



Republic of the Marshall Islands

National Energy Policy and Energy Action Plan

VOLUME 1: NATIONAL ENERGY POLICY

Majuro, September 2009

The Government of the Republic of the Marshall Islands is grateful to the European Union for supporting the development of this national energy policy through the 9th European Development Fund.



Foreword

In 2008, the Republic of the Marshall Islands experienced unprecedented increases in the costs of imported petroleum fuel and staple food items. This high level of inflation had serious impacts on the economy and people of the RMI and prompted President Litokwa Tomeing and his Cabinet to declare a State of Economic Emergency on July 3, 2008. This led to an ADB-funded analysis of key energy issues in September 2008 and the Government's decision to develop a national energy policy and an action plan for its implementation.



MRD Minister Mattlan Zackhras

Although fuel prices fell dramatically in late 2008, they are again increasing substantially and imported petroleum still accounts for a high percentage of our imports. In the medium to long term, oil prices are expected to be unstable but remain at higher levels than they are today. Sustained high energy prices would result in a far worse crisis for the RMI than that of 2008. Reducing the expected social and economic impact requires serious action now. There must be an immediate and significant reorientation of the energy sector, with changes to reduce energy demand and diversify energy supply. The RMI must significantly improve energy efficiency and begin shifting its reliance away from oil and towards practical and affordable renewable energy sources for its urban and rural communities. This effort is also part of the nation's strategy to build resilience to climate change. Although the RMI as a small island nation contributes almost no greenhouse gases to atmosphere, we have no choice but to adapt to the severe impacts being caused by others.

This energy policy has been developed after extensive consultation within government and with the public. It expresses the RMI's commitment towards a new energy direction and serves as the foundation for planning and development in the energy sector over the medium term. It is expected to be endorsed by Cabinet and the Nitijela as official policy of the Government of the Republic of the Marshall Islands.

A handwritten signature in blue ink, appearing to read 'Mattlan Zackhras'. The signature is stylized and cursive.

Mattlan Zackhras
Minister of Resources and Development

Acknowledgements

This energy plan was developed over a relatively short period beginning in late 2008. Its development and finalization were done so quickly that it required the considerable effort by many people during a few short months. The efforts of the following are greatly appreciated:

- The former Minister of Resources & Development, Hon. Frederick H. Muller, for his patience, confidence and trust throughout the entire process;
- Members of the national Energy Task Force for their commitment, willingness to meet frequently, ideas, guidance and reviews of various drafts, with special recognition of the work of ETF member Ben Graham, who provided guidance and sound advice throughout the process;
- The Asian Development Bank for supporting a Rapid Energy Assessment of key energy issues in September 2008, an Energy Public Policy Forum in January 2009, an Energy Fair in February 2009 and an ongoing energy awareness campaign;
- The European Union for financing the development of this policy and the action plan through the European Commission's REP-5 Pacific energy program;
- The private sector, government and NGO participants at a September 2008 workshop who actively and enthusiastically considered a wide range of strengths, weaknesses, opportunities and threats regarding energy issues in the Marshall Islands;
- The College of the Marshall Islands Public Policy Institute, which helped to organize the 2009 Energy Public Policy Forum; and
- Participants at the Forum, who produced *The Majuro Energy Declaration 2009*, which was endorsed by the Council of Iroij, the Marshall Islands Chamber of Commerce, the Marshall Islands Council of NGOs, the Office of the Chief Secretary and the Asian Development Bank, providing invaluable input to the policy development.
- Peter Johnston and Herb Wade for their patience, guidance, and professionalism in contributing to this National Energy Policy and medium-term Energy Action Plan.

This policy also benefitted from earlier analyses and strategies particularly *Marshall Islands: Issues and Options in the Energy Sector* (World Bank, et. al., 1991); *Marshall Islands National Energy Policy 2002* (draft, 2003); *Republic of the Marshall Islands Ministry of Resources and Development Strategy and Action Plan 2005-2010* (2004); the *Marshall Islands National PIREP Report* of the Pacific Islands Renewable Energy Project (RMI GEF/SPREP, 2005); and the RMI chapter of the *United States of America Insular Areas Energy Assessment Report* (PPA/USDOJ, 2006).



