

# The Pacific Tradewinds Quarterly

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## We Are Moving

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## What is Renewable Energy?

**Thursday, March 22, 2007**

What do we mean when we talk about "renewable energy"? Typically, we are referring to energy supplied by sources that are naturally and continually replenished, such as wind, solar power, geothermal, hydropower, and various forms of biomass (assuming we grow the biomass "sustainably", that is, we replant as much as we harvest, or we don't cut plants down faster than they can naturally grow). So what is the connection between a program that is interested in weather and climate, and renewable energy? The short answer is that by understanding weather and climate, we can make more efficient use of the various types of renewable energy available in different parts of the world.

In this short article, we will just focus on how making measurements through the SPaRCE program can help with developing renewable energy sources. Then we'll touch on what other measurements are being made by weather services around the world that also aid in the development of renewable energy sources.

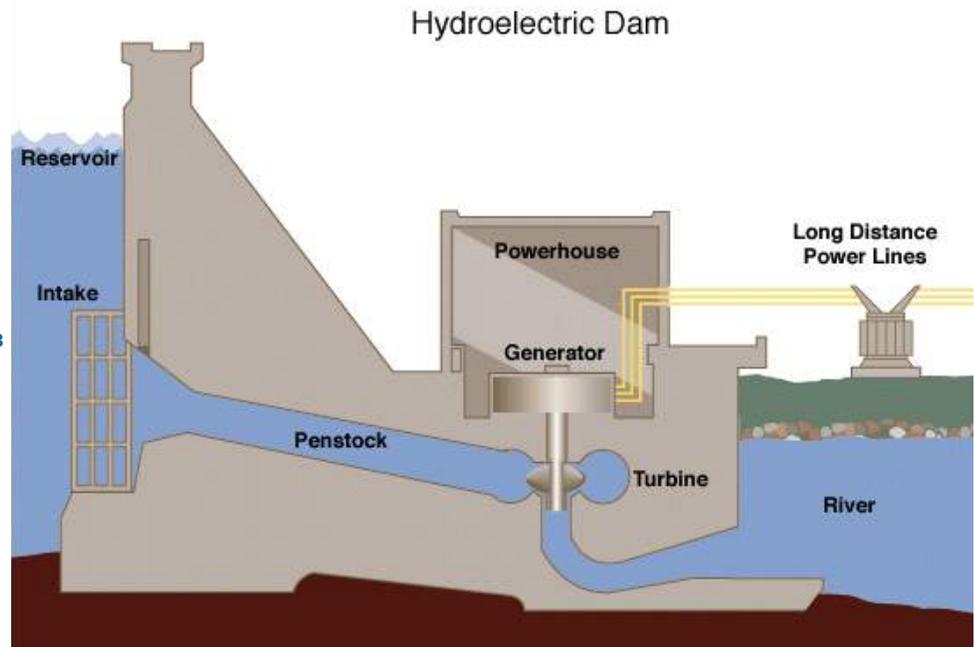
However, first we should answer

the question of why we are even talking about renewable energy? Throughout much of the world, energy is supplied through the burning of fossil fuel such as oil, natural gas, and coal. Our automobiles and trucks are made to run off of petrol (gasoline) or petrodiesel (diesel fuel) that is refined from petroleum. Boat, airplanes, and other forms of transportation use these products as well. If you are fortunate enough to live in a place where a local utility company can deliver electricity to your home, then every time you turn on a light or other electric appliance, your local power plant has to make that energy – which is usually done by burning one of the fossil fuels.

But fossil fuels are a limited resource. In general, fossil fuels formed over hundreds of millions of years when dead plants and animal remains are buried and converted by heat and pressure into usable forms of carbon (oil, gas, coal). But it takes a very long time and special conditions to form these fuels, and once we use up the existing sources, we won't be able to wait around for more to form.

## The anatomy of a hydroelectric dam.

[http://www.thebestlinks.com/images/8/81/Hydroelectric\\_dam.png](http://www.thebestlinks.com/images/8/81/Hydroelectric_dam.png)



In addition, when we burn fossil fuels, we turn the carbon into carbon dioxide, and most of it gets released into the atmosphere. It is the large amount of carbon dioxide released into the atmosphere by burning fossil fuels over the past 100 years that is leading to increased global temperatures (global warming).

