

AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE)  
 AMERICAN SOCIETY FOR ENGINEERING EDUCATION (ASEE)  
 AMERICAN INSTITUTE OF CHEMICAL ENGINEERS (AIChE)  
 INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

DECEMBER 2005

## ENGINEERS FORUM ON SUSTAINABILITY

### IEEE Joins Forum as Co-Sponsor

With this issue of the Forum Newsletter, we are very pleased to announce that the Institute of Electrical and Electronics Engineers (IEEE) has become a co-sponsor of the Engineers Forum on Sustainability. IEEE has been increasingly involved in activities directly related to environmental issues, as described in the article "IEEE Addresses Sustainability" in this newsletter. IEEE's participation will expand and enhance the interdisciplinary scope and outreach of the Forum.

This issue of the Forum Newsletter summarizes the presentations at the September 15, 2005 Forum meeting. Also included are a number of articles touching on sustainability developments and issues in Government, International, Academia, Professional Organizations, and Other Organizations; such as smart growth, capacity building, the solar decathlon, sustainable infrastructure, and alternative energy sources.

The next meeting of the Forum is scheduled for Friday, January 20, 2006, in the Lecture Room of the National Academy of Engineering in Washington, D.C. The Forum will meet from 9:00 a.m. to noon, and the AAES International Activities Committee will meet in the same room from 1:00 p.m. to 4:00 p.m. Detailed agendas will be mailed out prior to the meetings.

We hope you will be able to join us at the Academy on January 20th. In the meantime, HAPPY HOLIDAYS!

Al Grant, Forum Chair

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## GOVERNMENT

### Nuclear Hydrogen as Future Energy Technology

The Office of Advanced Nuclear Research within the Office of Nuclear Energy, Science and Technology at the Department of Energy (DOE) is working with the DOE Hydrogen Initiative to bring about a revolution in the transportation fuel production and delivery industry in America. The DOE Hydrogen Initiative supports the President's vision, as stated in his 2003 State of the Union Address, that "...the first car driven by a child born today could be powered by hydrogen, and pollution free." The Office of Advanced Nuclear Research is supporting this goal, with a specific target of moving to a hydrogen economy by 2030-2040, through three major initiatives.

The Nuclear Hydrogen Initiative (NHI) has been established to develop the production technologies that can be most effectively coupled to next generation nuclear reactors for hydrogen production. Efficient processes, which can utilize the high-energy output of a nuclear reactor, include thermochemical splitting of water and high-temperature electrolysis. The program participants similarly include national laboratories, industry, universities, and international participants.

The Generation IV Nuclear Energy Systems Initiative (Generation IV) supports the development of future, next-generation nuclear technologies that can compete economically in domestic and international markets while further enhancing nuclear safety, minimizing the generation of nuclear waste, and further reducing the risk of proliferation. The Generation IV program focuses the resources of university, laboratory, and industry technologists on these issues, and encourages international cooperation in the development of innovative, advanced nuclear energy technologies.

The Advanced Fuel Cycle Initiative (AFCI) is working to provide advanced fuel cycle technologies ready to be deployed with light water- and gas-cooled reactors that have the ability to achieve a significant reduction in the amount of high-level spent fuel requiring geologic disposal, to reduce significantly the amount of accumulated plutonium in civilian spent fuel, and to extract more useful energy from spent nuclear fuel components.

Together, these programs are working to demonstrate a commercial-scale production source of hydrogen that is not dependent on fossil fuels and minimizes greenhouse gas emissions.

For additional information, contact Carl Sink at [carl.sink@nuclear.energy.gov](mailto:carl.sink@nuclear.energy.gov).

### Briefing Held on Combined Heat and Power Infrastructure Act

The Energy and Environment Study Institute, together with the Northeast-Midwest Senate Coalition and the Northeast-Midwest Institute, held a briefing on Capitol Hill on October 3, 2005 to discuss a proposed Combined Heat and Power Infrastructure Act. The Act, as described by the President of the International District Energy Association (IDEA), would reduce costs for operating U.S. colleges and universities, airports and hospitals while enhancing energy security, increasing power grid reliability and reducing air pollution and greenhouse gas emissions. The act would facilitate implementation of Combined Heat and Power (CHP) through technical assistance and a revolving loan fund to provide financing for construction of public sector CHP facilities.