MRD's Key Energy Staff and Adviser

Thomas Kijiner, Jr.
Secretary of Resources and Development

Energy Planning Division
Ministry of Resources and Development
PO Box 1727, Majuro MH 96960

Tel: 692 625-4020 or 3206

Fax: 692 625-7471

E-mail: rndsec@gmail.com

Acronyms and Abbreviations

ACP	African, Caribbean and Pacific countries
ADB	Asian Development Bank
ADMIRE	Action for the Development of Marshall Islands Renewable Energies (RMI GEF/UNDP)
ADO	Automotive Diesel Oil = light diesel fuel
AusAID	Australian Agency for International Development
CMI	College of the Marshall Islands
EC	European Commission
EE	Energy Efficiency
EPD	Energy Planning Division of MRD
EPPSO	Economic Policy, Planning and Statistics Office
ETF	Energy Task Force
FY	Fiscal Year (ends September 30 th)
GEF	Global Environment Facility
GHG	Greenhouse gas
GWh	Gigawatt hour = million kWh
Iroij	Marshallese chief or king
JICA	Japan International Cooperation Authority
KADA	Kwajalein Atoll Development Authority
KAJUR	Kwajalein Atoll Joint Utility Resource
kW	Thousand Watt (common unit of electrical power)
kWh	Kilowatt hour (common unit of electrical energy)
LPG	Liquid Petroleum Gas (propane)
M&E	Monitoring and Evaluation
MEC	Marshalls Energy Company
MEPS	minimum energy performance standards
ML	Megaliter = million liter (1 liter = 0.264 US gallon)
MPW	Ministry of Public Works
MRD	Ministry of Resources and Development
MW	Megawatt = million Watt = thousand kW
MWh	Megawatt hour = million Watt hour = thousand kWh
NGO	Non Governmental Organization
Nitijela	The Parliament of the RMI
O&M	Operations and Maintenance
OEPPC	Office of Environmental Planning and Policy Coordination
PIC	Pacific Island Country
PIREP	Pacific Islands Renewable Energy Project (GEF/SPREP)
PPA	Pacific Power Association
PV	Photovoltaic(s) = Solar Electric
RE	Renewable Energy
REP-5	Support to the Energy Sector in 5 ACP Pacific Islands (including the RMI; EC-funded)
RMI	Republic of the Marshall Islands
RMIEPA	RMI Environmental Protection Agency
\$	US dollar, the official currency of the RMI
SOPAC	South Pacific Applied Geosciences Commission

SPREP	Secretariat of the Pacific Regional Environment Programme
SUV	Sport Utility Vehicle
SWOT	Strengths, Weaknesses, Opportunities and Threats
UNDP	United Nations Development Program
WUTMI	Women United Together Marshall Islands

Table of Contents

Foreword	i
Acknowledgements	ii
Acronyms and Abbreviations	iii
Table of Contents	v
Objectives and Goals for Energy Development	vi
1. National Context and Economic Overview	1
2. Overview of the Energy Sector	2
3. A Framework for National Energy Policy and Its Implementation	7
4. Energy Policy Administration and Implementation	9
5. Petroleum and Liquid Fuels	12
6. Electric Power	14
7. Transport and Energy Use	17
8. Energy Efficiency	19
9. Renewable Energy	22

Annexes

- Annex 1: The Public Consultation Process
- Annex 2: The Majuro Energy Declaration 2009

Objectives and Goals for Energy Development

The *national vision* of the RMI, as expressed in “Vision 2018”, the Marshall Islands Strategic Economic Development Plan for 2003-2018 is:

To become a country within an inter-dependent world, with an enhanced socio-economic self-reliance, and an educated, healthy, productive, law-abiding and God-loving people in which individual freedom and fundamental human rights are protected, and culture and traditions are respected, and development and environmental sustainability are in harmony

(from the Second National Economic and Social Summit, 2001)

The *objective* for national energy development is consistent with the above national vision:

An improved quality of life for the people of the Marshall Islands through clean, reliable, affordable, accessible, environmentally appropriate and sustainable energy services

Broad *goals* for the development of energy services are:

- Electrification of 100% of all urban households and 95% of rural outer atoll households by 2015;
- The provision of 20% of energy through indigenous renewable resources by 2020;
- Improved efficiency of energy use in 50% of households and businesses, and 75% of government buildings by 2020; and
- Reduce supply side energy losses from MEC by 20% by 2015.