So scientists believe that there are two good reasons to turn to use renewable energy: the fossil fuels will eventually run out (even if it isn't for a couple of hundred years), and burning fossil fuels is the primary cause of the global warming that is currently taking place. Using renewable energy sources, however, like solar power, wind power, hydropower, or even biomass, don't pollute as much, and have the advantage that we will never run out.

The SPaRCE program focuses mostly on making measurements of rainfall. It is easy to see the connection between rainfall

measurements and developing hydropower – that is, power generated by flowing water. This is usually done by constructing a dam across a river or stream. The water behind the dam is allowed to flow through a pipe beneath the dam, where it turns a turbine that is connected to an electric generator. As long as there is enough water to flow fast enough, the turbine will turn and energy can be generated. It is very important to know the rainfall of an area before deciding where to build a hydroelectric power plant, so you can be sure there is enough rainfall to keep the reservoir behind the dam filled. Too little rainfall, and soon there won't be enough water flowing to turn the turbine. Likewise, long-term rainfall records can help to determine if there are certain times of year when more electricity can be generated than at other times of year when it is drier. This helps the utility company decide if they need a backup system to generate electricity

when there isn't much water available.

But rainfall measurements can help indirectly with other forms of renewable energy as well. For example, if you live in an area that is very rainy all year around, then it may be that solar energy won't be as useful in your area (all those rain clouds block the sun!). In addition, rainfall will help determine the kinds of crops and other plants that grow in your region. Some types of plants are better than others for burning directly for energy, or for converting into liquid biofuels that can be used in cars and trucks. In many of the Pacific Islands, coconuts are being used to make biodiesel fuel for use in vehicles.

Many local weather services can make direct measurements of daily amounts of sunshine, which are very useful in helping to determine how much solar energy is available. Just as important are wind measurements to aid in determining if wind power can be successfully used in a given area.

In some areas of the world, efforts are made to try and harness the large amount of energy available from the movement of the oceans. The simplest design to capture tidal energy is building a dam across an inlet, and the system works similar to a hydroelectric dam across a river. In this case, however, the dam is two-way, so that energy can be generated both when tides come in and when they go out. In New Zealand (and a few other places in the world), scientists are working on a new design to harness energy created by the tides in Cook Strait. The plan is to an-

chor up to 7,000 turbines (similar to the turbines that are used to harness wind energy) to the sea floor and float them about 40 meters below the surface. This way the turbines will be protected from storms and earthquakes, and won't interfere with ships. These turbines are similar to the turbines used to capture wind energy, but because water is about 800 times denser than air, these ocean turbines will have to be sturdier than wind turbines. However, because water is denser than air, these ocean turbines will be able to capture much more energy than wind turbines. Scientists in New Zealand believe that these turbines could eventually produce enough electricity to meet the power needs of the entire country.

Nearly all forms of renewable energy are more environmentally friendly than burning fossil fuels. In addition, energy from the sun, wind, tides, and rain is free! (once we build the structures to be able to capture that energy). Using crops such as coconuts to make fuel not only reduces the dependence of a country on fossil fuels, but also provides a local market for farmers to sell their products. More and more countries around the world are turning to renewable energy sources to meet the rising demand for power.

In the coming months, the SPaRCE program will be developing and sending out a new workbook that will help teachers and students learn more about renewable energy.

-Susan Postawko


**"In some areas of the world, efforts are made to try and harness the large amount of energy available from the movement of the oceans," Susan Postawko.**

## Cook Islands' Pukapuka, Nassau Get Flood Relief

**Wednesday, February 21, 2007**

RAROTONGA, Cook Islands – A container loaded with food valued at almost NZ\$30,000 [US\$21,200] will soon make its way to the islands of [Pukapuka](#) and Nassau as part of continued relief effort for the islands from 2005 cyclones.

Cyclone Percy badly hit the two islands but fortunately no lives were lost.

Appeals were sent out for help and the funds used to purchase this container load of food came in from Cook Islanders living in New Zealand who responded to the appeal.

The Rarotonga based Pukapuka community president Tingika Elikana says that soon after the cyclone hit the islands, the Red Cross Society provided much appreciated relief for the people.

Elikana says that everyone is very thankful for the assistance they provided, and this recent effort was simply continuing on

where CIRC left off.

