

## **Track 4: Sustainability in National Programs**

- I. Impact of Executive Orders on Federal Agencies**
- II. Energy Conservation in Infrastructure**

### **1. Impact of Executive Orders on Federal Agencies:**

*Two presidential executive orders have expanded federal agencies' responsibility for energy efficiency, renewable energy, water conservation, toxics reduction, high-performance buildings, electronics stewardship, sustainable fleet management, and greenhouse gas reductions. This session explored how agencies are using a twofold approach to sustainability: first, through management and policy; and second, by developing innovative technologies.*

#### ***Are We Headed For True Sustainability?***

Don Juhasz, Keynote and Co-Moderator, Director of Energy Resource Management, Department of Defense, Defense Logistics Agency  
America can never achieve sustainability without renewable energy. However, switching to alternative fuels would require a paradigm shift in cost-effective energy production and a significant reduction in energy use. Are we headed in that direction? What will it take to get there? This presentation addressed the vision and principles required to reduce the cost of renewable energy sources for this country and thereby increase environmental sustainability.

#### ***Executive Orders Bring Challenges and Opportunities in NASA Infrastructure***

Jim Wright, Deputy Assistant Administrator, NASA Office of Strategic Infrastructure

NASA's sustainability policy is to execute the agency's mission without compromising our planet's resources so that future generations can meet their needs. Sustainability also requires taking action now to provide a future in which the environment and living conditions are protected and enhanced; in that future, NASA will have the resources it needs to perform its mission. NASA is committed to the intent of Executive Order 13514 and is integrating sustainability principles and methods into existing systems, processes, and decision-making, which will influence both long-term planning and short-term actions. Sustainability will increasingly become part of NASA's culture.

#### ***Department of Energy's Strategic Sustainability Performance Plan Abstract***

Josh Silverman, Office of Environmental Policy and Assistance, U.S. Department of Energy

Sustainability is fundamental to the Department of Energy's research mission. With the issuance of Executive Order 13514, the Department intends to integrate sustainability even more closely into its planning, budgeting, and operations to

reduce greenhouse gas GHG emissions and achieve other major goals. The Department is instituting wholesale cultural change to factor sustainability into all DOE corporate management decisions, while recognizing that its energy-intensive operations limit opportunities for resource conservation. Changing behaviors, maximizing opportunities, and relieving constraints will be critical factors in the Department's successful implementation of the Executive Order.

### ***Executive Orders Bring Opportunity for Suppliers***

Nancy Gillis, Paradigm Research International

President Obama signed an executive order on October 5, 2009, that not only prompted federal agencies to take sustainability-related action but also changes the rules for companies providing products and services to the government. Section 13, for example, asks the General Services Administration determine whether federal suppliers should report greenhouse gas (GHG) emissions and whether the government should use that information in procurements. Although reporting GHG emissions can be complex, especially with standards in flux, it also provides opportunities for industry. Those opportunities, such as identifying supply chain inefficiencies, will drive a need for new technologies.

### ***Inside the DOD, America's Biggest Energy Consumer***

Alan C. Hurt, Bioengineering Group

As the nation's largest employer, the U.S. Department of Defense (DOD) oversees more than 3 million civilian and military personnel. Also America's largest energy consumer, the DOD accounts for nearly 1% of U.S. energy consumption and 80% of the government's energy use. This presentation discusses how that massive institution's sustainability efforts are shaped by executive orders. EO 13514, for example, requires the DOD to reduce facility energy intensity by 30% by 2015, and by 37.5% by 2020. The directive also mandates an 18% reduction in use of transportation fuels by 2020, which will bring a 34% reduction in greenhouse gas emissions by 2020.

## **2. Energy Conservation in Infrastructure:**

*This session examined the technologies and innovation required to minimize energy consumption in infrastructure. Speakers discussed what it takes to qualify as a "smart city" or "smart region" in which urban planners, architects, and engineers identify, develop, incorporate, and implement energy-efficient, cost-effective technologies for delivering water, electricity, natural gas, and other utilities*

**Keynote:*****Energy Conservation and Greenhouse Gas Mitigation at Caltech***

John Onderdonk and Matthew Berbee, Caltech

Caltech is demonstrating that greenhouse gas mitigation coupled with energy conservation is a multiple win, self sustaining strategy. In 2008, a committee of faculty, staff and students developed a climate action plan that will reduce Caltech's greenhouse gas emissions to 1990 levels by the year 2020. The foundation of the plan is an aggressive campaign to improve energy efficiency within existing buildings, maximize environmental performance of new buildings and generate low-cost, clean energy on-site. The presentation described Caltech's custom approach to energy conservation and building retro-commissioning by highlighting initiatives in several campus buildings. For example in the Broad Center (a 125,500 sq. ft. biology laboratory) a 40% reduction in total building energy consumption has been achieved resulting in \$300,000 in annual avoided utility costs. The presentation also covered the unique ways Caltech is financing and monitoring the success of these initiatives. The Caltech Energy Conservation Investment Program (CECIP) combines the power of real-time performance tracking with an ambitious energy-efficiency capital investment program financed by avoided costs. Caltech's Enterprise Energy Management System (CEEMS) combines basic energy usage information with select data from building management systems, fault-detection checks, air-flow-control systems, and weather data to get the right information, to the right people, at the right time, to make the right decision and sustain the return on efficiency.

**Panel****Panelists:**

Chair: J.R. Deshazo, Luskin Center for Innovation at the University of California at Los Angeles

Cochair: Randy Britt, Parsons

Mike Ambrose, East Bay Municipal Utilities District

Mark Gamble, Southern California Hospital Association

***Tips for Converting LFG to LNG at Wastewater Plants to Replace Diesel Fuel***

John Barclay, Prometheus Energy Group Inc.

Displacing diesel fuel with renewable, biogas-derived liquefied natural gas (LNG) is economical and reduces NOx, particulate matter and CO2 emissions.

However, the digester biogas energy source at many wastewater treatment plants is not fully utilized and optimized. Converting that biogas into high-value LNG for vehicle fuel could provide an economical method of using that energy.

This presentation will summarize experiences at the LFG-to-LNG plant at Bowerman and highlight elements of a successful wastewater treatment plant biogas-to-LNG project based on use of the LNG/LCNG for transportation fuel.

### ***Optimizing Energy Consumption In Infrastructure Using Hydroturbines***

Jim Denton, Tekdraulics

Generally, wastewater treatment stops at the point at which the wastewater is treated sufficiently to begin the regeneration process. However, some byproducts of the treatment process may be converted to energy and used as a source fuel. This session explores how energy generation can be incorporated into the wastewater treatment process, what types of energy are generated, and how it can be used. Currently, embedded energy is not fully utilized when the wastewater treatment process is performed. Available technology allows for the transformation of that embedded energy into usable fuels that may supply energy to the process itself and may be converted into a transportation fuel for use in clients' fleet vehicles.

### ***Smart Technology Improves the Power Grid***

Percy Haralson, Field Technologies Group, Southern California Edison

This presentation examines ways that incorporating smart technology into utility generation, transmission and distribution can keep the grid reliable, while allowing for increased use of renewable generation. Smart technology also can reduce energy loss related to transportation of energy and water.