

ENGINEERS FORUM ON SUSTAINABILITY

Sustainability Issues and Developments Highlighted and Summarized

At the May 28, 2004 meeting of the Engineers Forum on Sustainability, attendees were updated and briefed on the EPA Energy Star Program, Restoring Coastal Louisiana, Restoring the Florida Everglades, and the findings of the U.S. Commission on Ocean Policy. Presentations were also made on the Sustainable Futures Institute at Michigan Tech, Engineering Involvement in the Long Range Program of the United Nations Commission on Sustainable Development, Sustainability Projects for the Engineering Community, and Communicating Sustainable Performance to Investors. A number of these presentations are summarized in this issue of the Forum Newsletter.

This issue also continues the practice of grouping articles into five categories, designed to facilitate access to summaries of particular interest to the reader: Government, Academia, International, Professional Organizations, and Other Organizations and Developments. I believe you will find many of the brief articles in each category to be of interest.

The next meeting of the Forum is scheduled for Friday, November 12, 2004, at the National Academy of Engineering in Washington, D.C. The Forum will meet from 9:00 am to noon, and the AAES International Activities Committee/Engineers International Roundtable will meet in the same room from 1:00 pm to 4:00 pm. Please mark your calendars now for these two events. Detailed agendas will be e-mailed to you prior to the meetings. - Al Grant, Forum Chair

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GOVERNMENT

Update on EPA Energy Star Program

At the May 28 meeting of the Engineers Forum on Sustainability, Jerry Lawson and Doug Gatlin of the U.S. Environmental Protection Agency (EPA) updated the attendees on the EPA Energy Star Program. Energy Star qualified products and labeled buildings meet strict energy efficiency guidelines set by EPA and the U.S. Department of Energy.

The Energy Star label has 56 percent brand name recognition in the United States. The program covers over 40 products for home and office, including household appliances, Compact Fluorescent Light Bulbs /residential fixtures/exit signs, home electronics, office equipment, heating and cooling equipment, commercial foodservice equipment, new homes, windows, transformers, roof products, water coolers, dehumidifiers and traffic signals. Manufacturers test and label products, based on the EPA testing initiatives, and they either qualify or do not qualify. The program is voluntary, with no cost for participating. Voluntary labeling is international in scope. Japan, Australia, New Zealand, Taiwan, and the European Union all participate in labeling office equipment, and there is informal cooperation with China on a variety of products.

The guiding vision of EPA's Power Supply Strategy is to transform the North American

power supply market for key product segments by improving the average efficiency of typical power supplies. The National Energy Star campaign addressing monitor power management reached a million monitors nationwide last year. Businesses, institutions, and governments all participate. The campaign is projected to save 215 kWh per year, or \$15 million per year and CO₂ reductions equivalent to taking 26,000 cars off the road. EPA's 2004 goal is to address power management in an additional 2 million monitors nationwide and double projected savings from 2003.

The EPA Commercial Buildings Goal is efficient equipment plus: component integration and system metrics, performance-oriented policies and incentives, whole building metrics at design and in operation, and elimination of system inefficiencies so that efficient components can affect whole-building performance. Buildings earning the Energy Star rating use 40 percent less energy than the average building and have as common elements: emphasis on good management and operations, proper equipment sizing, and less focus on cutting edge technologies than on good application of equipment within an integrated system.

For more information, visit the EPA website: www.energystar.gov.

Draft Federal Guide for Green Construction Specs Under Review

The U.S. Environmental Protection Agency (EPA), the Office of the Federal Environmental Executive, and the members of the multiagency-sponsored Whole Building Design Guide have invited public review of the Draft Federal Guide for Green Construction Specs.

Covering over 60 building materials and methods, the on-line tool was developed to allow Federal building professionals to "cut and paste" their way to greener office, residential, laboratory, and other buildings. Specifically, the Guide, organized according to the Construction Specifications Institute's Master Format™, will help agencies meet their project-specific environmental goals and mandates, including:

- Greening of Government Executive Orders,
- OMB Circulars A-11 (i.e., use of the U.S. Green Building Council's LEED™ Rating System and Energy Star in the design of Federal buildings) and A-119 (i.e., the National Technology Transfer and Advancement Act and the use of voluntary consensus standards),
- Department of Energy/Federal Energy Management Program's Product Efficiency Recommendations, and
- EPA's Energy Star, Indoor Environmental Quality, Compliance Assistance Center, and Comprehensive Procurement Guidelines.

For more information on the Draft Federal Guide for Green Construction Specs, contact Alison Kinn Bennett at 202-564-8859 or kinn.alison@epa.gov.

Corps of Engineers Emphasizes Sustainability in its Five-Year Plan

A five-year plan recently released by the Department of the Army and the U.S. Army Corps of Engineers reflects the Corps' recognition that, in its approach to domestic projects, it must balance the protection and restoration of the environment against the needs of the shipping industry. The "Civil Works Strategic Plan" for fiscal years 2004 through 2009 sets forth five goals:

1. Provide sustainable development and integrated management of the Nation's water resources.
2. Repair past environmental degradation and prevent future environmental losses.
3. Ensure that operating projects perform to meet authorized purposes and evolving conditions.
4. Reduce vulnerabilities and losses to the Nation and the Army from natural and manmade disasters, including terrorism.
5. Be a world-class public engineering organization.