While the Pukapuka and Nassau have been cyclone free since 2005 like the rest of the Cook Islands, Elikana says that there has been heavy rainfall on the islands, flooding the islands' taro plantations.

Taro plants have been rescued and islanders are waiting for the water to recede before replanting.

Elikana says they are anticipating that there will be some food shortage on the islands so the new supply will be of great help.

The boat carrying the container will stop off in Nassau, where that island's supplies will be offloaded before the remainder of the food continues to Pukapuka.

This is not the last of such shipments of food with Elikana saying that they are already looking at sending another shipment towards the end of the year.

*Cook Islands News: <http://www.cinews.co.uk/index.htm>  
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**"Taro plants have been rescued and islanders are waiting for the water to recede before replanting," Cook Island News.**

<http://www.cinews.co.uk/index.htm>

**A picture of flooded houses on Roto Island caused by Cyclone Percy in 2005.**

[http://www.ausaid.gov.au/hottopics/images/roto\\_is.jpg](http://www.ausaid.gov.au/hottopics/images/roto_is.jpg)



## Maui Utility to Build \$61 Million Biodiesel Plant

**Sunday, February 18, 2007**

By Harry Eagar

MAUI, Hawaii – Hawaiian Electric Co. and BlueEarth Biofuels LLC announced Saturday that they will build a \$61 million biodiesel refinery at the Waena power station site, with Maui Electric Co. the initial customer.

While MECO President Ed Reinhardt said the goal is to get all of the company's Maalaea generators off petroleum, Mayor Charmaine Tavares noted her call at her inauguration to diversify the county's economy.

The development of a plant-based alternative energy source would support her vision of a sustainable Maui economy, she said.

The BlueEarth plan calls for burning imported palm oil, but HECO will contribute all of its half of the profits to a nonprofit public trust that will encourage the growth of local fuel crops. Candidate crops include palm oil, jatropha, kukui or coconut.

"This is a huge and gigantic step in the right direction," Tavares said.

Production should begin in 2009. The first phase output target is 40 million gallons of biodiesel per year. MECO consumed about 73 million gallons last year.

Eventually, by phase three, the Waena refinery could produce 120 million gallons in 2011, and there are plans to use it at Hawaiian Electric plants on Oahu and Hawaiian Electric Light plants

on the Big Island.

"I am happy to be able to pursue this on Maui," said Reinhardt.

"We welcome BlueEarth Biofuels' commitment to build a plant here, and I commend Maui Electric Co. and Hawaiian Electric Co.'s willingness to work with them," Tavares said.

Landis Maez, a co-managing partner of BlueEarth, which has ethanol refineries in several western states, said the Maui facility provides "a great opportunity for BlueEarth to do business in Hawaii.

"Our commitment is not just to design and build the Maui facility and its subsequent expansions, but also to remain involved as owner and operator of the facility for the long term."

Aside from general environmental, economic and energy security concerns, at least three factors pushed HECO and MECO in this direction:

- In 2000, the state Department of Health fined MECO for Clean Air Act violations from two of its large diesel generators at Maalaea. The problem was opacity (smoke) at startup and shutdown. The state renewable energy policy that mandates electric utilities to get at least 20 percent of their power from renewables by 2020.
- A condition on the Waena power station lot requires at least half of its allowable 240 megawatts of capacity to come from

**"The first phase output target is 40 million gallons of biodiesel per year. MECO consumed about 73 million gallons last year," Harry Eagar.**

Maui News:

<http://mauinews.com>




**“The refinery is expected to require about 100 construction workers to build and about 40 workers to build,” Harry Eager.**

Maui News: [mauinews.com](http://mauinews.com)

renewable sources.

Current power generation on Maui from all sources – Maui Electric’s Kahului and Maalaea plants, Hawaiian Commercial & Sugar Co.’s Puunene Mill, the Kaheawa Wind and several small co-generation operators – is in the neighborhood of 240 MW.

There was no requirement to start out with renewables at Waena, and MECO has been putting off developing the site to avoid the high capital costs that will include site preparation as well as installation of infrastructure.

The initial investment in a combined cycle petroleum-fueled unit – like the latest units at Maalaea – would be several hundred million dollars.

When the county approved zoning for the Waena site, there were no specific renewable sources named, but solar was one possibility. Reinhardt believes using 15 acres of the 60-acre lot for a biodiesel refinery comes within the conditions, although MECO is not adding any capacity.

