



In This Issue:

- MHPCC completes Terascale upgrade
- Maui renewable energy projects build momentum
- Project EAST-Service based learning using high technology tools

MHPCC completes Terascale upgrade

On December 8, 2006 The Maui High Performance Computing Center (MHPCC) dedicated its new Terascale, High Performance Computing platform from Dell.

The 5,120-processor system will increase MHPCC's the computational capability to over 60 TeraFLOPS (60 x 10¹² Floating Point Operations Per Second).

The upgrade returns MHPCC to the forefront of High Performance Computing. Now ranked at 11 in the top 500 supercomputing sites in the world, MHPCC is the most powerful Department of Defense (DoD) research and development computing platform.

The system-named JAWS after the legendary surf spot on the north shore of Maui-is based on off the shelf Dell PowerEdge 1955 hardware. The blade form factor servers feature 3.0 GHz Dual Core Intel Woodcrest processors arranged in 1,280 four-core nodes using the Infiniband interconnect.

The purchase is the largest in MHPCC's history, and the center's first major purchase from Dell. Jaws has 5.2TB (5200GB) of memory, and 250TB of direct attached disk space (storage).

The contract with Dell includes the option to upgrade to the latest and greatest multi-core processor technology in 2008.

If exercised, this option would double JAW's power to 120 TeraFLOPS 7,000 times more powerful than MHPCC's original 1994 platform, JAWS will complement existing systems at the center, which provides more than 10,000,000 hours of computing time per year to the DoD research, science, and warfighter communities.

Maui renewable energy projects build momentum

Renewable energy projects are gaining momentum throughout the world, and Maui is no exception. Located at the end of a 2,500 mile supply chain, Maui is captive to the ever rising cost of oil. The expense of shipping by air or sea, local transportation fuel, and electricity for Maui homes and businesses are all directly tied to oil.



Conversely, when it comes to new renewable projects, expensive energy is a competitive advantage for the island. When coupled with tax incentives, local investors, and favorable natural conditions, Maui is positioned to be a leader in renewable projects.

Power on Maui's electrical grid-drawing over 200 MW at peak load-costs a whopping \$.30/Kwh, while the national average is around \$.11/Kwh. If Maui runs short of electricity, extra power cannot be imported from Neighbor Islands, as each of the populated Hawaiian Islands has its own completely independent power grid. Maui's expensive, isolated, power system makes proving the business case for Maui renewable energy projects much easier.

Hawaii gives generous tax credits to renewable energy projects. Commonly known as act 221 or 215 incentives, the law encourages investors to fund renewable energy projects by cutting the state taxes they owe in an amount equal to the investment.

Renewable energy research and development is also given preferential treatment. The state of Hawaii will write a check reimbursing 20 cents on every dollar qualified companies spend on R&D conducted in the state of Hawaii-even if they do not owe any tax to the state.

Leading the way for newcomers, biofuels, biomass, wind, and small scale hydro projects are already feeding Maui's electrical grid and providing fuel for transportation. New in the past year, the Kaheawa wind farm runs along a gusty spine of the West Maui Mountains. When the blades spin, Maui Electric is able to idle diesel burning generators. While still too new for historical data, it is estimated the 30 Mega-Watt (MW) wind farm will end up supplying about 9% of Maui's electricity.

In addition to the new wind farm, Maui is home to two renewable energy pioneers; One of the first commercial Biodiesel production plants in the county-and the first biodiesel retail pump-is located on Maui. Pacific Biodiesel built its first plant on Maui in 1996. Conceived to divert waste restaurant grease from the Maui landfill, the plant now produces over 200,000 gallons of biodiesel each year-with every drop being sold.

This innovative company has taken the template for the original plant, and used it to build similar plants across the nation and overseas. Hawaiian Commercial & Sugar Company-one of two remaining sugar plantations in Hawaii-has been producing renewable electricity for many years. While the lion's share of the power HC&S produces is used for running the 30,000+ acre plantation, on the order of 16 MW of firm power are sold to Maui Electric.

The company produces this power using sugar cane bagasse (waste biomass gleaned from the sugar milling process), and hydroelectric power derived from running irrigation water. As the landscape changes for sugar and biofuels, HC&S is seriously evaluating the viability using the biomass potential of the plantation for energy versus commodity sugar production.

Project EAST-Service based learning using high technology tools

Project EAST or the Environmental and Spatial Technology Project originated in Arkansas in 1995 as collaboration between industries, community organizations and educational institutions.

Utilizing students and sophisticated technology, EAST Projects work with community organizations to develop service-based learning projects within the schools to solve community problems.



The EAST Initiative model has been recognized nationally as an innovative, relevant, and successful approach to education. Different from other classes in today's high school curriculum, EAST is a project-based, service learning class that provides students with the most current, high-end technologies available in some of the most progressive fields in the world.

EAST is more than a class offering and much more than a "computer class". At its heart, the program is a coordinated attempt to provide today's students with an educational atmosphere that allows them to gain insight into their own abilities to acquire and use information, solve problems, and gain valuable experience in using various technologies.

Working in teams, students routinely interact with hardware and software, learning skills in animation, computer-aided design, engineering design, visualization, database design, webpage design, programming office automation, global positioning systems, and geographic information systems.

In the process of solving sophisticated community-oriented problems, they also learn to become creative, intuitive, adaptable learners who can solve unpredictable, real-world problems. Project EAST gives the students a chance to see their real potential – choosing to become professionals in areas that previously weren't even a thought or an option.

EAST enables the students to see themselves as winners, and truly raises the bar in their expectations for life. Seven Hawaii schools including Maui High, Baldwin High, Lahainaluna High, Kihei Charter, and Keaau High School participates in the dynamic EAST program.

EAST's community-based model continues to prove effective with projects such as: "Project Typhus," "Dome School," "Hawaiian Commercial & Sugar Virtual Tour," "The Anti-Drought Project," "A Keiki's Dream Website," "MPD 911 GIS," "Kick Butt's Day," and "Akimeka's Digital Bus". The Maui, Kauai, and Hawaii Island Economic Development Boards have to facilitated County, Federal, and private sector investment in Project EAST, including contributions to upgrade hardware, software and training opportunities.

To receive email updates about High Tech Maui events please visit the following link: <http://www.hightechmaui.com/programs/email-list.cfm>.

High Tech Maui A Project of Maui Economic Development Board, Inc.

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