District energy systems, which are already used in many leading universities and colleges, are considered a key opportunity for expanding implementation of CHP because these piping systems provide needed infrastructure for delivering,

controlling and using thermal energy from CHP to a substantial base of end users, including universities, airports and health centers. District energy systems distribute steam, hot water, and/or chilled water from a central plant to multiple buildings through a network of underground pipes to provide space heating, air conditioning, water heating and other services.

In a study undertaken for the Department of Energy, 160 colleges and universities responded to a survey of CHP potential and barriers to implementation. The study found that there is a significant and untapped potential for CHP on campuses, but that this potential is seriously constrained by lack of access to capital.

In response to the findings of the DOE study, the Combined Heat and Power Infrastructure Act, if adopted, would authorize a program to facilitate implementation of CHP by providing technical assistance to evaluate, design and develop CHP systems, and by establishing a Combined Heat and Power Revolving Fund that would provide financing for constructing CHP and related facilities in colleges, universities, municipalities, and other public sector or non-profit entities, with a view to reducing energy operating costs, increasing energy security, boosting power supplies, and reducing peak power demand. Funds loaned from the CHP Revolving Fund would be repaid to the Treasury to provide funding assistance to other institutions. The proposed legislation would authorize funding levels beginning at \$100 million in FY2007 and rising to \$200 million in FY2009.

Contact: Robert Thornton, President,  
International District Energy Association  
(Tel: 508-366-9339; website:  
[www.districtenergy.org](http://www.districtenergy.org))

EPA Provides Smart Growth Policy  
Checklist

The US Environmental Policy Administration (EPA) Smart Growth Policies can be summarized as follows:

**COMMUNITY AND STAKEHOLDER COLLABORATION IN DEVELOPMENT DECISIONS** - Ensuring a high level of public involvement is fundamental to guaranteeing that community needs are fully integrated into the planning process, as well as contributing to avoidance or creative resolution of development conflicts.

**COMPACT BUILDING DESIGN** - Compact building design reduces the footprint of new construction, thus preserving greenspace to absorb and filter rain water, reduce flooding and stormwater drainage needs, and lower the amount of pollution washing into our streams, rivers and lakes. Compact building design is necessary to sustain transit rider ship at levels necessary to make public transit a viable transportation option.

**DIRECT DEVELOPMENT TOWARD EXISTING COMMUNITIES** - Directing development toward existing communities strengthens the tax base, ensures a closer proximity of a range of jobs and services, increases the efficiency of already developed land and infrastructure, and reduces development pressure in edge areas, thereby preserving more open space, and, in some cases, strengthening rural communities.

**DISTINCTIVE AND ATTRACTIVE PLACES** - Such places set standards for development and construction that respond to community values of architectural beauty and distinctiveness, and retain their economic vitality and value over time.

**MIX LAND USE** - Mixing land uses helps streets, public spaces and pedestrian-oriented retail businesses to again become places where people meet, attracting pedestrians and helping to revitalize community life.

**PREDICTABLE AND COST EFFECTIVE DEVELOPMENT DECISIONS** - Removing

barriers in the regulatory process that inhibit the construction of pedestrian-oriented, compact, mixed-use development, and making public investment and infrastructure decisions that support such development activity.

**PRESERVE OPEN SPACE AND FARMLAND** - Protection of open space provides fiscal benefits, prevents flood damage, and offers a less expensive and natural alternative for providing clean drinking water, combating air pollution, attenuating noise, controlling wind, providing erosion control, and moderating temperatures.

**RANGE OF HOUSING CHOICES** - Expanded housing choice allows communities to mitigate the environmental costs of auto-dependent development, use their natural resources more efficiently, ensure a better jobs-housing balance, and

generate a strong foundation of support for neighborhood transit stops, commercial centers, and other services.

**VARIETY OF TRANSPORTATION CHOICES** - Effective provision of choices requires adopting development practices - mixed land use, compact building design, etc. - that support multiple travel choices, or modes, which enable regions and communities to move toward a less congested transportation system and cleaner air.

**WALKABLE NEIGHBORHOODS** - Walkable neighborhoods allow persons to substitute walking, bicycling or other non-auto modes for short trips, contributing to reduced congestion and better air quality.

For more information, visit [www.epa.gov](http://www.epa.gov) and click on "Smart Growth."