The lot, still in cane, is across Pulehu Road from the Central Maui Landfill.

Palm oil has its own critics. Commercial palm oil plantations were encouraged after World War II by the United Nations to provide edible fats for poor people in the tropics. This was very successful.

The palm oil plantations also became a source of oil for margarine makers and commercial bakeries in rich countries, until health fears over trans fats reduced that market.

Meanwhile, the search for alternatives to petroleum led not only to conversion of palm oil grown for food to oil for fuel, but to rapid expansion of palm plantations into virgin rainforests in South Pacific and Southeast Asian countries.

Reinhardt said he is aware of that criticism, and the HECO-BlueEarth joint venture will avoid obtaining oil from sources “that ravage the forest.”

The refinery is expected to require about 100 construction workers to build and about 40 workers to operate.

Reinhardt said the refinery lease, fuel agreement and generators at Waena will require approval of the state Public Utilities Commission. He said he expects the applications for the developments will be filed “soon” for start of the facility by 2009.

It will require “minimal” amounts of water and among its residual products will be ethylene. Ethylene is inflammable, and although it could not be used in diesel generators, Reinhardt said there might be enough to run a small generator.

The refining will require alcohol as an ingredient, and the hope is that local producers can supply that.

HC&S has been considering using its molasses as feedstock for an ethanol plant, but no decision about that has been made.

The state now requires ethanol to be blended into gasoline. The intention was to encourage a locally-produced, renewable fuel, but so far all of the ethanol has to



**Hawaiian Electric Company, Inc.**  
*Giving you the power*

be imported.

The state imports most of its energy, with geothermal on the Big Island, bagasse on Maui and wind turbines at several sites the primary alternative sources of electricity in the islands.

Maui is also home of the country's first biodiesel plant using waste cooking oil, the Pacific Biodiesel facility headed by diesel engineer Bob King, who developed the technology for utilizing used cooking oil. Other biodiesel makers, including BlueEarth, rely on oil that is not contaminated by food wastes.

Reinhardt said the decision to go with BlueEarth was not a reflection on Pacific Biodiesel.

"I can't say enough about Pacific Biodiesel. This is not to compete with them," he said.

Pacific Biodiesel has been building smaller plants than BlueEarth, on the order of 5 million gallons output. MECO has used Pacific Biodiesel fuel to help solve a smoke problem at Maalaea. (See related story.)

Bob Wellington, a co-managing partner of BlueEarth, said, "BlueEarth will work diligently with other local biodiesel and ethanol producers to encourage increased local biofuels produc-

tion, greater efficiency and lower pricing.

"Potentially, shared raw materials purchasing, joint land use, and using locally produced ethanol and methanol in our own process are a few of the ways we can further stimulate the local biofuels industry. We intend this to be a win-win for Maui, Hawaii and our company."

The joint venture between BlueEarth and HECO, BlueEarth Maui Biofuels LLC, is seeking legislative approval to raise \$59 million in special purpose revenue bonds. Senate Bill 1718 to authorize the bonds has passed second reading and is pending in the Senate Ways and Means Committee, chaired by Maui Sen. Roz Baker.

Revenues bonds would benefit the business by piggybacking on the state's lower borrowing costs, but the company is obligated to pay off the bond from its revenues.

The amount of anticipated profit was not revealed, but HECO's share will go into a Biofuels Public Trust that will fund development of Hawaii's biocrop agricultural infrastructure.

"HECO is willing to give up our profits in this bold venture because, in the long run, it is good

**"Maui is also home of the country's first biodiesel plant using waste cooking oil...," Harry Eager.**

Maui News: [mauinews.com](http://mauinews.com)

Picture from:

<http://www.heco.com/portal/site/heco/menuitem.be07911cc094a3340b4c0610c510b1ca/?vgnextoid=c708f2b154da9010VgnVCM10000053011bacRCRD&vgnnextfmt=default>

**"MECO will lease the 15 acres to BlueEarth at fair market rates," Harry Eager.**

The Maui News:  
[www.mauinews.com](http://www.mauinews.com)

for our company and good for Hawaii to promote clean, green, local renewable energy here," HECO President Mike May said.