The plan clearly states that in the future, the Corps will take "a watershed approach" to the management of the nation's water resources. Fred Caver, Corps deputy director of civil works, said that the Corps will do more in the future to help

the various stakeholders in a project to reach a consensus. This effort will extend to other government agencies, state and local government bodies, and such non-governmental organizations as environmental watchdog groups, the goal being to achieve consensus early in the planning stages.

The five-year plan also focuses on informing the public about the importance of water as a resource that must be cared for properly. "We believe that water resources in the future could be a potential constraint on economic growth and the quality of life in this country," Caver said.

To create its five-year plan—a document that has been eight years in the making and that was required by the Government Performance and Results Act of 1993—the Corps consulted every federal agency that might have had an interest in it. Some 16 "listening meetings" were conducted throughout the United States to hear interested parties' views on the maintenance and protection of the nation's waterways and water resources. The next step is for the Corps to produce detailed plans each year that will serve as guidelines for implementing the goals set forth in the five-year plan.

The Strategic Plan can be accessed from www.usace.army.mil/inet/functions/cw/hot_topics/cw_strat.htm.

Congressional Briefing Reveals Major Implications of U.S. Climate Change

On July 29, the Environmental and Energy Study Institute held a Congressional briefing addressing the implications of climate change for the U.S. The event provided an overview of the main findings that emerged from the U.S. National Assessment on climate change and what climate change is likely to mean for the United States and its regions. The Assessment was called for by a 1990 law and has been built on a solid foundation of science conducted as part of the U.S. Global Change Research Program.

The Assessment Overview, entitled "Climate Change Impacts on the United States: The Potential Consequences of Climate Variability and Change," was written by the National Assessment Synthesis Team (NAST), a committee of experts drawn from governments, universities, industry, and non-governmental organizations that has been responsible for broad oversight of the Assessment. The two speakers at the briefing were Anthony C. Janetos, Vice President of the H. John Heinz III Center for Science, Economics, and the Environment, and NAST Co-chair, and Lynne M. Carter, Former Regional Liaison for the U.S. National Assessment. The plan for the Assessment, developed by the NAST, was approved by the National Science and Technology Council, the cabinet-level body of agencies responsible for scientific research, including global change research. The Overview is based on a longer, referenced

"Foundation" report, written by the NAST in cooperation with independent regional and sector assessment teams. These two documents synthesize results from studies conducted by regional and sector teams and from the broader scientific literature.

According to the Assessment Summary, "Long-term observations confirm that our climate is now changing at a rapid rate" with trends "most apparent over the last few decades" and "the science indicates that the warming in the 21st century will be significantly larger than in the 20th century." Assuming that no major interventions are made to reduce the continued growth of world greenhouse gas emissions, the Assessment concludes that "temperatures in the US will rise by about 5-9°F on average in the next 100 years, which is more than the projected global increase. This rise is very likely to be associated with more extreme precipitation and faster evaporation of water, leading to greater frequency of both very wet and very dry conditions.... A unique contribution of this first US Assessment is that it combines national-scale analysis with an examination of the potential impacts of climate change on different regions of the US. For example, sea-level rise will very likely cause further loss of coastal wetlands ... and put coastal communities in greater risk of storm surges, especially in the Southeast. Reduction in snowpack will very likely alter the timing and amount of water supplies, potentially exacerbating water shortages and conflicts, particularly throughout the western US." The Assessment Summary also reports that "large increases in the heat index ... and increases in the frequency of heat waves are very likely" and "continued thawing of permafrost and melting of sea ice in Alaska will further damage forests, buildings, roads, and coastlines, and harm subsistence livelihoods" in that State.

The Assessment Summary concludes by reporting that "the planet and the nation are certain to experience more than a century of climate change, due to the long lifetimes of greenhouse gases already in the atmosphere and the momentum of the climate system. Adapting to a changed climate is consequently a necessary component of our response strategy."

The Assessment Report was published by Cambridge University Press (www.cambridge.org). The Overview is located at www.usgcrp.gov/usgcrp/Library/nationalassessment/overview.htm.

EPA Makes State-of-the-Art Research Facilities Available

In recognition of the breadth and complexity of the research challenges posed by environmental issues, the U.S. Environmental Protection Agency (EPA) is advancing a new, more collaborative business model for environmental leadership. With its highly specialized research facilities located in laboratories and research centers across the country, EPA aims to foster research with other federal agencies, states, private sector companies, utilities, nonprofit organizations, and academic institutions interested in addressing environmental issues. EPA will serve as a catalyst for progress in efforts to identify, understand, and solve current and future environmental problems. Facilities where opportunities for productive research alliances exist include:

- MULTIPOLLUTANT CONTROL RESEARCH FACILITY, Research Triangle Park, North Carolina - This recently constructed multipollutant control research facility supports development of new flue gas cleaning technologies for stationary sources of air pollution, closely simulating full-scale emission.
- HUMAN STUDIES FACILITY, Chapel Hill, North Carolina - The Human Studies Facility offers scientists the ability to study the health effects of airborne pollutants using state-of-the-art exposure chambers.
- MOBILE SOURCE RESEARCH FACILITY, Research Triangle Park, North Carolina - A number of unique state-of-the-art resources for the characterization and source profiling of motor-vehicle emissions and off-road-engine exhaust are available. Motor-vehicle-emissions research can be conducted using a chamber capable of maintaining temperatures in the range of -20°F to 100°F.
- ENVIRONMENTAL CHAMBERS, Athens, Georgia - Two walk-in controlled environmental chambers are available at EPA's research laboratory in Athens. Researchers can use these controlled systems to examine the effects of climactic and human perturbations on soil and aquatic processes.

