Transitions

SECURING HAWAI'I'S FUTURE THROUGH ENERGY DIVERSITY

HONOLULU, HAWAI'I U.S.A. ISSUE #42 NOVEMBER 1993

"Trek" Empowers Student Leaders

By Dean Masai

The large meeting room was hushed as we watched the opening scene of a student skit about energy conservation. However, when the three intermediate school girls walked in, I gasped.

Pillows strapped to their stomachs bulged from under their t-shirts making them look...well, like they were expecting... something. The audience of intermediate and high school students began to giggle and howl.

"Oh, God," I whispered in horror to Elaine Mahoney, a co-instructor of the conference, "What are they doing?"

"Good morning," said Bryan Wong, an eighth grader from Punahou, acting as the host of their talk show. "As you can see, these three guests need to be put on an energy diet...."

I sank back into my chair and breathed a sigh of relief. Once again, the students showed their ability to creatively communicate their message. But how much more of their creativity could an adult's heart take?

Welcome to Power Trek '93, the six-day conference full of surprises, incredible highs, lifetime friendships, laughter and learning.

Power Trek '93 was supposed to be the Department of Business, Economic Development & Tourism's (DBEDT) energy and environmental leadership training conference.

And it was.

But, as did last year's inaugural conference, it grew to be more than just a vehicle in which students and their advisors were trained to teach energy. Since it was cosponsored by the State Department of Education (DOE) and had DOE co-instructors Mahoney, the Energy Project Resource Teacher, and Michael Swangel, a Kealakehe Intermediate science teacher, there was plenty of tough practicum.

This conference went beyond its simple goals. All 60 of us, it seemed, including the delegates (students and advisors), staff and junior staff, evolved into improved versions of what we were before the August 14-19, 1993, conference was held on the island of Hawai'i. We were a diverse group, coming from the Big Island, Kaua'i, Maui, Moloka'i, O'ahu, Saipan and Nevada, yet we melded into a cohesive unit that learned, laughed and worked well together.

"Power Trek was wonderful and worthwhile for students and teachers alike," said Pauline Kawamata, a teacher in the Community Quest

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STUMPING FOR ENERGY–Power Trek delegates visit BioEnergy's tree plantation.

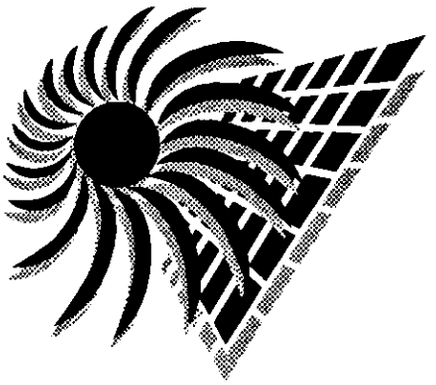
THIS ISSUE...

Solar Success Continues in Palau

by
Greg Decherong

Remote communities of the Republic of Palau without access to utility grids are limited in their choice of power supply. This is due to their location and their low energy requirements.

However, this has not prevented the Palau Energy Office from seeking alternative sources of energy for these remote locations. Through grants from the U.S. Department of Energy's Technical Assistance Program, the office has been able to provide photovoltaic lighting systems to the village of Ngkeklau on the east coast of the island of Babeldaob.



This project cost a total of $21,030 and provides electrification for thirteen families in Ngkeklau. Each of the thirteen homes is equipped with two panels, two six-volt batteries, three 22-watt fluorescent lights and one low-voltage controller. In order to maintain the units and ensure that there will always be materials to replace failed parts, each community member contributes $3 per month to a community maintenance fund. The project was installed in 1992 by the Palau Energy Office and has been running successfully ever since. ❖

(Greg Decherong manages the Palau Energy Office, P.O. Box 100, Koror, Palau 96940.)