Although MECO's participation will be as a buyer, Reinhardt said there would be "little or no" impact on customer rates, at least initially. But as MECO is able to rely on biodiesel, electricity rates will be less influenced by the price of a barrel of oil and more by the price for the alternative fuel.

MECO will lease the 15 acres to BlueEarth at fair market rates.

Since the cost of Waena is built into Maui's electric rate base, the rental income will exert a small downward effect when the PUC calculates consumer rates.

Maez said the plant will seek to hire on Maui, with the initial facility expected to require 40 workers and an expanded plant to require up to 100 permanent positions.

"We want Maui people to work at the plant," he said.

The Maui News: [www.mauinews.com](http://www.mauinews.com)

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Pacific Islands Report

## Contact to Invest Big in Wind, Geothermal Power Plants

**Friday, February 23, 2007**

WELLINGTON, New Zealand -

Contact Energy, 51 per cent owned by Origin Energy of Australia, today announced a plan to spend \$2 billion on new wind and geothermal power generation plants.

Chief executive David Baldwin said, given appropriate policy settings, the company's investment plans in renewable generation could play a significant role in helping to advance a more sustainable and climate-friendly energy generation sector.

The announcement was made as the company reported a \$122.9 million December half year net profit, down from \$146.6m a year ago.

The company will pay an un-

changed dividend of 10 cents a share on March 23.

Mr Baldwin said the next stage of the company's generation growth would come primarily through investment in up to 260 MW of new geothermal generation, with two new power stations planned for the Taupo region.

Mr Baldwin said recent results from test production wells in the Tauhara steamfield strengthened the company's view that the geothermal resource was potentially very strong and able to support a new geothermal power station.

Following further confirmation tests it would apply for resource consents for a new 200 MW power station from the Tauhara steamfield that could be in production by 2012.

In addition, Contact has been considering upgrading or replacing the Wairakei geothermal power station, and will be developing and advancing these plans with a view to having a new plant commissioned by 2011.

Upgrading Wairakei would add 60MW capacity.

Mr Baldwin said Contact would need a streamlined consenting process for its geothermal investment programme if it were to be implemented within the timeframe anticipated by Contact to help meet the country's growing demand for electricity.

"Contact's 2001 Wairakei resource consent application currently still remain unresolved, preventing us from generating substantial additional renewable energy."

Contact has recommended the Government call in applications for renewable projects directly to a board of inquiry or the Environment Court for swift consideration.

"We have been encouraged by the draft New Zealand Energy Strategy and have held positive preliminary discussions with the Energy Minister (David Parker) over possible call-in options.

Contact is also considering four wind farms, two of which, with a capacity of 400MW were under development.

The company had agreed commercial terms for the purchase of two further wind farm sites, with promising signs for capacity to generate up to 300 MW, although further feasibility work is required, Mr Baldwin said.

He said the development of any two of these wind farm sites would cost up to \$1 billion.

Otahuhu C and the future of thermal generation Mr Baldwin said that new generation would be needed by around 2012, and new renewables needed to be developed by then.

He said that with government support for the consenting of geothermal and wind development, he believed the Government's goal of meeting New Zealand's energy growth from renewable forms of energy could be realised.

Mr Baldwin said if the Government came to the party over aiding the resource process for renewable projects, Contact may be able to delay the development of new thermal generation for up to 18 months.

"During this time, we would be looking to the Government to finalise a market-based pricing system for carbon emissions."

Contact's proposed Otahuhu C combined-cycle gas turbine power station was "clearly New Zealand's best thermal option" because Contact had the consents but it could be delayed "if the consenting climate, and grid transmission capacity, support timely investment in new renewable generation".

Mr Baldwin said there would still be a need for thermal generation. Older, inefficient thermal plants needed to be replaced by plants such as Otahuhu C to help NZ reduce greenhouse gas emissions.

- NZPA

The New Zealand Herald  
Nzherald.co.nz




**"The company had agreed commercial terms for the purchase of two further wind farm sites, with promising signs for capacity to generate up to 300MW..."** The New Zealand Herald.

The New Zealand Herald  
Nzherald.co.nz

## Global Warming All to Real for Kiribati

**Tuesday, February 6, 2007**

PAPEËTE, Tahiti - World efforts to stem global warming are welcome but may be too late for nations such as tiny Kiribati, whose people could be forced from their homes by rising seas within decades, Kiribati President Anote Tong said.

