industrial system for doing the "right things right." ■

Address correspondence regarding this article to Julie Zimmerman at zimmerman.julie@epa.gov.

Also visit http://www.epa.gov.oswer/docs/iwg/cradle.pdf and http://www.mbdc.com/challenge.

For information on EPA's Green Chemistry programs, visit http://www.epa.gov/greenchemistry.

Update on the West Coast Regional Federal Network for Sustainability (FNS)

Barbara Lither and Mike Flannery, EPA

The Federal Network for Sustainability (FNS) is a voluntary network of Federal agencies located primarily on the West Coast that strives to promote sustainable environmental stewardship. Launched in April 2000, the FNS continues to expand its membership and interest in Federal leadership for sustainability principles. In 2003, the FNS hosted six Emergency Management System training sessions for more than 200 Federal employees. At least four FNS member agencies have joined the Federal Electronics Challenge, which is working to improve electronics stewardship. Because of its efforts in education and outreach, the FNS received a White House Closing the Circle Award in 2003.

The FNS maintains a successful Paper Initiative that encourages Federal agencies to reduce paper usage and purchase green copier paper. Several states and municipalities use this initiative as a paper procurement policy and often refer to the Paper Initiative website. As a model network that any region of the country can use for improving Federal collaboration, the FNS focuses on building partnerships with states and local governments and encourages joint participation on sustainability initiatives in 2004. ■

Contact Barbara Lither on (206) 553-1191 or send email to lither.barbara@epa.gov.

For more information on FNS, visit http://www.federalsustainability.org. For the latest updates on the Federal Electronics Challenge, visit http://www.federalelectronicschallenge.net. ■

Interagency Effort Underway to Develop Plans for a National System of Indicators

Ted Heintz, Department of the Interior Representative
to the White House Council on Environmental Quality

In early 2003, Jim Connaughton, Chair of the White House Council on Environmental Quality, established an Interagency Working Group on Indicator Coordination. This group has reviewed a number of ongoing efforts that are developing indicators on natural and environmental resources including the EPA Draft Report on the Environment (http://www.epa.gov/indicators/). Based on this review, the Working Group has evolved a vision for a comprehensive system that could be developed by building on these efforts. In addition, the group has identified key principles to guide future work, discussed concepts that could be used to design an "information architecture," and identified institutional arrangements that could be used to develop and operate a national system of indicators.

The long-term goal of this effort is to develop the capacity to regularly report on natural and environmental resources and closely related health, social and economic factors using a comprehensive set of indicators.

The Working Group identified the following set principles to guide development of the system:

- Meet the needs of a wide range of uses and users, both private and public.
- Reflect a systematic and science-based approach to the selection of indicators and measurements.
- Use data from valid, consistent, science-based measurements, such as called for in Office of Management and Budget's Quality of Information Guidelines.
- Draw upon the existing inventorying and monitoring capacities of Federal agencies and their partners to make the relevant measurements.
- Apply new institutional capacities as needed for data compilation, indicator development and production and statistical reporting.
- Employ up-to-date information technology to reduce the costs of data acquisition, processing and access.

The Federal government currently does not have the capacity to publish a comprehensive set of statistical indicators for the environment and natural resources. The Federal government and others currently collect a variety of environmental and natural resource data. These efforts produce a wealth of information but do not provide a comprehensive set of national measures. Many of the Federal data collection processes and data parameters that are designed for use in the conduct of Federal programs fall short of providing national coverage.

A national system of regularly published indicators would inform policy and decision-making in many public and private institutions in the United States. It would inform public discussion about national goals and help evaluate environmental protection and natural resource management national programs.

Sound decisions on the use and allocation of environmental and natural resources should be based on a clear picture of the existing situation, a thorough knowledge of the effects of past actions, and the ability to predict the likely consequences of future actions. Each of these contributing factors requires information of a quality and credibility that is acceptable to interested stakeholders. This situation would be substantially improved by a national system of indicators that would bring together the indicators being developed by a variety of ongoing projects and build upon the existing data collection efforts of Federal agencies. An important part of the effort to develop the capacity to report on the indicators in the National System involves improving coordination of the inventory and monitoring efforts that currently produce data that would be used to produce the indicators. Federal agencies would continue to collect the data needed for management of their programs even if that data are not used for indicators in the National System.

A well organized capacity to report on environmental and natural resource indicators could provide more consistent information on conditions and trends across administrative and resource boundaries. In practice, such a system for publishing indicators could promote more realistic and more widely shared understanding of issues and proposed actions, as well as more consistent and timely information for public discussion about national goals and priorities. The development plan is to be completed by June 30, 2004. ■

For further information, call Theodore Heintz on (202) 456-6541 or forward email to Theodore_Heintz@cep.eop.gov.

The website for **EPA's Draft Report of the Environment** is http://www.epa.gov/indicators.

The **2002 Heinz Center Report** has a 2003 update that can be found at http://www.heinzctr.org/ecosystems/report.html.

For information on the **Sustainable Forest Roundtable**, visit http://www.sustainableforests.net/index.php.

See the **Sustainable Rangelands Roundtable** website with a link to their **First Approximation Report** at http://www.sustainablerangelands.cnr.colostate.edu.