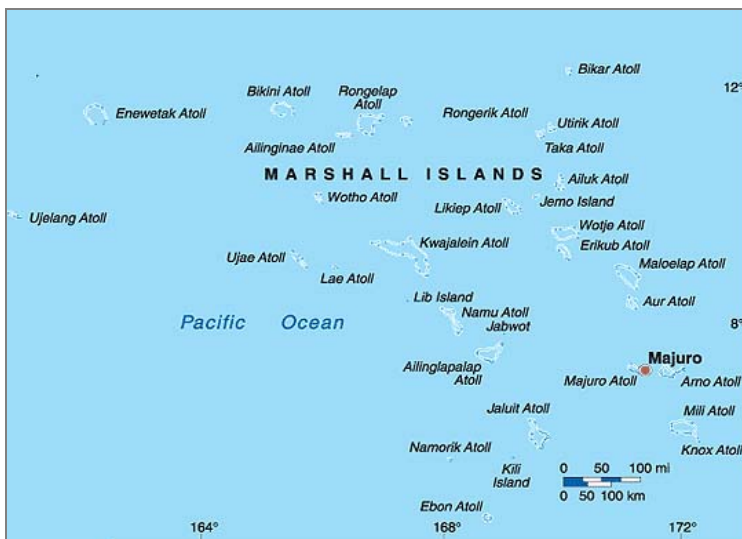
1. National Context and Economic Overview

The Republic of the Marshall Islands (RMI) consists of two groups of 29 atolls and five raised coral islands extending 750 miles (1200 km) north-south and 800 miles (1300 km) east-west, with the capital Majuro located 2000 miles (3200 km) from both Honolulu and Tokyo. The 1999 census recorded 50,840 people. Due to considerable emigration to the US, net population growth has been low; the current estimated population is 54,000, with roughly 51% residing on Majuro and 20% on Ebeye in Kwajalein atoll.

The RMI is heavily dependent on compensation payments from the US and external assistance, grants recently averaging \$70 million annually, or 45% of Gross Domestic Product (GDP) and 70% of fiscal revenue, mostly through two Compacts of Free Association with the USA, the current one from FY 2004–2023. The economy declined between 1990 and 2001 but annual growth in real terms averaged 3% from 2001–2003 and 3.6% from 2004–2007. Unemployment remains high, human development indicators lag behind other middle-income countries, and income distribution is uneven, with relatively high poverty on some outer atolls. Conducting business can be difficult due to problems of access to finance and land, sometimes ineffective laws and regulations, relatively poor infrastructure, and the huge role of the state, which accounts for some 40% of GDP and 46% of paid employment. Although Japan and Taiwan have contributed significant grant funding, the budget remains highly dependent on the Compact, with US grants accounting for 64% of projected 2009 revenue. Public debt remains high, arrears on the debt have been a problem, and the fiscal position is weak. The government is addressing these issues but progress can be slow.

According to the Asian Development Bank, GDP grew by about 1.5% in FY 2008, due mainly to grant-financed public expenditure. Copra production rose in response to high international prices, with production exceeding 7,000 tons for only the third time in 50 years. However copra prices have since dropped substantially. Fuel imports accounted for nearly 20% of the national budget in FY 2008, with some of the aid funds allocated for capital projects redirected to finance fuel. The high prices for imported petroleum – coupled with large price increases for electricity, transportation and rice – resulted in inflation of 29.4% in the third quarter of 2008 compared to the same period in 2007. This was the highest inflation rate in the Pacific, reflecting the RMI's remoteness and extreme import dependency. It also demonstrates the importance of containing the cost of energy imports.