Record Set From Sea to Shining Sea

Student Solar Team Triumphs

After battling floods, breakdowns, hills and other obstacles for 41 days, the Konawaena High School Solar Car Team successfully completed their cross-continent journey when they nosed their car,"Spirit of Aloha," into the Atlantic Ocean at Cape Henlopen, Delaware.

The team is expected to be listed in the *Guiness Book of Records* as the first high school team to cross the contiguous United States in a vehicle solely powered by the sun. The primary sponsor of the effort was the Bank of America.

Students Conradt Marquardt, Daniel Stein and Pablo Weaver, recent graduates Shawn Kemp, Mandy McCasland, Jennifer Todd and Keith Wong, and advisors Bill Woerner, Stephen Best and Brenda McCasland were feted in Washington, D.C., at the end of their trip.

The trek began on June 20 in Long Beach, California. The team's 3,480-mile journey across 14 states was delayed by tornadoes, lightning storms and the torrential rains which caused massive flooding of the Mississippi River. They averaged 25 mph and 200 miles per day.

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Trekkers Take Charge of Knowledge

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program based at Kailua High School. "It was jam-packed with activities, and we learned a lot."

"I was amazed," said Yuka Nagashima, a Punahou science teacher. "Just within those few short days, I saw the students grow as a group and individually. They took charge of the knowledge they gained and now can spread it to the community."

Nagashima said it was astonishing–and wonderful–to see the students who were the shyest at the start of the conference confidently conveying information to others.

"It showed they really believed in what they were saying," she said, "and they had a mission to educate the rest of us. It showed that they learned, especially what Catherine Robbins taught them about communication skills. It left a deep impression."

Robbins is a field agent with DBEDT's Hawai'i Energy Extension Service in Hilo. Her communications skills workshop had the delegates practicing tone of voice, body language and role switching to improve their perception and public speaking.

Other highs included the presentation by Christine Bean, education program coordinator for the Natural Energy Laboratory of Hawai'i Authority, on the workings and uses of ocean thermal energy conversion (OTEC); the discussion on geothermal energy by Pam Calhoun, a geologist, forester and Nevada Energy Education Director; and the presentation by Deborah Ward of the U.H. Cooperative Extension Service on the water cycle.

Ward's demonstration on how pollution gets into our water supply hit home when Carolyn Kahoohanohano and her two students returned to Moloka'i after the conference. The sight of a landfill located near the water treatment plant started them thinking about possible problems and solutions. They now want to do a water cycle demonstration for other students on Moloka'i.

Two conference highlights came in the form of guest staff: Pam Calhoun and Bridget Brown. Calhoun initiated Nevada's excellent energy and environmental education program, which includes a well-established, week-long camp similar to Power Trek. Her experience with workshops and camps was invaluable and a source of solutions, suggestions and outrageous anecdotes.

The biggest conference high for me was the junior staff. There were six of them, ranging from seventh through 11th graders. They were selected upon recommendation by teachers and were trained three days prior to the conference. Seeing them learn, grow and work together was marvelous.

Among other duties, each junior staff was assigned a group of students, called a "task force," who were to work on a specific project and make a presentation at the end of the conference. Kanoe Bunney, an 11th grader from Kailua High School, had to educate the members of her task force about coal and the new AES Barbers Point power plant, and then have them develop a presentation without the benefit of a previously written script. Her "Let's Talk Energy Show–Coal" not only accomplished those goals, the presentation was so hilarious it brought down the house.

"They had a mission to educate"

Grace Dumlau, a ninth grader from Moanalua High School, led her Classic Energy Tales task force into producing two memorable energy plays. The humor and fine acting of the group showed their determination to make their point while having fun.

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FEELING FUELISH--One stop on Power Trek's field trips was Hilo Coast Processing Co., where coal, shown above, and biomass are burned, providing power to a sugar factory and the electric utility.

Mayor's Office Enlightened

by Raymond Carr

In August, the existing T12 fluorescent lights and ballasts in the Hilo office of the Mayor of Hawai'i County were replaced by high-efficiency, long-life T8 tubes and electronic ballasts donated to the County by the Hawai'i Electric Light Company.