- DRINKING WATER RESEARCH FACILITIES, Cincinnati, Ohio - Two drinking-water pilot plants are on site at this facility. These large-scale (6.4L/min) pilot plants can be used to study contaminants in drinking water. Water is trucked from nearby rivers, reservoirs, and ground water sources and stored in the plant's 5,000 gallon raw water storage tank. Contaminants, chemicals, or microbes may be added to the raw water, as needed.

Information about additional avenues for collaboration can be found at www.epa.gov/facilities_network/.

ACADEMIA

Michigan Tech Establishes Sustainable Futures Institute

Michigan Technological University of Houghton, Michigan has recently established a Sustainable Futures Institute, the mission of which is to "create and disseminate new tools, methods, knowledge, and technologies that promote, enable and support environmental, economic, and societal sustainability principles." According to the Institute, its vision "is to become internationally recognized for its teaching, research, and outreach contributions to the field of sustainable systems." The Institute seeks to develop a new "meta-discipline in sustainability science that integrates engineering and technology elements of industrial ecology; the scientific elements of environmental assessment and modeling; and the economic, human behavioral elements of social sciences that support environmental decision-making."

Over 25 faculty and University staff, from the College of Engineering, the College of Sciences and Arts, the School of Forest Resources and Environmental Science, and the School of Business and Economics, will be active in the three thrusts of the Institute that will include research, education, and outreach. Example project areas of the Institute include alternative energy, eco-efficiency, clean manufacturing processes, product take-back, stakeholder

involvement in decision support for sustainability, sustainable decisions via advanced information, and technology methods to integrate industrial, environmental, and social process models.

Under the Institute's education program, Michigan Tech will offer a graduate certificate in sustainability. The 15-credit certificate, open to enrolled graduate students at the University, will require classes in each of four areas: policy and societal system and economics, environmental systems, industrial systems, and sustainability

The Institute, in cooperation with the National Science Foundation (NSF) and Southern University of Baton Rouge, Louisiana, has also established an NSF Integrative Graduate Education and Research Traineeship Program that will offer enhanced coursework, novel educational elements including industry internships and international experience, distance learning, and inter-university advising, as well as an annual summit meeting and institutional commitment. For further information on the Sustainable Futures Institute, contact the Michigan Technological University at 1-906-487-2520, search the web at www.sfi.mtu.edu, or e-mail sfi@mtu.edu.

EPA Has Requested Proposals for Sustainability Benchmarking in U.S. Universities

Early in June 2004, Dr. Paul Gilman, the U.S. Environmental Protection Agency (EPA) Science Advisor and Assistant Administrator for Research and Development, announced the need for research proposals to assess the integration of sustainability concepts into engineering curricula at institutions of higher education in the United States.

"Our next generation of engineers must be aware one of the roles of engineering is as a cornerstone for sustainability," said Dr. Gilman at the 2004 EPA Science Forum. "This awareness will build capacity for a future workforce that is prepared to address the scientific and technical challenges to simultaneously promote prosperity, benefit people, and protect the planet."

EPA requested proposals describing a methodology that can be used to benchmark the current efforts of engineering departments to give future engineers an awareness of the relationships between the economy, society, and the environment. The deadline for submitting proposals was August 3, 2004.

The Engineers Forum on Sustainability participated in a proposal submitted for the Sustainability Benchmarking in U.S. Universities. The proposal, put forth by the Engineers Dean's Council of the American Society for Engineering Education (ASEE) with the AIChE Institute for Sustainability (IfS) was supported by IEEE-USA (Institute of Electrical and Electronics Engineers-USA), American Institute of Chemical Engineers (AIChE), the Council for Chemical Research, and the American Society of Mechanical Engineers, as well as the Engineers Forum on Sustainability. According to Frank Huband, Executive Director of ASEE, and Earl Beaver of IfS, "It is important to have broad based support in sustainability activities."

Carnegie Mellon Constructs First Certified "Green" Dormitory

A five-story, 260-bed building at Carnegie Mellon in Pittsburgh, Pennsylvania, called New House, is the first "green" dormitory in the country certified by the U.S. Green Building Council, a coalition of leaders from across the building industry whose goal is to produce environmentally responsible structures. Carnegie Mellon does not plan to stop with one building. The university says that every new structure on its campus will go through the Green Building Council's Leadership and Environmental Design (LEED) program, in which an elaborate points system rates how friendly a building is to the environment. New House earned a silver ranking on the bronze-silver-gold-platinum LEED scale.

The 71,400 square foot building cost less than expected. The building's construction totaled \$9.5 million (budgeted at \$10.8 million). The total cost, which includes construction, furnishings, and equipment, was \$12.5 million (budgeted at \$15 million). New House should use about 30 percent less energy than similar new dormitories that are not green. In its first year of use, utility costs for the dorm have been within budget, even with a very cold winter. For extra points toward the LEED certification, about 6 percent of the electricity used on the university's campus comes from wind power.