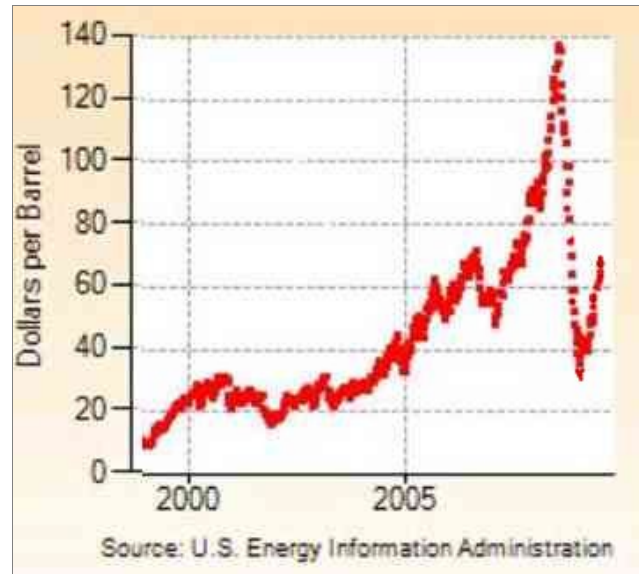
Much of the income on the outer islands has traditionally come from copra sales but widely fluctuating, and often low, copra prices have led to an interest in using coconut oil as a fuel to reduce diesel fuel imports. Remittances from relatives on Majuro and Ebeye and pensions are also common sources of outer island cash.



The Marshall Islands

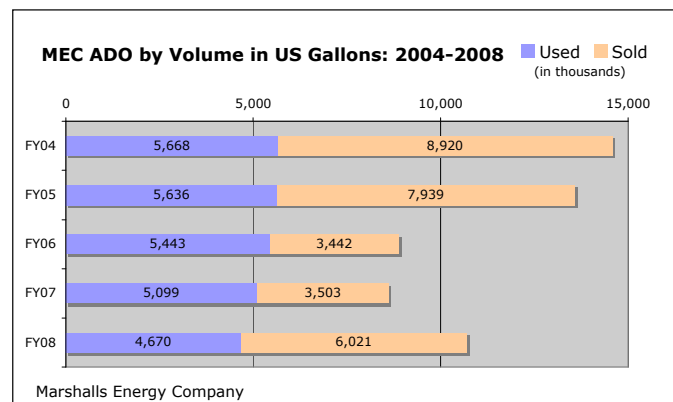
2. Overview of the Energy Sector

Petroleum. The graph at the right shows the average spot price for OPEC crude oil from 1999 through mid June 2009. Prices in mid 2009 are only half of the 2008 peak, but have rebounded to the high 2006 levels despite the depressed global economy. The RMI remains extremely dependent on imported oil, which accounts for about 90% of national energy use (in tonnes of oil equivalent). Biomass provides most of the rest. Petroleum, or liquid fuels that can economically replace it, are the lifeblood of the RMI economy, essential for both transport (about 65% of fuel use) and electricity production. The main imports are gasoline, diesel fuel, dual-purpose kerosene (for aviation and household use) and propane (liquid petroleum gas, LPG). Although no comparative data have been available since early 2008, landed fuel prices (excluding duties and taxes) have been about average for Pacific Island Countries. However consumer prices are significantly higher as there is no wholesale or retail fuel price control on Majuro or Ebeye, and maximum allowable retail margins applicable for outer islands are difficult to enforce.



OPEC Crude Oil Price Trends: 1999 – mid June 2009

The government-owned Marshalls Energy Company (MEC) owns and operates a fuel tank farm of 6 million US gallons (23 ML) capacity, the largest functional non-military fuel storage facility in Micronesia outside of Guam. MEC imports and distributes diesel fuel and propane on Majuro and until recently subsidized electricity costs through profitable bunkering of diesel fuel to fishing fleets. Mobil Oil Micronesia (MOMI) and Pacific International Incorporated (PII) also import fuel products.