Intended as a promotion for the use of high-efficiency lighting systems, this demonstration project showed that important savings can be realized without sacrificing quality. In fact, while measured electric current to the new lights proved to be 35 percent less, average lighting intensity increased and color rendition was markedly improved.

Besides these direct benefits, these new lights and ballasts give off less heat, easing the load on the building's air-conditioning system. This results in total energy savings of about 45 percent.

Energy savings from such lighting retrofits are usually high enough to return the inital cost of the retrofit in only three to four years, a very favorable payback period. For this reason, they play a major role in the energy conservation plans presently being formulated for Hawai'i. ❖

(Raymond Carr is the County of Hawai'i's energy specialist, and can be reached at: County of Hawai'i; Dept. of Research and Development; 25 Aupuni St.; Hilo, HI 96720 USA. Tel. 808-961-8497. Fax 808-935-1205.)

Energetic Students Honored

Kealakehe Intermediate School's Junior Honor Society received national recognition for their energy education project during June ceremonies in Washington, D.C.

The Junior Honor Society's National Energy Education Development (NEED) committee worked for six months on their multi-faceted project, which earned them the chance to represent Hawai'i at NEED's national Youth Awards Program. Their efforts included radio announcements, establishment of an energy collection in the school library, burying a time capsule, and persuading Mayor Stephen Yamashiro to declare March 15-19 "NEED Week" in the County of Hawai'i.

Honored in the nation's capital were students Elana Richardson, Kellie Hata, Rachelle Wehrsig, Bree Kaniho, Maile Cannon, Andy Akona, Shaun Doran, Marlene Sperka, and Tara Ellis; advisor Michael Swangel; and chaperones Sheryll Kaniho and Henry Akona.

DATEBOOK

DECEMBER 1-5, *Bridging Gaps Between Research, Development and Markets*

Perth, Western Australia; Murdoch University. 31st annual meeting of Australian and New Zealand Solar Energy Society. Contact: Solar '93 Conference Secretariat; Box 461; West Perth; Western Australia 6872. Tel. (61-9) 351-3157. Fax: (61-9) 351-3107.

DECEMBER 4-5, *Electric Vehicle and Alternate Energy Fair*

Hilo, Hawai'i, USA; Hamakua Butler Bldg., Civic Auditorium. Exhibits, including solar and electric cars; hourly speakers; door prizes. Free, 10 a.m. to 5 p.m. Contact: Rolf Salzer, (808) 965-7259.

DECEMBER 9-12, *Hawai'i EV '93*

Honolulu, Hawai'i, USA. Electric and hybrid vehicle conference and exhibition. Technology and infrastructure issues, curriculum, demonstrations and performance tests. Contact: David Rezachek; Electric Vehicle Assn. of Hawai'i; 710 Lunalilo St., Suite 1107; Honolulu, HI 96813 USA. Tel. & fax: (808) 524-1954 (eves). Tel. (808) 587-3814 or fax (808) 587-3820 (days).

JANUARY 11, 1993; *Hawai'i Energy Strategy Workshop*

Honolulu, Hawai'i, USA; Hawaiian Electric Co. Training Room 2, Room #805, Pacific Tower, 1001 Bishop St. Results to date of the Hawai'i Energy Strategy will be presented, with opportunity to comment. Contact: Steve Alber; DBEDT Energy Division; tel. (808) 587-3837; fax (808) 587-3839.