## INTERNATIONAL

### Support Grows For Millennium Development Goals

In his speech to the United Nations High Level Plenary Meeting in September 2005, President Bush stated, "We are committed to the Millennium Development Goals." The Goals, to be achieved by 2015, can be summarized as follows:

Halve Extreme Poverty and Hunger (1.2 billion people still live on less than \$1 a day. But 43 countries, with more than 60% of the world's people, have already met or are on track to meet the goal of cutting hunger in half by 2015).

Achieve Universal Primary Education (113 million children do not attend school, but this goal is within reach; India, for example, should have 95 per cent of its children in school by 2005)

Empower Women and Promote Equality Between Women and Men (Two-thirds of the world's illiterates, and 80% of its

refugees are women and children. Since the 1997 Microcredit Summit, progress has been made in reaching and empowering poor women, nearly 10 million in 2000 alone).

Reduce Under-Five Mortality by Two-Thirds (11 million young children die every year, but that number is down from 15 million in 1980).

Reduce Maternal Mortality by Three Quarters (In the developing world, the risk of dying in childbirth is one in 48. But virtually all countries now have safe motherhood programs and are poised for progress).

Reverse the Spread of Diseases, Especially HIV/AIDS and Malaria (Killer diseases have erased a generation of development gains. Countries like Brazil, Senegal, Thailand and Uganda have shown that HIV can be stopped in its tracks).

Ensure Environmental Sustainability (More than one billion people still lack access to

safe drinking water. However, during the 1990s, nearly one billion gained access to safe water, and as many to sanitation).

Create a Global Partnership for Development, With Targets for Aid, Trade and Debt Relief (Too many developing countries are spending more on debt service than on social services).

#### AAES Coordinates Capacity Building Through Engineering

The American Association of Engineering Societies (AAES) and its member societies are working to provide engineering services in the third world in the following forms: professional volunteers, institutional support, establishment of standards, and providing academic resources. This work is part of a greater cooperative effort: - Engineering for a Better World. The US Department of State, World Federation of Engineering Organizations (WFEO), and AAES are collaborating on this program with the United Nations Education, Scientific and Cultural Organization (UNESCO). Engineering for a Better World was created in response to the US rejoining UNESCO, and a challenge from the United Nations to have science and technology play a greater role in development.

Under the auspices of the WFEO, AAES chairs the Committee on Capacity Building. Capacity building has been defined as "...the building of human, institutional, and infrastructure capacity to help societies develop secure, stable and sustainable economies, governments and other institutions through mentoring, training, education, physical projects, the infusion of financial and other resources, and most

importantly, the motivation and inspiration of people to improve their lives."

With this role comes a wide range of responsibilities, one of which is to mobilize cooperation amongst engineering societies around the world. In collaboration with Volunteers for Prosperity and USAID, AAES is working towards a partnership that will make available volunteer engineers from firms, government agencies, and academia, to be sent around the world to assist with capacity building. AAES, through its member societies, has access to hundreds of thousands of engineers across the United States (and millions around the world). These engineers come from many disciplines and can provide practical support, advisory services, training and education.

Opportunities for engineer involvement exist for Agricultural Engineers (Food Production, Food Processing, Farming Technology, Soil Maintenance); Civil Engineers (Infrastructure Development, Urban Planning, Water Supply, Homes, Sanitation, Roads, Bridges, Buildings, Public Works Agencies, Structures, Watershed Management, Land Planning); Electrical/Computer Engineers (Energy, Communication, Computer Technologies, Information Technology Capacity, Electrical Systems); Environmental Engineers (Pollution Controls, Regulation of Environment, Safe Energy Consumption); Industrial Engineers (Infrastructure Support, Logistics Planning, Improving Productivity); Mechanical Engineers (Energy, Machinery, Water Pumping Stations); and Medical/Bio Engineers (Discovering Potential Threats, Testing Environment for Disease).

For more information, visit [www.aes.org](http://www.aes.org)

## ACADEMIA

### Youth Activities in Sustainability Organized

The Institute for Sustainability (IfS) of the American Institute of Chemical Engineers (AIChE) has partnered with SustainUS, a youth network for sustainable development, to form a national council of youth on sustainable science called the Youth Council on Sustainable Science and Technology (YCOSST). YCCOST's mission is to create an understanding about sustainability issues and to raise awareness of the science and technology behind sustainable choices through grass roots efforts on college and university campuses. The Council plans to provide students with tools and possible topics on which to conduct research about the science and technology of sustainable development along with guidelines for conducting such projects.