Data on the volume of petroleum imports are unreliable, but they may have fallen by about half between 2003 and 2008. MEC diesel fuel bunker sales to fishing fleets have fluctuated considerably but as shown in the graph (above right), sales have exceeded internal use for power generation for three of the past five years, depending in large part on government’s shifting policy on import duties and taxes. Based on rough estimates, about 68% of total 2003 fuel imports – MEC, MOMI and others – were used for transport, 30% for electricity generation and 2% for direct commercial or household use. More recent energy end-use data are not available.

Electric power. MEC is responsible for all electric power generation and distribution on Majuro (including Rongrong Island); manages small power systems on Jaluit and Wotje under government contract; and installs, operates and maintains solar photovoltaic (PV) systems for home lighting in remote

atolls, also through government contracts. On Majuro, MEC has 24.4 MW of operational diesel capacity, and had about 12 MW of maximum demand from 2003-07, dropping below 10 MW in 2008-09. There were about 3900 active MEC customers in late 2008, of whom nearly 3700 were on Majuro. MEC generation in calendar year 2008 was 70 GWh, sales (i.e. billings) were 50 GWh and residential consumption per household averaged 531 kWh/month including subsidized ‘lifeline’ customers who constitute about two thirds of household customers. This is relatively high consumption by Pacific Island standards. Since peaking in FY 2005 at 82.4 GWh, MEC generation and sales have steadily dropped in subsequent years.

Average revenue per kWh sold to all customers was about \$0.30 in January 2008, peaked at \$0.45 in September and dropped to \$0.36 in December. By April 2009 it had dropped further to \$0.275. The tariff formula is the same for MEC and other utilities managed by MEC, with a fixed base price and an adjustable fuel price component based on a 2006 formula approved by Cabinet. The tariff does not cover MEC’s full costs with the operations of the smaller utilities subsidized even more than Majuro and Ebeye operations.

MEC sales away from Majuro, i.e. Jaluit and Wotje, accounted for 1 GWh, only 2% of 2008 MEC demand. There are no data readily available on household consumption but overall consumption per customer in 2008 was about 400 kWh/m (Jaluit) and over 480 kWh/m (Wotje), with wide monthly variations.

The second largest power system is KAJUR on Ebeye in Kwajalein atoll. In May 2009, KAJUR had about 4.2 MW of installed capacity and a maximum demand of 1.8 MW. Generation in 2008 was about 12-14 GWh, but generation has only been accurately metered since early 2009. Nearly all customers use pre-pay meters, making average sales per customer difficult to calculate.

Household energy use. At the time of the 1999 census, 63% of all RMI households used diesel-generated electricity for lighting, 31% used kerosene and 5% relied on solar PV systems. Nearly 90% of urban households had electric lighting compared to only 13% in outer islands, 71% of which used kerosene. By 2006, the urban electrification rate had reached 93% in Majuro and 97% in Ebeye. Since the 1999 census, a significant percentage of outer island households have received solar lighting systems.

A 2006 EPPSO community survey – which covered Majuro, Ebeye, Eniburr, Wotje, Jaluit, Arno and Ailuk – demonstrated the scale of biomass (wood/charcoal and coconut waste) for rural cooking, the main cooking fuel for 40% (Jaluit) to 91% (Arno) of house-holds, except for Eniburr (10%). For Majuro and Ebeye, kerosene was the main cooking fuel for about 40% of households, followed by electricity. A

Main Energy Source for Urban Cooking, 2008			
Fuel	Both Atolls	Majuro	Ebeye
Propane	38%	35%	43%
Kerosene	22%	20%	27%
Biomass	21%	24%	13%
Electricity	19%	20%	17%

2008 UNDP/EPPSO household energy survey suggests that nearly 40% of Majuro/Ebeye households now use mainly propane for cooking, with about 20% each dependent mainly on kerosene, biomass, or electricity. As shown in the table above, in Majuro there was considerably higher use of biomass, whereas in more crowded Ebeye, there was far less biomass available for cooking and more use of propane, kerosene and electricity. The 2006 and 2008 survey results are not fully comparable due to different techniques and sample sizes but they nonetheless demonstrate how quickly consumers can adjust to changing energy prices for cooking.