A United Nations climate panel report released last week in Paris, France blame human activities for heating the planet over the past 50 years.

"We're very happy that now at last there is agreement, that all the countries are in agreement that we have a problem with global warming," President Tong told Reuters during a visit to Tokyo in which he met Prime Minister Shinzo Abe. "The question is, what can we now do? There's very little we can do about arresting the process. We believe it's already reached a stage where it is irreversible for most countries."

Burning fossil fuels releases carbon dioxide and other greenhouse gases into the atmosphere. Scientists say rapidly increasing levels of these gases are warming the planet, causing glaciers to melt and sea levels to rise.

A draft of the U.N. report projects a big rise in temperatures this century and warns of more sea rise.

Among the nations considered to be at greatest risk is Kiribati, a group of 33 Pacific coral atolls

straddling the equator.

President Tong said his nation was already suffering, with land and houses washed away and even some public buildings threatened.

But the worst effect was the human toll on Kiribati's 105,000 citizens, he said.

"It's about the lives of the people, the homes, and the source of livelihood. A lot of our people survive on taro, and the seawater has gone into that, so it's affecting their lives directly," he said.

Although islanders have tried to move farther away from the water, the narrowness of the low-lying atolls that are their home means that in the end, their only choice may be to leave, perhaps in as little as 50 years, President Tong added.

Despite having little to offer economically, Pacific island states such as Kiribati are courted for their support as a bloc in international forums, including Japan.

At a meeting in the southern Japanese island of Okinawa last year, Japan promised fresh aid of 45 billion yen (US\$372 million) to the region over the next three years.

President Tong said he was grateful for international support such as this and other efforts to tackle global warming, but feared it was too little and far too late.

Tahitipresse: [www.tahitipresse.pf](http://www.tahitipresse.pf)  
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Pacific Islands Report  
<http://pidp.eastwestcenter.org/pireport/2007/February/02-12-15.htm>

**"Burning fossil fuels releases carbon dioxide and other greenhouse gases into the atmosphere," Tahitipresse.**

Tahitipresse:  
[www.tahitipresse.pf](http://www.tahitipresse.pf)

## Nature Conservancy Gets Help from Maui Businesses

**Wednesday, February 21, 2007**

HONOLULU – The Nature Conservancy's Corporate Council for the Environment has received a total of \$16,000 from three Maui operations: Dowling Co. Inc./Dowling Community Improvement Foundation, Goodfellow Bros. Inc. and Skyline Eco-Adventures LLC.

Dowling and Goodfellow donated \$5,000 each, and Skyline gave \$6,000.

Such donations usually are given without restrictions, but Skyline requested that the money be used on Maui.

The council was formed in 1987 to engage the business community in caring for Hawaii's environment. The coalition involves more than 100 businesses that have given more than \$3 million. The three recent Maui donations help to "make meaningful conservation work possible in Ha-

waii," said Suzanne Case, the Conservancy's Hawaii executive director, and "we are very grateful."

The Nature Conservancy has been protecting, preserving and managing native habitats and ecosystems in Hawaii since 1980. There are 11 preserves with a total of 32,000 acres on Hawaii, Lanai, Maui, Molokai and Oahu.

The Conservancy also is protecting the larger landscapes and biological systems of which these preserves are a part.

Through watershed partnerships with public and private landowners, nearly a million acres of ecologically important lands are being protected. The landowners share expertise and resources and work across ownership boundaries to reduce key threats, the Conservancy said.

Maui News

<http://mauinews.com/story.aspx?id=27944>

**"Dowling and Goodfellow donated \$5,000 each, and Skyline gave \$6,000," Maui News.**

Maui News

<http://mauinews.com/story.aspx?id=27944>

## DEQ Invites Student Environment Writers

**Friday, February 23, 2007**

By Marconi Calindas

The Division of Environmental Quality is inviting young environmental writers from the CNMI for the upcoming DEQ's 24th Annual Environmental Awareness Poetry and Essay Contest.

DEQ public information officer Reina Camacho said the student writers and poets could express

their opinions and hopes and dreams by participating in the poem or essay contest. Camacho said the poem and essay contests are a CNMI wide competition and are based on the theme for this year, "Let Our Islands Shine!"

