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NPS Energy Initiatives, Research Help Navy Blue Go Green

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Article By: *Barbara Honegger*



Navy blue is going green and a sea change in renewable energy and energy efficiency initiatives at the Naval Postgraduate School is helping it get there.

As the Navy unveiled its first “green” ship and the Secretary of the Navy announced the goal of increasing the service’s renewable energy use by 50 percent by 2010, NPS and Naval Support Activity Monterey showcased a rainbow of green initiatives by the university and local technology vendors at the NPS Centennial Energy Fair, Oct. 22.

To the pulse of electric guitars powered by a combined wind-and-solar generator, an estimated 400 faculty, students, staff and local community members tried out NPS’ the latest all-electric vehicles manufactured in nearby Salinas and moved between green and white tents to learn about the latest NPS energy infrastructure initiatives, academic renewable energy research programs and industry and local government programs.

Exhibitors included NPS faculty and students, Public Works Department Monterey, Green Fuse Energy’s demonstration of vehicle charging stations; electrical distributors showing off the latest in lighting technology, a local recycling company, Cal-Am Water, and local governmental organizations involved with energy, transportation and environmental issues.

“NPS actively seeks to be a leader in the Department of Defense sphere in energy research, by discovering and providing new knowledge in support of DoD interests and goals,” said Vice President and Dean of Research Karl van Bibber. “Energy is a primary national security issue and one of the three articulated priorities of the Secretary of the Navy due to the global effects of climate change and the fact that the U.S. still purchases a quarter of a trillion dollars in fossil fuels each year from some of the most troubled parts of the world.”

Just a few of the student and faculty research projects highlighted at the Fair were an “Energy Yellow Pages”; a revolutionary decision-support tool to vastly improve Navy surface-combatant ship fuel savings, and Swedish Mechanical and Astronautical Engineering guest doctoral student Klas Andersson’s prototype autonomous unmanned aerial vehicle (UAV) that senses and exploits naturally occurring thermal updrafts to remain aloft all day as compared to one to two hours for conventional UAVs.

Also highlighted was Information Sciences Lecturer Brian Steckler and his student team’s hastily-formed networks ‘fly-away kits’ with compact satellite communications and canvas-fused foldable solar arrays used to quickly establish emergency wireless communications in crisis zones, in addition to cutting-edge research by Physics Research Associate Professor Jose Sinibaldi on powering future ships using algae-based bio-fuels.

And finally, a student who is building the liaison between the Departments of Defense and Energy at the National Renewable Energy Laboratory, and Mathematics Dept. Prof. Hong Zhou’s research on thermoelectric generators that convert temperature differences into electrical power and visa versa were also showcased during the event.

A few of the “green” initiatives already installed or planned for the command showcased at the Fair are adding solar panels to the Library, Halligan and Watkins Halls projected to generate between five and 15 percent of the energy requirements of the entire base, slated to begin in November; advanced water and energy meters covering 90 percent of NPS’ energy usage; and, steam trap and condensate return unit upgrades and installation of a summer boiler to provide high-efficiency steam during times of low load.

In addition, a base wide swap-out of conventional for high-efficiency bulbs in parking lot and street fixtures and installation of advanced lighting controls such as occupancy and day lighting sensors; the introduction of a fleet of near-silent Global Electric Motors (GEM) vehicles that look like miniature white VW “bugs”; and new Energy Management Control System upgrades to automate heating and air conditioning systems in two of the largest energy-using buildings on base are also planned.

A recent dredging of Lake Del Monte, which provides 99 percent of irrigation water for the campus; ground source heat pumps; and a near-complete energy audit of the entire base to identify yet additional energy savings are also part of the effort. Such initiatives earned the university’s support activity the Secretary of the Navy’s Small Shore Installation Energy Award for achieving a 20 percent energy savings.

“We’re very proud that Naval Support Activity Monterey [NSA Monterey] won the Small Shore Installation Energy Award for FY2006 and has brought home the gold every year since, including the just announced [gold award] for FY2009,” said Public Works Officer in Charge Lt. Cmdr. Matthew McCann. “And the new Ingersoll Expansion Building – a 12,000-square-foot facility for modern, advanced classrooms for the Business School – will be NPS’ first LEED Gold certified building based on its aggressive, energy efficient design.”

“We’ve set the bar very high,” added Deputy Public Works Officer Gary Phillips, “and it’s great to have all the hard work and incredible teamwork that’s gone into transforming the command recognized by Navy leadership.”

The Centennial Energy Fair was co-sponsored by the Cebrowski Institute for Innovation and Information Superiority, PWD Monterey, and the NPS Alumni Relations Office/Centennial Headquarters.

“The Cebrowski Institute was thrilled to co-sponsor the Energy Fair because it’s a great venue to share the building excitement on campus for cross-disciplinary research on the multi-faceted energy issue,” said Institute Deputy Director Sue Higgins. Other key Cebrowski initiatives include the recent hosting of the Naval Energy Forum in the nation’s capital attended by 750 energy leaders including the Secretary of the Navy, Chief of Naval Operations and Commandant of the Marine Corps; and the expanding “Energy Conversation” think tank created and championed by Institute faculty member and former Deputy Undersecretary of the Navy Mitzi Wertheim. The most recent “Energy Conversation” event, also in Washington, was attended by 360 participants from all agencies and fields, including Rear Adm. Philip Hart Cullom of Fleet Readiness Division Navy Staff; Acting Deputy Assistant Secretary of the Air Force Michael McGhee; Marine Corps Assistant Deputy Commandant for Installations and Logistics Carla Lucchino; Deputy Assistant Commandant EI of the Coast Guard Jeffery Orner; and Dr. Kevin Geiss of the Army’s Installations and Environment office.

“We’re reaching critical mass,” Higgins said. “You can feel it!”



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