ADMIRE

Acting for the Development of Marshall Islands Renewable Energy

NATIONAL ENERGY POLICY VISION:

- “Renewable energy is the most appropriate long-term alternative sources to replace imported petroleum products for electricity production in the Marshall Islands; solar photovoltaic (PV) is already technically and financially attractive for relatively small remote island demands when properly planned, operated and maintained.”
- Solar is especially viable due to the high cost of imported petroleum from distant markets.

Benefits of Solar Energy in RMI

- **Produces little to no noise, fumes or greenhouse gases**
- **Virtually zero visual impact**
- **Completely avoids leakage into marine habitat and costly transfers**
- **Drastically reduces cost to all parties, especially poor households**
- **Affords schools and homes with sufficient and reliable artificial light, as well as expand handicraft industry into night operations**
- **Two individuals will be trained to service the systems, overseen by the Marshalls Energy Company**
- **All customer service, maintenance, system upgrades and fee collection will be handled by the MEC, a utilities company with an outstanding Pacific reputation, further ensuring accelerating sustainability**
- **Best technical and economic solution to supply electricity to outer islands**
- **Decreases reliance on foreign oil while insuring electricity in times of shortages, higher prices and other conflicts**
- **Reduces “urban drift” from outer islands, thus decreasing urban congestion**

OBJECTIVES

- **Improve quality of life for Marshallese**
- **Face major environmental issues by thinking globally and acting locally**
- **Improve access to government services, especially schools and medical dispensaries**
- **Create an environment conducive to supplement and increase incomes for all**
- **Sustaining this program is relatively easy to maintain and operational**

COST/BENEFIT ANALYSIS – LIGHTING/RADIO

Table :Benefits (Avoided Costs) Based on Electricity Substitutes

	Kerosene/ Pressure Lanterns No	Kerosene/ Pressure Lantern (1) $	Flashlight (2) $	Radio (3) $	Total $
1 room House	1	10.50	2.80	-	13.30
2 room House	2	21.00	2.80	10.80	34.60
House w/ small washing machine	3	31.50	2.80	10.80	45.10
House w/ VCR/TV	3	31.50	2.80	10.80	45.10
House w/ refridge/freezer	4	57.35	2.80	10.80	70.95
Church/Hall (5)	2	21.00	2.80	25.00	48.80
Primary school	2	21.00	2.80	-	23.80
Store/dispensary	2	21.00	2.80	10.80	34.60

Notes:

1. Based on total avoided costs of $10.50 per month per lantern for kerosene lantern, and in the case of a house with a refer/freezer, one pressure lantern at an avoided cost of $25.85 per month per lantern.
2. Assumes a saving of $2.80 or 25% of the monthly battery cost.
3. Assumes a saving of $10.80 or 75% of the monthly battery cost.
4. In the case of church and primary school assumed that use of kerosene lanterns over a month was equivalent to a 2-room house.
5. An allowance of $25.00 per month for batteries or generator to operate an electric organ or PA system.

The Marshalls Energy Company

With approval from the Marshallese Cabinet, the Energy Office has turned over the installation, operation and maintenance of the Outer Island Electrification Project to the Marshalls Energy Company. The MEC has proved its viability through managerial, technical and financial successes and greatly strengthens the promise of the project.

A SHARED VISION OF SUSTAINABILITY…

"Available, reliable, affordable and environmentally-sound energy for sustainable development for all Pacific islanders." (Raratonga Declaration, 2002)

Thus, the RMI supports and is striving to abide by the environmental mandates outlined in the following agendas:

- Earth Summit- 1992
- Kyoto Protocol- 1997
- Millennium Development Goals- 2000
- World Summit for Sustainable Development- 2002
- International Conference for Renewable Energies- 2004

Problems/Solutions

- User maintenance rarely works
- Fee connection and management should be from outside the immediate community
- Sporadic visits by trained maintenance personnel
- Spare parts stocks must be readily available
- Field technicians should have ready access to technical assistance and a continuing training program

- The involvement of the MEC ensures the availability of local qualified staff to participate in ongoing training and maintenance activities
- A non-island local will be dispatched to enforce payment policies and service interruption in the absence of payment, bypassing local collection organizations. Since all will pay, all will benefit from constant solar power generation
- Day-to-day maintenance staff will be employed to ensure proper system functions. Furthermore, they will be required to attend training sessions in Majuro on a regular basis
- Facilities at the MEC headquarters will soon include a Renewable Energies training and storage facility to store parts and train technicians
- Senior technicians will entertain technicians' inquiries, provide ongoing technical know-how and visit the outer islands for field assistance