“The concept of sustainability is gaining support as people realize the unsustainability of our current development practices,” said Matt Stern, National Youth Coordinator for YCOSST. “The urgency of sustainability issues appeals to young people since they will live with the consequences.” For more information about the Council, contact Matthew Stern, National Youth Coordinator through e-mail at [matt.stern@gmail.com](mailto:matt.stern@gmail.com).

Higher education is often the venue for budding leaders, and yet a lack of understanding of sustainability concepts exists on many campuses despite efforts to adopt greener university infrastructures and increase environmental education. YCOSST will strive to enhance the capacity of emerging students to better provide the technical and interdisciplinary needs of a sustainable society while addressing the lack of sustainability awareness among college students.

The Council plans to do this by providing resources to fill existing gaps in sustainable science and technology curriculum in the colleges and universities. YCOSST will also utilize its innovative organizational structure and national network to disseminate

resources and establish interdisciplinary connections between students, faculty, and administrators. The Council plans on providing campus organizations with research handbooks, access to a national network, educational opportunities like speaker series, and a clearinghouse website.

YCOSST chapter membership only requires the commitment of one student and one faculty representative per campus. Students are encouraged to establish YCOSST member groups when needed, but not required when sufficient member and organizational infrastructures already exist on campus that serve sustainable science and technology.

Individual and group membership is crucial to this grassroots effort that hopes to influence university-level curriculum and ultimately lead to the incorporation of sustainability concepts in *all* research. Through combined efforts, students, faculty, and administrators can work together to foster college graduates that understand the concepts of sustainability, embrace them, and bring them to all future endeavors.

AIChE has formed the Institute for Sustainability (IfS) to promote the societal, economic and environmental benefits of sustainable and green engineering. IfS serves the needs and influences the efforts of--engineers and scientists in industry, academia, and government. For more information, visit [www.aiche.org/sustainability](http://www.aiche.org/sustainability) .

SustainUS is a nonprofit, nonpartisan organization of young people advancing sustainable development and youth empowerment in the United States. Through proactive education and advocacy at the policy-making and grassroots levels, SustainUS is building a future in which all people recognize the inherent equality and interdependence of social, economic, and environmental sustainability. For more information, visit [www.sustainus.org](http://www.sustainus.org) .



### Solar Decathlon Winners Announced

The University of Colorado, Denver and Boulder, successfully defended their championship and took first place overall in Solar Decathlon 2005. Cornell University was the second place team, and California Polytechnic State University finished third.

The Solar Decathlon is a competition sponsored by the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy, in partnership with its National Renewable Energy Laboratory, the American Institute of Architects, the National Association of Homebuilders, BP, the DIY Network, and Sprint.

The Solar Decathlon brought together 18 teams of college and university students from around the globe to participate in an unparallel solar competition to design, build, and operate the most attractive and energy-efficient solar-powered home. The teams transported their solar houses to the National Mall in Washington, D.C., where they formed a solar village. The village and solar houses were open to the public from October 7 to 16.

Using only energy from the sun, the teams were required to generate enough electricity

to run a modern household. Ten contests measured competitor success across a broad spectrum of activities that are key to creating an appealing, comfortable home that generates enough energy for everyday needs. The measurements included 1) Architecture (Integrating solar and energy efficiency technologies into home design), 2) Dwelling (Meeting the livability needs of today's families), 3) Documentation (Documentation of the energy performance analysis and design process), 4) Clear and consistent messages and images of the team visions and results, 5) Comfort Zone (Interior comfort by controlling temperature and humidity), 6) Appliances (maintaining acceptable temperatures for appliances), 7) Hot Water (Demonstrating that solar hot water systems can supply daily needs), 8) Lighting (Maintaining lighting levels within an optimum range), 9) Energy Balance (Producing as much or more electrical energy than required for the house), and 10) Getting Around (Using electricity generated by solar energy systems to "fuel" street-legal, commercially available electric vehicles.