Poetry Contest coordinator Jonathan Arriola said, "Poems must reflect this year's theme and use the haiku 3-line, 5-7-5 syllable format." He added the poem con-



**“Every household spends an average of 40 percent of their salary to electricity rate,”**  
**Kione Isechal.**

Marianas Variety:  
[www.mvariety.com](http://www.mvariety.com)

test is only open for students in the first through sixth grades from all the private and public schools. Camacho added that high school students interested in entering the essay competition are asked to write their essays in 300 to 500 words only. The young writers should express their understanding on what the theme means to personally them and how does it impact the islands to shine in the years to come.

Essay Contest coordinator Julie Dela Rosa said DEQ has already been receiving entries. She added that DEQ is hoping that all schools would participate in this contest. Prizes for the contests include: stationery and art supplies. The supplies are valued at \$100 for first place, \$75 for second place and \$50 for third place. “The win-

ners of the poem and essay contest shall be awarded on April 21st at the Sustainable Living Festival at the Sabalu Market at Civic Center Beach Park,” said Camacho.

Learning about environmental concerns and issues is a two-way street, added Camacho. “While we visit schools teaching them about the environment, there is a lot we can gain from our students. Students also talk about how they feel and how pollution impacts their life. DEQ annually holds the writing events to learn from the students as well,” she said. For more information about the contests, visit [www.deq.gov.mp](http://www.deq.gov.mp) or call 664-8500.

Saipan Tribune

<http://www.saipantribune.com/newsstory.aspx?newsID=65970&cat=1>

## Palau Seeks Energy Alternatives for States

**Thursday, February 22, 2007**

By Bernadette H. Carreon

SAIPAN, CNMI - The Palau Public Utilities Corporation (PPUC) will be seeking financial assistance to utilize renewable energy in Peleliu, Angaur and Kayangel States.

PPUC Chairman of the Board Kione Isechal in an interview said the use of solar energy in outlying states will be “more reliable, cheap and affordable.”

Isechal said a renewable energy may be expensive to start but in the long run it will be cost effi-

cient.

He said PPUC spends big money in transporting fuel to provide power in the states.

He said that the every household spends an average of 40 percent of their salary to electricity rate.

He said he wants to help consumers cut down the costs with PPUC pursuing a cheaper alternative to fuel-run power plant.

PPUC is also pursuing to construct a new and more efficient power plant.

Marianas Variety: [www.mvariety.com](http://www.mvariety.com)  
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## Australia, New Zealand aide Fiji Flood Victims

**Thursday, February 15, 2007**

SUVA, Fiji - The region's big brothers have stepped in to help ordinary Fijians affected by the floods in the Northern and Western divisions.

New Zealand has given FJ\$35,000 [US\$20,000] and Australia FJ\$58,000 [US\$34,000] to the Fiji Red Cross to help rehabilitation for people affected.

In a statement, New Zealand Foreign Affairs Minister Mr. Winston Peters said New Zealand had taken a strong stance against the interim regime but that did not stop it from helping ordinary Fijians in a time of need.

"Several hundred people have been evacuated because of the floods, many of them are from squatter settlements, are vulnerable and need immediate assistance," Peters said.

The Australian High Commission yesterday said the money was to replenish the Fiji Red Cross stock of relief supplies. "The funds will be used to assist Fiji Red Cross supply tarpaulins, cooking sets, blankets, water containers and humanitarian packs containing

essential items and clothing to people affected by the recent floods." The high commission said Australia and the Fiji Red Cross had a long tradition of partnership. "They have worked together to assist Fiji families in times of natural disaster, including through Cyclone Ami in 2003 and the floods of 2004."

Relief assistance to families affected by the flood in the Northern Division have been supplied by the Red Cross.

Labasa Red Cross coordinator Mr. Victor Kissun said the delivery of the assistance was only put on hold because there was shortage of supply.

"That was why we had not delivered relief assistance to certain villages ... because there was not enough supply. In one case, we had to visit 50 families in one village but because we only had 30 packs to hand out, we postponed the trip because it will not be fair for the other 20 families."