ONGOING, *Renewable Energy Education Program*

Carbondale, Colorado, USA. Solar Energy International (SEI), a non-profit educational organization, offers hands-on renewable energy workshops: solar homes, photovoltaic design and installation, solar water pumping, micro-hydro systems, wind, hydrogen, more. Limited number of scholarships available through a grant from the Ruth H. Brown Foundation. For more information, contact SEI at (303) 963-8855, or write to P.O. Box 715, Carbondale, CO 81623 USA. ❖

Diverse Views Design Legislation

by Steven Alber

All through last summer, interested citizens and members of environmental groups, community organizations, businesses and government agencies worked together to develop energy- and environmental-related legislation. The results of their labors were presented during the Legislature's Energy and Environmental Summit at the Hilton Hawaiian Village in Honolulu on Oct. 8.

The Summit had two goals:

✘ to seek broad-based input into legislation which addresses the energy and environmental issues of our state; and

✘ to facilitate the exchange of ideas and suggestions in open discussion.

Rep. Duke Bainum initiated the Summit process earlier this year, focusing committees on specific sets of issues. His intent was to aid the Legislature by developing consensus-based proposals with broad support, instead of having to deal with a variety of similar but conflicting and uncoordinated efforts by a multitude of groups. The Summit brought these groups together.

A wide range of people were invited to a kick-off meeting on June 23 in the State Office Tower to begin work, creating committees on energy, education, compliance and recycling/waste management.

Sen. Matt Matsunaga and Rep. Bob Herkes headed the Energy Committee. Their three subcommittees are Energy Supply, Energy Demand and Transportation Energy. Each subcommittee heard presentations on state energy policy, alternatives, technology, federal and state legislation and other topics. Then, each developed goals and began working on legislative proposals upon which the group could agree.

The Energy Supply Subcommittee, chaired by Art Seki and Clare Hachmuth, developed several proposals, including:

✘ devising a strategy allowingalternate energy to compete with fossil fuels,

✘ redesigning the permitting process to speed the approval or disapproval of energy facilities while ensuring public involvement, and

✘ creating an independent State energy entity.

The Energy Demand Subcommittee, chaired by Scott Derrickson, developed legislation to facilitate performance contracting for energy efficiency measures in State and County facilities, and to foster energy efficiency.

In the Transportation Energy Subcommittee, chaired by Heidi Wild and Ralph Dobson, the basis of an omnibus transportation energy bill has been developed. The bill will seek to reduce energy demand and increase energy efficiency in ground transportation, reduce negative environmental effects, increase transportation energy security and stimulate the production and use of alternate fuels.

Developing consensus-based proposals

During the Summit, participants from the public examined these and other proposals, providing additional ideas and comments.

The Summit is not the end of the process. The subcommittees' work will continue as their proposals are refined into draft legislation and supporting testimony. These will be presented to the 1994 Hawai'i State Legislature and, if passed, will make a real difference in our energy future.

(Steve Alber is an energy analyst with DBEDT's Energy Division, tel. 587-3837.)

$10.5 Million for Electric Vehicle Demos in Hawai'i

Buses, sedans, station wagons and pickup trucks

On August 18, the federal Advanced Research Projects Agency awarded a $5 million grant to the High Technology Development Corporation (HTDC) to conduct a two-year electric vehicle demonstration program. The federal funds are to be matched by $5.5 million from members of the Hawai'i Coalition. The first vehicles are expected to arrive before year's end.

The program will demonstrate electric vehicles' workability in Hawai'i's favorable weather and short commuting distances.

The Coalition consists of: HTDC and its parent agency, the Dept. of Business, Economic Development & Tourism; Hughes Power Control Systems; EML/Kaman Corp.; Solar Electric Engineering; Suntera Corporation; Electric Power Technology, Inc.; Hawaiian Electric Company and its subsidiaries; the University of Hawai'i; the City & County of Honolulu; and the Kaua'i Coalition, which includes the County of Kaua'i, Kaua'i Community College, Kaua'i Electric Company, and the Pacific Missile Range Facility.

The Hawai'i Electric Vehicle Demonstration Project is one of six grants awarded nationwide. Under the demonstration program, 37 electric vehicles will be converted or built, then operated statewide by electric utilities, military bases, and other cooperating agencies.