Insulated double-paned windows let sunlight in, without the heat, and reduce the need for lighting during the day. All the windows open. Each

room has its own temperature controls, so students will not be tempted to waste energy by opening windows while the heat is on or the air-conditioning is going full blast. New House will have a kiosk at its entrance with computer monitors that will show how energy is being used in the building. To pique student's interest in the environment, it will register every time a light is turned on or a toilet is flushed. And housing officials hope to bring speakers on the environment to the dorm regularly.

The concrete in the building contains recycled fly-ash, a waste product of the burning of coal for electricity. The carpeting is made with half new and half recycled fiber. The building contractor for New House sorted and recycled nearly 97 percent of the construction waste, saving over 200 tons of material from going into a landfill. Some of it was even used on site, like the wood scraps that were shredded for mulch.

Instead of a black-tar roof and dark brick, New House uses light-colored brick and roofing materials. The light colors absorb less heat from the sun, so the building needs less energy to stay cool in the summer. Walkways leading to the building are lined with about 50 shade trees. The trees, Marshall's ash and serviceberry, are native to western Pennsylvania, so they are tolerant of drought and frigid winters. They also do not need irrigation systems or fertilizers.

INTERNATIONAL

Partnerships for Sustainable Development: Building on the Johannesburg Legacy

(Ed. Note: This article is abstracted from a July 2004 presentation to the Council of Environmental Deans and Directors by Dr. Jonathon Margolis, Special Representative for Sustainable Development.)

During the Johannesburg World Summit on Sustainable Development in 2002, some 209 "Partnerships for Sustainable Development" were launched. These partnerships—voluntary, collaborative initiatives aimed at implementing sustainable development—varied widely. Some involved a few smaller organizations, while others involved several of the largest governments, nongovernmental organizations (NGOs), and international organizations. They also varied in funding levels: some involved tens of thousands of dollars, while others involved tens of millions of dollars. They varied in regional and thematic focus, with everything from global efforts on agriculture to local efforts on bicycling. For all their differences, however, each of these initiatives focused on delivering action, on meeting goals.

This marked the first time that partnerships were an official outcome of a United Nations (UN) summit. In endorsing partnerships as an official outcome, the UN catalyzed four key developments: First, UN meetings would now be results-oriented. Partnerships are about delivering results. A second change ushered in by partnerships is that they introduced a new culture of transparency-based accountability in UN meetings. By publicly committing to an initiative and voluntarily reporting progress in a transparent manner, partnerships are held accountable by their peers and the general public. This system led to a third change: it has raised the standard for the quality of reporting, placing a premium on concrete results. Finally, partnerships made it even more essential that those actually carrying out the work participate in the discussions. Results-oriented discussions require the active engagement of all stakeholders.

The UN maintains an online database with information on each of the 291 partnership's goals, their progress, and their mechanisms of implementation, as well as other background information. Locate the UN partnerships database at www.un.org/esa/sustdev/partnerships/database_about.htm.

The new partnerships paradigm has continued to mature and evolve in the years since the Summit. Examples include:

- The White Water to Blue Water partnership recently convened over 700 public and private stakeholders from the Wider Caribbean region to integrate watershed and marine ecosystem-based management. The conference resulted in the launching of over 100 new partnership initiatives.
- The Partnership for Cleaner Fuels and Vehicles has helped the elimination of lead in gasoline in nine sub-Saharan African countries over the past two years. Twelve additional African countries have developed plans and set dates for eliminating leaded gasoline.
- The Safe Water system partnership—which includes U.S. Government agencies, international organizations, the private sector, and non-profit NGOs—has distributed or sold at low cost over 8 million bottles of disinfectant solution. This simple technology provides affordable safe drinking water. In fact, each bottle can typically provide one person with enough treated water for drinking and cooking for six months.
- The U.S. Agency for International Development's Global Development Alliance uses public-private partnerships as a key component of U.S. development assistance activities. In the last 2 years alone, the Global Development Alliance has fostered nearly \$500 million worth of U.S. Government investment in public-private partnerships, leveraging an additional \$2 billion in contributions from partner organizations.

AAES Hosts New WFEO Capacity Building Committee

The initial meeting of the Committee on Capacity Building (CCB), a group set up by the World Federation of Engineering Organizations (WFEO), was held June 29-30 in Washington, D.C. at the National Academy of Engineering. The meeting—called to develop a strategic plan for the committee and set priorities—was attended by approximately 20 committee members representing 18 nations.

The WFEO, comprising engineering organizations from more than 80 nations, works with national and international institutions to develop engineering solutions and apply them in ways that benefit humanity. Although the CCB is an international body, the American Association of Engineering Societies (AAES), based in Washington, D.C., is hosting the committee in the United States.

Activities to be conducted by the CCB include making available to engineers in the developing world the expertise of professional and technical societies in the developed world, strengthening engineering education in developing nations by sharing what are called best practices, promoting collaboration among institutions in the developing and developed nations, and facilitating volunteer efforts by engineers. Russell Jones, the president of the CCB, said that "a desirable outcome of capacity building would be the creation of a solid base of technologically prepared people in developing countries."