Planning for the next Solar Decathlon, which will be held in 2007, has already begun. For more information, visit [www.eere.energy.gov/solar\\_decathlon/](http://www.eere.energy.gov/solar_decathlon/)

## **PROFESSIONAL ORGANIZATIONS**

### IEEE Addresses Sustainability

Like its counterparts - ASME, ASCE, and AIChE - members of the IEEE are keenly interested in the impact of engineering on society. This was evident in a survey of IEEE members, reported in the February, 2005 edition of the Forum Newsletter. IEEE members expressed strong support for

IEEE's involvement in sustainability and sustainable development issues so long as it is grounded in science. Pinpointing how IEEE's technical activities intersect with sustainability issues is not easy given the large scope of IEEE's technical interest areas. IEEE's membership of 365,000 members includes electrical and computer engineers whose technical interests thirty-

nine societies and three technical councils serve. It serves several major industrial sectors, including computing, aerospace, transportation, manufacturing, semiconductors, communications, power and energy, and biotechnology. There are more than one hundred disciplines related to these major sectors. IEEE has 38 Technical Societies and 4 Councils that organize their own conferences and publications that involve stakeholders from industry as well as the research community. One of these, the Society of Social Implications of Technology, focuses on the social, environmental, and economic impact of technology from both a historical and contemporary perspective.

Although the technical scope of many IEEE organizations tends to be specialized, some work on larger systems that bring the issue of sustainability into focus. The IEEE Computer Society, the largest of IEEE's Technical Societies, co-sponsors the International Summit on Electronics and the Environment (ISEE) -- an annual conference that is concerned with the disposal and reuse of materials in the semiconductors industry. The IEEE Power Engineering Society sponsors conferences on energy that include "green" themes, including its annual Power Meeting and specialized conferences, including Hydrogen Economy (2004), Electronic Ships (2005), and Wind Power (2006).

IEEE's technical publications, searchable on its vast database, IEEE Xplore, yields numerous publications on topics related to sustainability in areas such as manufacturing, controls, energy, remote sensing, product safety, security, communications, IT and computing in the context of both developed and developing world economies.

There is a growing trend for the IEEE to become more visible in technical activities that have a direct relationship to environmental issues, particularly global warming. The September issue of the IEEE Institute's magazine ran a feature story, "Taking the Pulse of the Earth" concerning

IEEE's role in support of an ambitious 60-nation enterprise to create a worldwide Earth-monitoring known as the Global Earth Observation System of Systems (GEOSS). This involves the use of technology to gather and analyze data to monitor the land, oceans, and atmosphere. The IEEE Committee on Earth Observation (CEO) was formally recognized as an ad hoc committee of the IEEE Technical Activities Board in February 2004. The IEEE societies involved with the committee include Aerospace and Electronic Systems, Communications, Computer, Geosciences and Remote Sensing, Oceanic Engineering, and Social Implications of Technology. For more information, visit [www.ieee.org](http://www.ieee.org)

#### Sustainable Metrics in Industry Discussed

Calvin Cobb, Chair of the Institute for Sustainability (IfS), described use of sustainability metrics in the chemical industry at the September meeting of the Engineers Forum on Sustainability.

An industry group, the IfS Center for Sustainable Technology Practices (CSTP), is currently working on the development of case studies which illustrate the use of metrics tools to assess the sustainability of various processes and products. Industry participants include BASF (Charlene Wall of BASF serves as chair of CSTP), Air Products, Dow, FMC, Cytec, Shell Chemical, Celanese and Rohm and Haas. The companies use different types of decision support tools in their assessment of sustainability. For example, BASF promotes the use of the Eco-Efficiency tool in making business decisions and Dow uses Total Cost and Benefit Assessment in process design. The group is also developing an evaluation framework to identify the applicability of various decision support tools in stage gate assessment of processes and products.

Cobb also described the applicability of an overall Sustainability Index, which is technically based. Various high level business type metrics have been



promoted in the investment community, yet very little attention has been paid to date to include more technical factors that are indicators of the sustainability of a company. Cobb's group, IfS is in the development stages of a technical Sustainability Index. For more information contact: ccobb@houston.rr.com

#### Infrastructure Community Plans Initiative for Sustainable Infrastructure

On September 8, 2005, at its headquarters in Reston, VA, the American Society of Civil Engineers, (ASCE) hosted a meeting of representatives of fourteen infrastructure organizations and two federal agencies to begin planning an initiative on Practice, Education and Research for Sustainable Infrastructure. For simplicity, it is called PERSI. Dennis Martenson, the President-elect of ASCE, has chosen PERSI as his presidential initiative.