According to the 2006 survey, 40% of all households had a refrigerator and 38% a deep freezer, rising to about 50% of each in Majuro and Ebeye, a very high rate of ownership compared to other PICs. The 2008 UNDP survey indicated that 54% of Majuro households and 70% of those on Ebeye had at least one

air conditioner, although a 2009 EC-funded survey, incomplete as the energy policy was being drafted, apparently shows that a significant percentage are not currently being used. The pattern of appliance ownership suggests that a very high percentage of household electricity use is for cooling.

Transport. Transport probably accounts for two-thirds of the RMI's fuel use. In 2008, there were 2464 registered road vehicles in Majuro, of which 93% were private, 6% government (including Majuro local government) and 1% diplomatic. Of the total, 55% were sedans and 20% pick-up trucks. Registrations grew by 28% from 2005-2007 before declining by 12% in 2008. In 2005, Cabinet approved a new policy requiring government departments to purchase only diesel-fueled vehicles, which are considerably more efficient than gasoline for the same engine size, but this has not been enforced. Nonetheless, despite the lack of data on the percentage of gasoline and diesel-fueled vehicles, importers suggest that diesel imports have dominated sales in recent years.

As in other widely-scattered PICs, the RMI uses a substantial amount of petroleum fuel for air and sea transport.

Efficiency of energy use. Electricity use has been subsidized in the Marshall Islands since well before Independence in 1986 though a range of grants for capital investments, fuel purchases, hidden subsidies, and recently cross-subsidies from MEC bunkering profits, understandably resulting in high, and now unsustainable, levels of electricity use. Where energy to the consumer has long been priced below its actual cost, there is inevitably waste. The ADB's 2008 Rapid Energy Assessment concluded that there were significant cost-effective opportunities for improved energy efficiency but that renewable energy investments in urban electricity production would require capital grants to compete with petroleum fueled electricity, at least in the short term. Investments in energy efficiency are designed to provide the equivalent service, or an improved service, at lower cost and with less energy use. There have been only limited estimates of the practical potential in the Marshall Islands but these studies, and experience elsewhere in Micronesia and the Pacific, suggest that there are numerous financially attractive opportunities. The College of the Marshall Islands (CMI) on Majuro has embarked on a construction program that incorporates principles of good energy management in its buildings, with considerable savings expected through reduced electricity demand and production of energy through renewable sources. This is expected to provide a good model of what others may also be able to achieve.



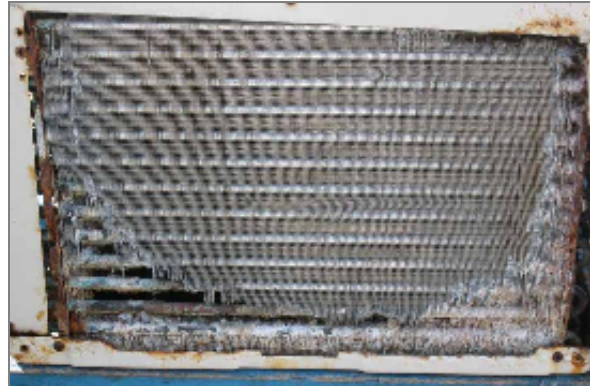
Replacing inefficient light bulb with a compact fluorescent light



Test of energy efficient street light

By early 2009, MEC had replaced about 3500 standard incandescent lights in Majuro households with more efficient compact fluorescent lights (CFLs), at a typical savings of \$17/household/month. If three inefficient lights had been replaced in all Majuro households at the peak of 2008 oil prices, annual fuel savings for MEC would have been nearly \$580,000 and consumer electricity savings \$660,000 at a cost to MEC of under \$50,000. Even at lower mid 2009 fuel prices, savings would remain substantial. 2009 MRD tests suggest that replacing all current street lights in Majuro and Ebeye with more efficient models could save 65-75% of MEC's street lighting energy use. The cost of generating and distributing one kWh depends highly on fuel price; at a full cost of approximately \$0.5/kWh, MEC would save over \$250,000 per year.