The next meeting of the CCB will be held in Shanghai, China, on November 1, 2004, as part of the World Engineering Convention 2004, which is being sponsored by the WFEO and UNESCO (United Nations Educational Scientific and Cultural Organization).

Land Use Standards Link Climate Change, Biodiversity, and Poverty

The first ever set of standards certifying land use projects that reduce global warming while conserving the environment and alleviating poverty have been opened up for global peer review and comment by the Climate, Community and Biodiversity Alliance (CCBA). This "multiple benefit" approach, which incorporates climate, environmental and social issues, addresses shortfalls in existing land-based climate strategies. With input from environmental organizations, academic institutions, and the private sector, the CCB Standards will help companies, conservation organizations, governments, and international funding groups to efficiently identify cost-effective carbon emission reduction projects that also have a positive impact on biodiversity and local communities.

CCBA members include: BP, Conservation International, GFA Terra Systems, the Hamburg Institute of International Economics, Intel, The Nature Conservancy, Pelangi, and SC Johnson. Other institutions helping refine the standards and ensure broad input include the World Agroforestry Center in Kenya, the Centro Agronomico Tropical de Investigacion y Ensanansa in Costa Rica, and the Center for International Forestry Research based in Indonesia.

The CCB Standards will ensure that land management projects deliver clear and compelling benefits for the climate, biodiversity, and communities. A project must also score 50 out of 100 points for each of the components. The scoring system will look at several factors in the following three integrated categories:

CLIMATE CHANGE - The climate standards identify a variety of factors to quantify the amount of carbon emissions reduced or absorbed by land use projects including baselines, additionality, leakage, monitoring and the permanence of the climate benefit.

COMMUNITY - The community standards identify land-based carbon projects that involve local communities in the design and operation of land management projects and produce real and verifiable benefits for project communities.

BIODIVERSITY - The biodiversity standards identify projects that enhance landscape management by restoring and/or maintaining local plant and animal species populations, their associated genetic variability, and their habitats, restoring and/or maintaining biological connectivity, and conserving or enhancing water resources.

For more information, visit the CCBA website at www.climate-standards.org or contact: Jason W. Anderson, Conservation International, 202-912-1464, janderson@celb.org.

World Bank Makes Energy Commitments

The World Bank Group (WBG) announced that it will commit to an average growth rate of 20 percent per year over the next five years in its annual financial commitments for renewable energy and energy efficiency projects. The target growth rate was formally announced during the plenary session of the International Conference on Renewable Energies "to ensure an institutional focus on the fostering of the transition toward cleaner energy sources," said Peter Woicke, managing director of the WBG and executive vice president of the International Finance Corporation, the WBG private sector lending arm. Woicke also said that the increased lending would effectively double by 2010 the Bank Group's current pace of roughly \$200 million per year. Since 1990, the WBG has been the largest lender for energy efficiency and renewable energy projects in the developing nations, investing more than \$6 billion in Bank-managed resources and mobilizing more than \$10 billion from other public and private sources.

"We are convinced more than ever that the transition to a cleaner energy future will be won project by project, village by village, and nation by nation ... it will require a marketplace of partnerships—public and private, national and local, corporations and civil society—that is organized around a few key principles," said Woicke. The principles outlined were:

- A transition from donor-driven subsidy schemes to market-based solutions;
- The development of policies and regulations that promote renewable energies and energy efficiency;
- Openness toward the adoption of new technologies, new partners, and new business models;
- Elimination of market distortions that keep nations tied to inefficient, financially unsustainable, or environmentally damaging energy regimes; and,
- The growth of carbon markets in order to mitigate climate change, accelerate the evolution toward shadow-pricing, and speed the clean energy transformation.

For more information, including a new brochure on the role of the WBG in renewable energy and energy efficiency, visit the website: www.worldbank.org/energy or contact Corrie Shanahan: 202-473-2258, cshanahan@ifc.org.

PROFESSIONAL ORGANIZATIONS

Sustainability Workshops at 2004 AIChE Annual Meeting

How green is green? What are the commonly used tools to measure the sustainability of a process or product? A series of four 3-hour workshops will introduce the concepts of sustainability, metrics and measurement tools, and their application. Each workshop is a stand-alone workshop, but participants are encouraged to attend all four. The workshops are offered in conjunction with the Sustainability Topical at the 2004 AIChE Annual Meeting in Austin, TX, from November 7 to 12, 2004.

Workshop 1: The Science Behind Sustainability will present the scientific basis for sustainability from first principles. Sunday, November 7, 9 am to 12 noon. Presented by Earl Beaver.

Workshop 2: The Business Case for Sustainability will discuss why sustainability makes good business sense. Presented in cooperation with The Center for Sustainable Technology Practices. Sunday, November 7, 1 pm to 4 pm.

Workshop 3: Applications of Sustainability in Industry will discuss how sustainability is measured and various metrics tools. Presented in cooperation with Sylvatica and the Center for Sustainable Technology Practices. Thursday, November 11, 9 am to 12 noon.

Workshop 4: Individual Activism will show what you as an individual can do to implement sustainability in your business practices and daily lives. Thursday, November 12, 1 pm to 4 pm.

Contact darls@aiiche.org or watch www.aiiche.org/conferences/annual/index.htm for meeting information.