For updates on the **Sustainable Minerals and Water Resources Roundtables**, visit http://www.unr.edu/mines/smr/ and http://water.usgs.gov/wicp/acwi/swrr. ■

Interagency Sustainability Working Group

Beverly Dyer, Federal Energy Management Program, DOE

The Interagency Sustainability Working Group was established in September 2001, in response to Executive Order 13123, "Greening the Government through Efficient Energy Management." The working group operates under the auspices of the Interagency Energy Management Task Force. The purpose of the Interagency Sustainability Working Group is to:

- Serve as a forum for the exchange of information within the Federal government on individual agency sustainable design activities.
- Foster and encourage each Executive Branch department and agency to consider the adoption of sustainable design practices and technologies in new Federally owned, operated, and leased buildings as well as major renovations of existing Federal facilities.
- Identify and propose solutions to barriers for the adoption of sustainable design in the Federal sector.

Chaired by Beverly Dyer of the Federal Energy Management Program, the working group is composed of more than 180 representatives. Approximately 40-50 "active members" represent a cross section of Federal agencies, including the Departments of Energy, Agriculture, Commerce, Defense, Health and Human Services, Interior, and State. Other members include the National Aeronautics and Space Administration, Bonneville Power Administration, Environmental Protection Agency, General Services Administration, Office of the Federal Environmental Executive, Office of Management and Budget, Tennessee Valley Authority, and U.S. Postal Service.

The working group has:

- Reviewed and/or evaluated a number of reports and program activities,
- Gained first-hand insight on current and innovative sustainable design practices by conducting site visits,
- Developed reports and matrixes, compiled data, and provided recommendations to address specific activities,
- Conducted surveys to collect data on policies and design/construction policies,
- Produced the "Business Case for Sustainable Design in Federal Facilities" summary report and resource document in 2003 (sponsored by DOE/FEMP - call 800-363-3732 to order free copies).

Since the working group's inception, several actions have been taken to ensure the ongoing flow of information to and among participants. To achieve this, an Intranet web site was established, allowing Federal agencies to post sensitive agency-sponsored sustainable design information for member review and comment. The site also posts bi-monthly meeting reports, including summaries of recent working group meeting discussions; presentations to the group on Federal and private sustainable design issues and activities; a listing of ongoing Federal sustainable design programs; a listing of pending Federal sustainable design projects (pulled from the Commerce Business Daily); and a listing of future conferences, workshops, and training programs dealing with sustainable design and related topics. ■

For more information on the activities of DOE's Federal Energy Management Program, contact Beverly Dyer on (202) 586-7241 or send email to Beverly.dyer@ee.doe.gov.

To obtain a copy of the Business Case for Sustainable Design in Federal Facilities and view ISWG's work on the Whole Building Design Guide, visit http://www.eere.energy.gov/femp/techassist/sustainability.html#wbdg.

Check out the Los Alamos Sustainable Design Guide, which focuses on the issues and design processes for energy-efficient buildings. Obtain a copy at http://www.eere.energy.gov/buildings/highperformance/lanl_sustainable_guide.html. ■

Federal Electronics Challenge: Putting Electronic Products in Their Place

Christopher Kent, EPA, and Charles Johnson, DOD
(Navy) Agency Representative to OFEE

The Federal Electronics Challenge (FEC), launched in May 2003, is in a year-long pilot phase and is setting the stage for purchasing and end-of-life strategies that will encourage environmentally sound electronics management at all federal facilities and agencies.

Electronic waste (e-waste) is the most rapidly growing waste problem in the world, and is posing new environmental and human health threats. E-waste includes used and obsolete electronics, such as computers, printers, mobile phones, and fax machines. As one of the largest consumers of electronics products, the federal government has a unique opportunity to set the pace for environmentally sound electronics procurement and end-of-life management.

The Federal Electronics Challenge is a purchasing, operations, and end-of-life management challenge issued for Federal facilities or agencies that want to: (1) purchase greener electronics products; (2) manage their electronic assets in an environmentally sound manner; (3) receive assistance to change their current practices; and (4) gain national recognition for their efforts.

The Challenge is open to all Federal agencies and facilities. FEC is sponsored by the Office of Federal Environmental Executive (OFEE), U.S. EPA, Department of Defense, General Services Administration, and Federal Network for Sustainability, with additional agencies likely FEC "Partners" learn the importance of applying environmentally sound electronics management principles throughout a product's life cycle stages—from the acquisition and procurement of environmentally preferable products to the operations and maintenance phase to end-of-life management of those products.

After completing a baseline survey, Partners set realistic goals to improve the management of their electronic assets and will track their progress. Depending on a Partner's commitment level and achievements, Partners can qualify for a bronze, silver, or gold award. The more the partners do, the higher the recognition they will receive. We are proposing that Gold Partners receive White House recognition. Partners will also receive technical assistance, networking opportunities, and additional tools and resources as they work to reduce their environmental footprint. ■

For more information on how you can sign up to become a partner, get involved as a stakeholder in the Federal Electronics Challenge, or learn more about improving stewardship of your electronic assets, visit http://www.federalelectrronicschallenge.net or contact Christopher Kent at Kent.Christopher@epa.gov. ■

Office of the Federal Environmental Executive

White House Task Force on Waste Prevention and Recycling

John Howard . . . . .Federal Environmental Executive
Ed Pinero . . . . . .Deputy FEE

Dana Arnold . . . . . .Chief of Staff
Robin Hirschhorn . . .Department of the Treasury
Cathy Broad . . . . . .General Services Administration
Cherie McClam . . . . .General Services Administration
Sonia Kassambara . . .Environmental Protection Agency
Jeanette Turner . . . . .AARP; U.S. Environmental Protection Agency
Lindsay Aylesworth . .Intern
Tommy Tracy . . . . . .Intern
Joshana Rutigliano . . .Intern

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