Urban households in the RMI use excessive amounts of electricity for air conditioning and could probably reduce electricity use by 20% or more through relatively simple means. More generally, buildings in Majuro account for well over half of all MEC electricity consumption mainly for cooling and lighting; the opportunities for saving are considerable. However, little has been done due to a generally low awareness of energy efficiency, relatively limited capacity to assess opportunities and provide advice, a lack of affordable finance, and other factors.



Inefficient badly corroded heat exchangers are very common in Majuro's air conditioners

There are also substantial opportunities to improve the efficiency of MEC's energy supply – improved 'supply-side management' – although determining financially attractive investments will require further technical studies, which are planned during 2009 with assistance of the Pacific Power Association (PPA).

Renewable energy. By mid 2008, MEC had installed about 1300 stand-alone photovoltaic (PV) systems in outer atoll households; this should reach 1500 by early 2010 and about 2800-2900 over the next five years, effectively providing PV lighting to nearly all outer island households. There are also plans to provide much larger PV systems for outer island schools, with installations in six schools to be completed by early 2010. For rural PV, the key donors (Taiwan, the European Commission and others) provide the equipment and RMI is responsible for operations and maintenance (O&M) and eventual battery replacement. There are various PV initiatives additional to the MRD/MEC household program. Solar PV is being installed by the ministries of telecommunications, fisheries, health and education, with different management and financial arrangements, sometimes rudimentary, for each.



Household solar PV system Installed at Jeh, Ailinglaplap Atoll

For household PV systems, users have until recently been charged \$12/month to meet in part MEC's O&M costs but this has not covered full costs if battery replacement is included, and actual collections from users have been considerably lower than planned. In 2009, Cabinet reduced the charge to \$5/household per month, raising serious concerns about sustainability.

There have been some trials of coconut oil as a fuel for small-scale power production in outer islands and for vehicle use on Majuro, but these have not been technically or economically successful. In 2008, the RMI produced 1.4 million US gallons (5.3 ML) of coconut oil, which could be used in place of diesel fuel (as filtered raw oil or chemically-processed into coconut based biofuel) or blended with diesel fuel to reduce imports for electricity generation or transport. Since the export value of coconut oil is highly variable, rising and falling dramatically, there has been renewed interest among coconut producers and processors in exploring this option, which could stabilize producer prices while reducing fuel imports.

In recent years, there have been numerous suggestions for large scale development of renewable energy on Majuro but there have been various constraints regarding their practicality. Systems based on ocean energy, particularly Ocean Thermal Energy Conversion (OTEC) are not mature or even commercially

available, practical and affordable systems being some years away. For wind energy there has been no assessment of the RMI's resource, which is essential to evaluate its practicality. In addition, commercial systems may not be available that match local requirements of relatively small size, low operating costs and long life under the difficult environmental conditions on atolls. For large scale solar, the technology is mature and the local resource is adequately known but investment costs have been too high unless supported in part by donor grants. Several small grid-connected solar PV systems have been installed in Majuro, the largest being a 60 kW system at the College of the Marshall Islands, and a larger system has been proposed by JICA. Within the next 5-10 years, it is likely that only solar and possibly coconut-based biofuel may be technically, economically and financially practical for the RMI.

3. A Framework for National Energy Policy and Its Implementation

The framework used for developing the national energy policy is as follows. Five specific areas where improvement is required have been identified as keys to shifting toward more sustainable energy development and use in the Marshall Islands:

- Petroleum and Liquid Fuels,
- Electric Power,
- Transport and Energy Use,
- Energy Efficiency, and
- Renewable Energy



RMI National Energy Task Force, May 29th, 2009

In addition there is a need for effective Energy Policy Administration and Implementation.

For each of the above areas:

- Government policies specific to each energy sub-sector are summarized;
- key issues are identified that hinder more rational energy use,
- medium-term objectives are stated, and
- strategies are listed to achieve the objectives.