Sustainability and Green Engineering: Coming of Age

Sustainability and in many cases the license to operate for business is defined by its Health, Safety, and Environmental (HSE) Commitment and Policy. Additionally, sustainability is the action of business in response to HSE issues that affect employees, contractors, stakeholders, and the surrounding community. By having a management system (MS) in place, these HSE issues are evaluated and worked on a sustainable basis. In other words, present day operations of business enhance future performance due to having a MS in place to manage risk. Business sustainability is a key concern in today's changing economic climate. It has both domestic and global considerations. What is the framework to put and keep business in a sustainable competitive position? Records are evidence of business performance. What is the value of having a management system in place?

These questions and others will be addressed by a topical conference sponsored by the Institute for Sustainability at the 2005 Spring National Meeting of AIChE in Atlanta, Georgia. The topical will provide a forum for discussion on issues of the management system, standards to use as a basis for evaluating Health, Safety, and Environmental performance, metrics to evaluate sustainability, risk assessment options to evaluate sustainable performance, the compliance assurance process, management of contractor HSE, and management review of HSE performance. The topical will be held April 11 to 15, 2005. If you are interested in presenting a paper or learning more about the topical, please contact Rebecca C. Pehler at rpehler@kingwoodcable.net.

ASCE to Publish Report on "Sustainable Engineering Practice: An Introduction"

"Sustainable Engineering Practice: An Introduction" provides a broad, fundamental understanding of sustainability principles and their application to engineering work. It is intended to fill a need as a "primer" on sustainability that can be introduced early in an engineer's career. It brings together all the basic dimensions of the history, concepts, and applications of sustainable engineering, and through a variety of examples and references inspires and encourages engineers to pursue and integrate sustainable engineering into their work on a life-long basis.

The report contains:

- A background summary of the role and accomplishments of engineers in sustainable development. The complete report, "Engineers and Sustainable Development," is contained on the accompanying CD ROM.
- A summary of the major commitments made and implementation activities agreed upon at the World Summit on Sustainable Development, held in Johannesburg, South Africa, in September 2002, and the initial steps taken by the U.S. engineering community and its global partners.
- A wide spectrum of examples, which describe how sustainability principles can and are being integrated and applied in engineering education, research, and practice.
- Sustainability definitions, policy statements, and principles, providing a broad sense of the visionary and ethical goals and strategies of sustainable engineering practice.
- References, resources, and tools containing a wealth of additional information that can be used to pursue the basic materials in the Report in greater depth and detail.

Both young and veteran engineering professionals and engineering students will benefit from this primer on sustainable development and its concepts and applications. The American Society of Civil Engineers (ASCE) will publish the report in late September 2004. For more information, send an e-mail to marketing@asce.org.

ASCE 2004 Conference Includes Sustainability Sessions

Two sessions on sustainability have been scheduled during the 2004 Civil Engineering Conference & Exposition in Baltimore, Maryland, October 20-23. The sessions are sponsored by the American Society of Civil Engineers (ASCE) Committee on Sustainability.

The first session, entitled "Innovation in Sustainable Engineering," is scheduled from 8:00 to 9:30 am on Saturday, October 23. Albert A. Grant is the session moderator. Hal Kassoﬀ, Parsons Brinkerhoff, will speak on "Sustainable Highways - Oxymoron or Opportunity?" Stuart J. Appelbaum, U.S. Army Corps of Engineers, will present a "Case Study on the Florida Everglades Project," and Bobbie Lippiatt, National Institute of Standards and Technology, will describe "Building for Environmental and Economic Sustainability (BEES 3.0)."

The second session, "International Sustainability," is scheduled from 2:00 to 3:30 pm on Saturday, October 23. Lt. General Henry J. Hatch, U.S. Army (ret.) is the session moderator. George Bugliarello, Polytechnic University, Brooklyn, N.Y., will speak on "Megacities and the Challenge of their Sustainability with Rapid Growth Amidst Poverty and Unsustainable Past Decisions." Bernard Amadei, University of Colorado, will discuss "Hands-On Voluntary Engineering in the Developing World - Engineers Without Borders."

For more information on the Conference, visit <https://www.asce.org/conferences/annual04/>.

ASCE Holds Technical Summit on Restoring Coastal Louisiana

At the May 28, 2004 meeting of the Engineers Forum on Sustainability, John Durrant, Managing Director, Engineering Programs, American Society of Civil Engineers (ASCE), described the process of organizing and holding a technical summit on Restoring Coastal Louisiana. The summit was held in New Orleans, October 16-17, 2003.

The ASCE Policy on Louisiana Coastal Wetlands states: "The American Society of Civil Engineers (ASCE) supports the efforts to reduce coastal land loss in the Louisiana coastal area, an area that has been named America's Wetland because of its national importance. ASCE urges continued support of the existing program for Louisiana coastal wetlands, funded by the Coastal Wetlands Planning, Prevention, and Protection Act (CWPPPA). ASCE also supports the ongoing effort to implement the comprehensive Louisiana Coastal Area (LCA) Program, which will further reduce land loss and provide additional preservation and restoration."