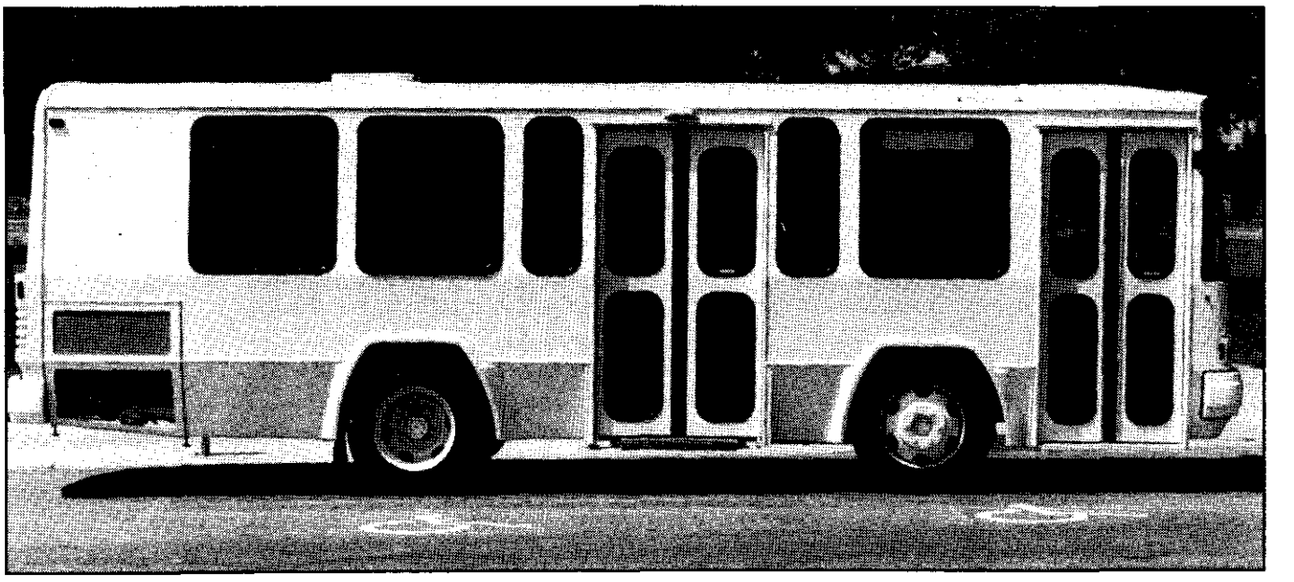
Vehicles will include buses, sedans, station wagons and pickup trucks. Each will be equipped with data acquisition devices to monitor performance.

One of the program's highlights will be the world's largest electrically-powered transit bus, a 40-foot vehicle which will use an Army tank's electric motor, adapted by EML/Kaman for the City and County of Honolulu.

Suntera Corporation, a company located in the Hamakua District of Hawai'i County, will build five composite-body vehicles for the program. These will be the only electric vehicles manufactured entirely within the state.

In addition, the demonstration program will establish a conversion, service and maintenance center in Honolulu's Kaka'ako district where operators and conversion personnel will be trained. Pickup trucks and sedans provided by Solar Electric Engineering will be converted to run on electricity at the center. ❖

(For more details, contact: Herb Hendrickson; HTDC; 2800 Woodlawn Dr., Suite 243; Honolulu, HI 96822 USA. Tel. 808-539-3789. Fax 808-539-3790.)



TRANSIT POWER--Two 30-foot buses, like this one built by El Dorado National of Chino, California, will operate on O'ahu as part of the Hawai'i Electric Vehicle Demonstration Project. One bus will travel normal city routes, while another will shuttle flight crews between Waikiki and Hickam Air Force Base. This bus is a hybrid vehicle, running on propane and electricity.

Trekkers High on Motivation

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Noli Gacusan, a tenth grader from Kaua'i High School, and Rachelle Wehrsig, a ninth grader from Kealakehe Intermediate, were in charge of the *Memories* task force, which produced a written and pictorial account of the conference.