Fiji Times Online: <http://www.fijitimes.com>.  
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Pacific Island Reports

<http://pidp.eastwestcenter.org/pireport/2007/February/02-16-10.htm>

**"Several hundred people have been evacuated because of the floods, many of them are from squatter settlements, are vulnerable and need immediate assistance," Winston Peters.**

Fiji Times Online:

<http://www.fijitimes.com>



**A photo from April 2004 of a Fiji flood.**

<http://www.greatestcities.com/users/cbray/5003/Oceania/Fiji>

# Welcome to the SPaRCE Family!



**Chris Dwyer**  
**Xavier High School**  
**Chuuk, FSM**



**Sheila Take**  
**Goroka Grammar School**  
**Goroka, Papua New Guinea**



**Nelson Keke**  
**Kompiam Baptist High School**  
**Wabag, Papua New Guinea**



# CLASSROOM WEATHER FOCUS

Welcome to Weather Focus! This section is dedicated to the students and teachers of the SPaRCE program. Every newsletter will have a weather trivia section or an activity. Trivia questions will starts out simple and progressively increase in difficulty with the arrival of your workbooks.

- 1) What uses wind to generate electricity?
  - a) Windometer
  - b) Wind Turbine
  - c) Wind shield
  - d) Windograph
- 2) Ethanol is what kind of renewable energy?
  - a) Solar
  - b) Wind
  - c) Hydro
  - d) Biofuel
- 3) What is another popular bio-fuel?
  - a) Biohydrogen
  - b) Biodiesel
  - c) Methane fusion
  - d) Hydrocarbon
- 4) True or False:  
Automobiles manufactured after 1982 can run on E85.
- 5) What is the name of cells commonly used for the conversion of sunlight to electricity?
  - a) Photovoltaics
  - b) Infrared Cells
  - c) Ultra-violet Cells
  - d) Sun absorbers
- 6) What is the leading source of renewable energy?
  - a) Solar
  - b) Wind
  - c) Biomass
  - d) Hydro
- 7) True or False:  
A water turbine uses the force of water and turns it into electricity.
- 8) True or False:  
In 2004, the use of ethanol reduced emissions equivalent to removing one million cars from the road.

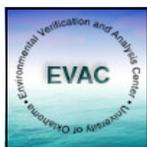
- Answers:
- 1) B) Wind turbine
  - 2) D) Biofuel
  - 3) B) Biodiesel
  - 4) False: Automobiles manufactured after 1982 can run on E10.
  - 5) A) Photovoltaics
  - 6) D) Hydro
  - 7) True
  - 8) True

## ENSO Diagnostic Discussion

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**WE'RE ON THE WEB!**  
<http://www.evac.ou.edu/>



**Thursday, March 8, 2007** - The pattern of anomalously warm SSTs associated with El Niño disappeared from the equatorial Pacific east of the date line during February. By the end of the month, SSTs were near average in the vicinity of the date line, and below average over the eastern equatorial Pacific between 140°W and the west coast of South America. Also, the main area of anomalously warm SSTs along the equator had become centered well west of the date line, which is also consistent with the disappearance of El Niño. Most of the statistical and coupled models, including the NCEP Climate Forecast System, indicate additional anomalous cooling during the next 2-3 months. Some of the forecast models, especially the CFS, indicate a rapid transition to La Niña conditions during March-May 2007.

Climate Prediction Center/NCEP

Climate Prediction Center: [http://www.cpc.ncep.noaa.gov/products/analysis\\_monitoring/ens0\\_advisory/ensodisc.html](http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/ens0_advisory/ensodisc.html)

## Get to Know: Amy Hillenburg



**Amy Hillenburg**



**Pleasant Hope, Missouri after an ice storm in January 2007.**

Hello my name is Amy Hillenburg and I am a student assistant for the Oklahoma Wind Power Initiative. I also help edit the Oklahoma WinCharger, the bimonthly newsletter and do public outreach. Currently, I am a junior at the University of Oklahoma studying meteorology. I originally went to college in Missouri but transferred for my major. After I graduate I plan on going into forecasting or research. My hometown is Pleasant Hope, Missouri where my mother and two sisters live. When I am not studying or working I like to watch my favorite movies and hang out with my friends. In early January of this year my family experienced a winter storm. The ice



**Amy and fellow EVACers at the Riverwalk in San Antonio, TX.**

from the storm coated trees, weighing the trees down causing large branches to break off. The ice also covered power lines, causing them to sag and break leaving people with out power for weeks.

-Amy Hillenburg

SPaRCE would like to thank those of you who have made this program possible: NOAA Office of Global Programs, NOAA PI-GCOS and especially Howard Diamond. Thank you!