A distinguished multidisciplinary professional committee with expertise in coastal land loss issues was formed to plan, organize, and implement the summit. The theme areas identified and addressed at the summit were 1) Adaptive Management, 2) Sustainability, and 3) Engineering and Science. Case studies were presented on the CALFED (San Francisco) Bay Area, the Florida Everglades, the Chesapeake Bay, and Venice and the Netherlands. The political, social, environmental, economic, and cultural/ethical dimensions of sustainability were identified and discussed. Fourteen recommendations were developed to deal with the issues and challenges.

"Reengineering The Mississippi" in the July 2004 issue of *CIVIL ENGINEERING MAGAZINE* covers the summit and is available at www.pubs.asce.org/ceonline/ceonline04/0704feat.html. The Summit report is available at www.ewrinstitute.org/pdf/report27Jan042.pdf.

ASME Update on Sustainability

For the past year, the American Society of Mechanical Engineers (ASME), lead by its Technology & Society (T&S) Division, has continued its efforts in promoting sustainable development to its members and in extending collaboration internally and with AIChE's Institute for Sustainability (IfS). As part of its Professional Practice Curriculum, an introductory online module on sustainable development is currently available for engineering students and early career members, and a second module on engineering tools for

sustainability is underway. A Sustainable Engineering Community has been created within ASME's Communities of Practice (CoP), an online interaction tool designed with engineer's needs in mind that links to helpful resources, industry news and, more importantly, solutions and ideas from peers. Session participation jointly with EPA is expected at National Manufacturing Week Technical Conference 2005 next March.

Earl Beaver, IfS, will speak at the T&S dinner reception being held at IMECE 2004 (International Mechanical Engineering Congress and RD&D Expo), November 13-19 in Anaheim. He will also participate, along with three other ASME members, as panel speaker during the Sustainable Engineering session. Cooperation with AIChE's IfS has included participation during the Sustainable Engineering Forum and further collaboration is expected in focus group meetings and involving student chapters on the Youth Council on Sustainability. Among the new activities: work has started in revising ASME's 1994 general position statement entitled "Designing for the Environment," an on-line book review led by the author is being scheduled, and planning for a sustainable development industry track for IMECE 2005 is underway. If you are interested in more information on these activities please visit T&S Division's Sustainable Engineering Program Committee web page or contact committee chair Timo Marquez marquez@asme.org.

For reference links and updates to the above activities visit:

SE Program Committee: www.asme.org/divisions/ts/committees/progse.html (being updated)

Online Modules: www.professionalpractice.asme.org/

CoP: <https://cop.asme.org/COP>

IMECE 2004 Program: www.asmeconferences.org/congress04/

Position Statement: www.asme.org/gric/Policies&Issues/SustainableDevelopment/DFE.html

RNRF Congress to Address Building Capacity for Coastal Solutions

The Renewable Natural Resources Foundation (RNRF) will convene a "Congress on Building Capacity for Coastal Solutions" at the American Geophysical Union headquarters in Washington, D.C., December 6-7, 2004.

As reported by both the Pew Oceans Commission and the U.S. Commission on Ocean Policy, the nation's oceans and coasts are in need of serious attention. While the effects of many resource problems are most dramatic along the coasts, the causes can develop far inland. Building capacity to address these issues at all levels—from local communities (both coastal and inland) to federal agencies—is critical to finding and implementing solutions.

To address these issues and develop credible solutions, the Congress will focus on:

- Understanding and reconciling the complexities of coastal governance and communication among federal, state, and local entities;
- Expanding and improving scientific capacity and the utilization of information technologies to sustain coastal resources; and
- Identifying opportunities and necessary tools to empower communities (including those far inland) to engage in discussions and actions for coastal solutions.

Distinguished lead speakers include Christophe Tulou, President, Center for SeaChange and former Executive Director, Pew Oceans Commission (Findings from the Pew and U.S. Oceans Commissions); Timothy Hensey, Professor, Department of Political Science, University of Rhode Island (The Complexities of Coastal Governance); Margaret Davidson, Director, NOAA Coastal Services Center (Building Networks for Solutions: Information Technology and Science); and Michael Orbach, Director, Duke University Marine Laboratory (Mobilizing and Empowering Communities). A case study on the Gulf of Maine will be integrated into the Congress program.

For more information, contact Ryan Colker at RNRF, 301-493-9101, or rmcolker@rnrf.org.

OTHER ORGANIZATIONS AND DEVELOPMENTS

Green Blue Institute Promotes Cradle-To-Cradle Design Principles

The Green Blue Institute (GreenBlue) is a 501(c)(3) organization co-founded by William McDonough and Michael Braungart in 2003 to encourage and accelerate the creative, proactive design of industrial activity to benefit people and the planet.

The First Industrial Revolution produced enormous benefits for society, but left a troubling legacy of unintended negative consequences. Its "cradle-to-grave" model of production, which conceives industrial activity as a pattern of "take-make-waste," has resulted in the indiscriminate production of vast quantities of waste, the wholesale depletion of natural resources, and widespread exposure of people and ecosystems to inherently toxic materials.