Elana Richardson, a poised and confident seventh grader from Kealakehe Intermediate, had 11 students in her Museum of Solid Waste and Energy, the largest task force. Their presentations were so well done that the Museum became one of the advisors' favorite activities.

DONNING A SARONG, teacher Erron Yoshioka of Moanalua High School, assisted by Kailua High's Pauline Kawamata, prepares for his role as Vanna Wannabe in the "Wheel of Energy" game at Power Trek.

And last, but not least, there was Wesley Ueoka, a 10th grader from Maui High School. His task force, Special Projects, had the challenge of practicing and performing five presentations on electricity, one a day starting the second day of the conference, and ending with two the last night.

Power Trek was based on programs developed by the NEED (National Energy Education Development) project. NEED's hands-on activities focus on the development of leadership skills as delegates are trained to teach others about energy and environmental issues. The NEED skits, plays, songs and other actiities are entertaining as well as educational, and emphasis on peer-teaching makes NEED activities particularly popular.

Does Power Trek work? So far, there are NEED workshops scheduled by returned delegates at Kailua, Moanalua and Kaua'i High Schools this semester, with other activities being planned at other schools. Moanalua and Punahou students performed NEED skits and songs, and made a project planning presentation during the Hawai'i Environmental Education Association meeting in October.

"Power Trek works," confirmed Sharon Orth, Kaua'i High School science teacher. "Anyone just has to look at my students. All four of them have been meeting in my room during lunch, planning their workshop. They've got the momentum and they're really committed. They've even got the bio-chem club involved."

That, in a nut-shell, is Power Trek.

(Dean Masai, Hawai'i's NEED project coordinator, can be contacted at: State Energy Division; 335 Merchant St. #110; Honolulu, HI 96813 USA. Tel. 587-3804.)

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Students 'Trek' toward energy leadership...See page 1.

READERS' GUIDE

***Solar Anthology.* VHS videotape; 65 min.; $24.95. Contact: Videos; Arizona Dept. of Commerce Energy Office; 3800 N. Central, Suite 1200; Phoenix, AZ 85012 USA.**

This ***Anthology*** is a collection of three videos documenting uses of solar energy in Arizona: "A Day in the Sun," "Living on the Sun," and "Hopi Story." The videos paint gentle portraits of solar users using extensive desert footage and a relaxed pace. Each documentary is also available individually.

"A Day in the Sun" shares the experience of the annual Tucson Solar Potluck, which attracts solar cooking afficionados from across the American Southwest. Using devices ranging from homemade cardboard box cookers to shiny parabolic concentrators, families cook pizza, stuffed turkeys, bread, cookies, casseroles and a variety of other foods to share with each other. Featured are Barbara Kerr and Sherry Cole, whose inexpensive cooker design has been disseminated throughout the world by the non-profit group, Solar Box Cookers International, as well as other pioneers.

Acting on personal commitment

"Living on the Sun" offers vignettes of five Arizona families who have made the sun an integral part of their lives, through photovoltaic electricity or space and water heating in their homes. Although two of the residences are in remote areas, unserved by any electric utility, the others are in city or suburban areas, including a home in the experimental "Solar One" subdivision in Phoenix, a community with a centralized photovoltaic power system. Testimonials confirm that the homes include all the modern conveniences, from computers to dishwashers. In the challenging words of one rancher, "Tell me what I could have, if I lived in a city, that I don't have here."

"Hopi Story" tells how both practical and cultural considerations have made the use of photovoltaics in Hopi communities a viable enterprise. The Hopi philosophy of stewardship, morality, faith and the maintenance of rituals sets the stage for a community-based solar electric venture which meets the spiritual and material needs of the tribes.

The shared message of the three programs is simply that the solar alternative is real and it is here today, but that its use can only start when individuals make personal commitments and act on them.

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