OUTER ISLANDS ELECTRIFICATION PROJECT

LIST OF POTENTIAL OUTER ISLANDS HOUSEHOLDS FOR PV

Atolls/Islands	No. of Households (Pop. 99)	Est. Mat'l Costs ($2,500 per sys)	Est Installed Costs ($4,500 per sys)
Ailinglaplap	236	*$590,000*	$1,062,000.00
Arno	244	*$610,000*	$1,098,000.00
Kwajalein (Ebadon, Santo)	103	*$270,000*	$463,500.00
Jaluit (not Jabor)	146	*$365,000*	$657,000.00
Mili	136	*$340,000*	$612,000.00
Ebon	122	*$305,000*	$549,000.00
Namu	127	*$317,000*	$571,500.00
Maloelap	138	*$345,000*	$621,000.00
Sub - Total	Total H 1252	***$3,142,000***	$5,634,000.00
Ailuk	88	*$220,000*	$396,000.00
Likiep	82	*$205,000*	$369,000.00
Aur	86	*$215,000*	$387,000.00
Utrik	65	*$162,000*	$292,500.00
Sub - Total	Total H 321	***$802,000***	$1,444,500.00
Lib	15	*$37,500*	$67,500.00
Jabat	15	*$37,500*	$67,500.00
Wotho	18	*$45,000*	$81,000.00
Wotje (Wodmej)	27	*$67,000*	$121,500.00
Majuro (Aenkan)	14	*$35,000*	$63,000.00
Sub - Total	Total H 89	***$222,000***	$400,500.00
Ujae	67	*$167,500*	$301,500.00
Lae	32	*$64,000*	$144,000.00
Sub - Total	Total H 99	***$231,500***	$445,500.00
GRAND TOTAL	1761 Households	***$4,397,500***	$7,924,500

NOTE: Bold Est Installed Cost column <u>includes</u> Material purchase costs

OTHER PROJECTS/PROGRAMS:

- **BIOFUEL/COPRA OIL: Considered the “tree of life” by locals, the coconut tree is vital to the ecosystem of the area as the drying of coconut kernels to make copra is a major source of income for rural families. As a substitute for diesel, the MEC aims to develop small generators from 5 kWh to 50 kWh to work synergistically with solar-powered systems to provide electricity for high load appliances not requiring 24-hour power generation such as freezers and washers. This will grant even greater flexibility for the rural Marshallese.**
- **BATTERY RECYCLING PROGRAM: With thousands of batteries being used and discarded from solar, vehicle other items such as flashlights, it is imperative that these be recycled. The MEC is aiming to collect and return these batteries to a specific offshore manufacturer where they will be recycled in exchange for a contract to purchase new batteries from the manufacturer. This will serve to diminish environmental and health hazards associated with the improper disposal of batteries and promote a beneficial relationship for the Marshall Islands.**

ACHIEVEMENTS OF THE RMI RENEWABLE ENERGY PROGRAM

- Franchise and Lease Agreement between the National Government and the Marshalls Energy Company concerning all renewable energy projects in the outer islands
- Creation of an Alternative Energy Division (2003) within the MEC
- National Energy Policy adapted (2003) from the National Economic and Social Summit (2001).
- Namdrik Atoll Solar Electrification (2002-2003). Some 113 units are successfully operating and customers are paying for the services
- Mejit Island Solar Electrification Grant (2002). The $170,000 grant from France was issued to assist in purchasing solar equipment.
- Cotonu Agreement (2003). Under the agreement, the RMI will invest $400,000 annually from European Union funds into Outer Island Solar Projects.
- Solar Project Selection Criteria (2004). Criteria developed by the Ministry of Resources and Development as grounds for determining the suitability and profitability of solar projects in area locations.
- Awarded a U.S. Dept. of the Interior Grant for Training Outer Island Solar Technicians and Establishing an Alternative Energy Database (2003). Worth $117,000, this has been allocated to meet the RMI needs for training and the maintenance of renewable energy systems, parts and projects.
- Tinak Hybrid Wind/Solar Project. Funded by ASPA, this $76,000 project is providing tremendous benefits to the school in and community of Tinak. It provides efficient lighting, and power for a copier and television, and even records weather observations which may prove beneficial in the future establishment of additional wind projects.