Infrastructure includes constructed facilities that shelter and support human activities: buildings of all types, communications, energy generation and distribution, transportation of all modes, water resources, and waste treatment.

Sustainable development has been defined by ASCE as the challenge of meeting human needs for natural resources, industrial products, energy, food, transportation, shelter, and waste management while conserving and protecting environmental quality and the natural resource base essential for future development. Needs for sustainable infrastructure are highlighted by the cascade of failures of infrastructure systems that led to the catastrophic losses in the flooding of New Orleans caused by Hurricane Katrina.

The vision is: sustainable infrastructure supports a high and sustainable quality of life for all people in a changing world. The mission is: to advance and incorporate concepts and knowledge of sustainability into the standards and practices used

throughout the life cycle of infrastructure systems.

The ultimate objectives for PERSI are to:

1. Provide the practices needed for sustainable renewal of America's infrastructure to respond to marketplace values and meet society's needs.
2. Embed sustainability provisions in the practices regularly used for planning, design, construction, commissioning, operation, maintenance, renovation and removal of infrastructure.
3. Assist educational programs in architecture, construction, engineering, planning, and related technologies, in incorporating principles for sustainable infrastructure in their curricula, and strengthen K-12 education to improve public understanding of sustainability and infrastructure, and to attract qualified youth to infrastructure careers.
4. Establish an enduring program of research to provide critically needed knowledge for improvement of practices for sustainable infrastructure.
5. Engage the U.S. infrastructure community in international efforts for sustainability.

The immediate objectives for PERSI are:

1. Establish the PERSI consortium of infrastructure organizations to plan and implement the PERSI program.
2. Develop the business case for PERSI to attract the support of potential partnering and collaborating organizations and agencies.
3. Assess current practices and knowledge and develop an agenda for:
  - a. Implementation of best available practices,
  - b. Development of improved practices to exploit available knowledge,

- c. Research to fill important gaps in knowledge, and

The concept of PERSI began with ASCE's Committee on Sustainability which in 2004 published *Sustainable Engineering Practice: An Introduction*, which provides a broad, fundamental understanding of sustainability principles and their application to engineering work. It may be ordered from ASCE  
[https://www.asce.org/bookstore/book.cfm?b](https://www.asce.org/bookstore/book.cfm?book=4701)

[book=4701](https://www.asce.org/bookstore/book.cfm?book=4701). In February 2005, ASCE held a Forum on Technical Opportunities for Sustainable Infrastructure to focus the attention of all ASCE on the practices needed for sustainable renewal of America's infrastructure. The Forum recommended the establishment of PERSI as an initiative of the infrastructure community. The Forum's report is available at:  
<http://www.asce.org/files/pdf/instfound/june05report.pdf>.

## OTHER ORGANIZATIONS AND DEVELOPMENTS

### EESI Works for Innovative Solutions

At the September 16, 2005 Forum Meeting, Carol Werner, Executive Director of the Environmental and Energy Study Institute (EESI), briefed the participants on the work of the Institute and current legislative developments. EESI is a non-profit organization dedicated to promoting environmentally sustainable societies. It carries out policymaker education in the areas of energy efficiency and renewable energy, global climate change, agriculture, biofuels, smart-growth, and clean bus technologies.

Carol reported that several proposals for a Renewable Fuel Standard (RFS) were introduced in Congress this spring with action being taken on RFS language in both the House and Senate. The enacted Energy Policy Act of 2005 mandates 7.5 billion gallons of renewable fuel to be produced by 2012. Considering that ethanol production in 2004 alone hovered around 3.4 billion gallons, the emerging biodiesel industry and advances in cellulose ethanol should enable this amount to be achieved sooner.

She added that the USDA has released the first of several rulings designating 83 categories of biobased products from which federal agencies will be expected to preferentially procure. Biobased products can reduce the demand for oil, thereby improving energy security and providing

another revenue source for the agriculture sector.