GreenBlue proactively supports design and implementation of the "Next Industrial Revolution"—a new industrial paradigm that supports healthy and profitable commercial activity. It facilitates adoption of "cradle-to-cradle" design principles, inspiring organizations to achieve the safety, effectiveness, and elegance of natural systems by using current solar income, eliminating the concept of waste, and exposing people and ecosystems to healthy materials throughout a product's lifecycle. GreenBlue thinks in terms of materials as nutrients, whether biological or technical, flowing in corresponding biological and technical metabolisms. This mental model encourages engineers and other designers to move away from goals such as fewer emissions, less toxicity, and end of pipe technologies, to designing closed loop systems, with maximum value recovery of both energy

and nutrient value. The cradle-to-cradle model results in different design challenges that often bring surprising and innovative results.

GreenBlue acts as a platform for delivery of resources and tools that enable intelligent, responsible application of cradle-to-cradle design principles. GreenBlue:

- Researches and develops resources and tools to support effective design.
- Provides access to those tools for relevant constituencies, directly enabling effective design decision-making.
- Encourages communities of innovative design practice through competitions, case studies, working groups, university partnerships, and other collaborations.

As a new organization, GreenBlue is in the early stages of organizational development. It is focused on two key activities in 2004—Strategic Development and Pilot Projects. Active pilot projects include a Sustainable Packaging Coalition to realize opportunities for healthy, economical material flows in the packaging industry; and Sustainable Textile Metrics (STMetrics) that address the design and manufacture of textiles for continuous healthy circulation in either natural biodegradation or technical recycling loops.

For more information, contact Lauren Heine, Director of Applied Science, at 434-817-1424 or lauren.heine@greenblue.org.

Ocean Use Sustainability Addressed

At the May 28, 2004 meeting of the Engineers Forum on Sustainability, Christophe Tolou, President, Center for SeaChange, pointed out that much public attention has been focused recently on the April 2004 release of the U.S. Commission on Ocean Policy preliminary report, describing the severity of the declining health of our oceans and coastlines and recommending substantial ocean policy reform. The U.S. Commission report confirmed similar findings and recommendations published in a 2003 report by the independent Pew Oceans Commission, which described an ocean in deep trouble and warned "Protecting the oceans relates to our health. It relates to our climate. It relates to our very livelihood." Tolou added that now that we have strikingly similar findings and recommendations from two separate commissions, the natural question that arises is who will see to it that the recommendations of these two commissions are implemented and the health of our oceans and coastlines are improved for future generations.

The Center for SeaChange, an independent, non-profit, non-partisan organization, was created specifically to help fill this role. Its focus is on getting the nation its first ocean policy, based on the recommendations of the two commissions. SeaChange provides a forum for members of both commissions to pool their expertise in realizing the vision of a new ocean protection ethic in this country.

SeaChange will pursue its goal of enacting a national ocean policy by taking the following steps:

- Urging members of Congress to support a national ocean policy act by educating them on the wide range of impacts that oceans have on local, state, and national economic, environmental, and social health.
- Working with local and state officials to advance regional and national ocean and coastal protection initiatives.
- Engaging the media in traditional and innovative ways to reach new constituencies and decision makers.
- Educating and activating groups not traditionally involved in ocean policy advocacy, including the recreation and tourism industry, commercial fishermen, the boating community, and public health interests.

For more information on the Center for SeaChange, visit www.SeaChangeCenter.org.

Earth Charter USA Activities Updated

The Earth Charter represents an ethical vision of development which embraces four central principles: 1) Respect and Care for the Community of Life; 2) Ecological Integrity; 3) Social and Economic Justice; and 4) Nonviolence and Peace. Over the past year, Earth Charter USA has responded to over 900 requests for materials for conferences, workshops, study groups, and courses. Over 65,000 brochures have been ordered by advocates across North America.

Some highlights of the last year include:

- The Earth Charter Community Summits were held on October 11, 2003 in 33 cities.
- The World Resources Institute is developing Earth Charter Indicators to measure community progress.
- Hundreds of Earth Day Initiatives featuring the Earth Charter were conducted by groups across the country.
- Many religious institutions are studying and utilizing the Earth Charter.

The Office for Earth Charter USA Community Initiatives has grown out of the grassroots network of the Earth Charter Community Alliance (ECCA), which coordinates a range of activities, including Community Summits, Earth Scouts, ECCA Community Indicators, and the Earth Charter Television Series. The annual summits serve as a catalyst for local Earth Charter activities.

For more information, contact Sandra Hannen, Director of Resources and Information, at 202-778-6133, or visit www.earthcharterusa.org.

Upcoming Sustainability Events

Call For Papers:

Engineering Sustainability 2005: Next Generation Technology in Green Construction and Sustainable Water Use, April 10-12, 2005, David L. Lawrence Convention Center, Pittsburgh, PA. Sponsored by The Mascaro Sustainability Institute, University of Pittsburgh. For more information go to: www.engr.pitt.edu/msi/conference.html.

Sustainability and Green Engineering: Coming of Age. April 11-14, 2005, AIChE Spring National Meeting, Atlanta, GA. Contact Rebecca C. Pehler, rcpehler@kingwoodcable.net. For more information, watch: www.aiche.org/conferences/spring/index.htm.

Taking Measure of Green Progress: Opportunities to Meet Global Challenges. June 20-24, 2005, in Washington, DC. 2nd International Conference on Green and Sustainable Chemistry and the 9th Annual Green Chemistry and Engineering Conference. For conference information go to: <http://chemistry.org/meetings/greenchem2005.html>.

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