Ms. Werner also noted that there have been a number of significant developments in climate science and policy thus far in 2005. On February 16, the Kyoto Protocol became legally binding on its 128 parties. On June 22, the US Senate passed a "Sense of the Senate on Climate Change" amendment which states "There is a growing scientific consensus that human activity is a substantial cause of greenhouse gas accumulation in the atmosphere, and mandatory steps will be required to slow or stop the growth of greenhouse emissions into the atmosphere." This amendment also urges Congress to enact a program of "mandatory, market-based limits and incentives in a manner that will not significantly harm the U.S. economy."

In another area of concern, Carol reported that Congress passed the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETA-LU) on July 29, 2005, authorizing spending of \$286.5 billion over five years. This includes \$8.5 billion for the Congestion Mitigation and Air Quality (CMAQ) Program. It includes \$51 billion for transit, and \$237.6 million (over five years) for the new Clean Fuels Formula Grant Program, to promote the use of alternative fuels and advanced technologies in buses, and a new Clean School Bus Program. Public health is included as a priority consideration for

CMAQ projects. For further information visit [www.eesi.org](http://www.eesi.org).

### WBCSD Offers Sustainable Development Case Studies

The World Business Council for Sustainable Development (WBCSD) seeks to illustrate how companies work independently, or with different stakeholders, to integrate the challenge of sustainable development into their business activities. The following case study summaries exemplify the current studies available.

Focusing on the Triple Bottom Line: NATURA - Brazil has a rich natural heritage, one-third of the world's remaining tropical forests, and is one of the most biodiverse countries in the world. Natura's Ekos Challenge aims to create a model to allow the sustainable use of natural resources, generating good business opportunity and social development for traditional communities and for Natura and its partners.

Tackling Water Pollution at its Source: WEYERHAEUSER - Weyerhaeuser is tackling water pollution at its source, the very process they use to make pulp and paper. The concentration of pollution in treated mill wastewater across the company's operations has now dropped to non-detectable levels.

### Upcoming Sustainability Events

*Apply for the Presidential Green Chemistry Award.* Nominations are due by December 31. The program is open to all individuals, groups and organizations. For more information, go to <http://www.eap.gov/greenchemistry/presgcc.html>

*Infusing Sustainability: HSE and Business Workflows.* AIChE Spring Meeting, April 23-27, 2006. Orlando Florida, at the Walt Disney World Dolphin Resort. Join leading international experts from industry, academia and regulatory communities to discuss HSE Management Systems and Sustainability; Auditing and How to Make a Resulting Change in Performance; along with the role of Green Engineering, Business cases for Sustainability and the role of university based sustainability programs. For more information go to <http://www.aiche.org>

Eco-Efficiency Gains Ground: UNITED TECHNOLOGIES CORPORATION - UTC is driving continuous improvement in its environment, health and safety performance through targeted programs including "Kaizen" events, community redevelopment, zero discharge wastewater treatment, and down-to-earth targets for space borne water systems.

Searching for Sustainable Solutions to Indoor Air Pollution (IAP): SHELL - IAP kills more than 1.6 million people each year - one every 20 seconds - and some two billion more are at risk. To address this problem, the Shell Foundation has committed \$10 million to tackle IAP through its Household Energy and Health Program, branded as "Breathing Space."

Planning to Manage Water Wisely: ALCAN - Alcan's "One of Our Most Precious Resources" position paper is an example of how a global company can plan for the sustainable management of water in all of its activities.

For more information on these and other case studies, visit [www.wbcd.org](http://www.wbcd.org) and click on "Case Studies"

*10<sup>th</sup> Annual Green Chemistry and Engineering Conference*. Washington, DC. June, 2006. To learn more about the conference and to submit an abstract for an oral or poster presentation, go to <http://www.greenchem2006.org>

The AIChE Sustainable Engineering Forum and the Society of Chemical Engineers, Japan will jointly launch a topical at the 2006 AIChE Annual Meeting (November 12 to 17) in San Francisco on the latest advances in core areas and emerging fields of sustainability related to engineering. This topical consists of 19 sustainability sessions and will present over 250 technical papers on sustainability related to nanotechnology, EHS, Life cycle assessment, metrics, process intensification, Green Chemistry and Engineering, and biorefineries. For more information and to submit an abstract, contact Helen Lou [louhh@HAL.LAMAR.EDU].

For more information on this newsletter  
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For more information on the four societies  
sponsoring this newsletter  
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