Action plan. A more detailed action plan has been prepared to implement the policies and strategies. The Energy Action Plan is a separate document, comprising volume 2 of this policy. A broad statement of policy can remain effective for some years but an effective action plan needs to be linked to the annual national budget process, include specific prioritized activities, incorporate a monitoring and evaluation mechanism, and be time-bound. Thus it requires regular revision and updating, preferably every year.

Cross-cutting issues. The key areas are also inter-dependent so there is some duplication of issues, objectives and strategies. In addition, there are cross-cutting areas that apply to all key areas. These need to be addressed when implementing strategies and actions:

- *Climate change.* Climate change will severely test the resiliency of the RMI's institutions and infrastructure, with expectations of increased flooding, longer periods of drought, changing patterns of disease and serious issues of access to clean water. This energy policy is consistent with, and supportive of, national efforts to address climate change. All new energy investment decisions and investments, including design and construction of new buildings, must consider resilience for adapting to climate change, which will also result in longer term savings to the government and people of the RMI.
- *Governance.* Development of transparent decision-making processes, appropriate legal tools and regulations, and consistent enforcement of regulations. Performance-based budgeting within the

government is needed including energy criteria as performance measures for each government ministry and agency.

- *Social and environmental sustainability.* Development of mechanisms to improve the likelihood of long-term sustainable operation, minimal production of pollutants; and reduced emissions of greenhouse gases (GHG) per unit of energy produced. Although the RMI has no legal obligation to reduce GHG emissions, which are practically nil, it plans to do so whenever practical.
- *Gender awareness.* Assurance of equal access by women and men to training opportunities (e.g. community-level solar system management) and decision-making (e.g. management and boards).
- *Capacity building.* Strengthening of a range of public, private, civil society and academic institutions so agreed initiatives can be effectively implemented. Strengthened public/private partnerships in energy production and efficient use.
- *Education and information dissemination.* Developing and disseminating appropriate public awareness materials and school curricula on energy issues.
- *Data development.* Developing and maintaining appropriate databases on energy imports, resources, production and consumption, that are easily accessed and suitable for more effective decision-making.
- *Appropriate technology choice.* Choice of energy production and energy efficiency equipment that is commercially available and proven in small island environments.
- *User pays principle.* Adoption and consistent application of the principle that the urban end-user pays at the full costs of energy and outer atoll end-users pay at least all O&M costs for renewable energy services.

The chapters that follow cover the specific key topics of Energy Policy Administration and Implementation, Petroleum and Liquid Fuels, Electric Power, Transport and Energy Use, Energy Efficiency and finally Renewable Energy. However, as noted above, these areas are intimately interconnected: strategies for improving energy efficiency or for producing more energy from renewable sources cannot be effective if developed in isolation from those for petroleum fuels and the power sector. There is a single national energy policy, not discreet policies for the various components. Some topics that are usually discussed under renewable energy (e.g. biofuels) are covered elsewhere (in this case liquid fuels). Key linkages are noted in individual chapters but it is impractical to list all of them.

4. Energy Policy Administration and Implementation

Policy Statement

The Government of the Marshall Islands recognizes weaknesses in administering past energy policies and will:

develop and enforce laws and regulations necessary to provide MRD with the authority required for effective and transparent implementation of this policy, including electric power legislation, clear guidelines for the MEC board and management, and a consistent management system for all government renewable energy programs.

Responsibilities for energy within government and government-owned enterprises are as follows:

- i) The Ministry of Resources and Development (MRD) is responsible for energy policy, coordination and some implementation. MRD's Energy Planning Division consists of a national energy planner, an energy officer, one support staff and an AusAID-funded energy adviser, initially for 18 months from April 2009. There is very little government funding for routine operations, no likelihood of additional staff positions, and heavy dependence on donor support for energy studies and project implementation. Despite responsibility for overall energy policy, MRD is not represented on the MEC board.
- ii) MEC was established in 1984 under Articles of Incorporation and associated bylaws, which have since been amended. Although 100% government-owned, there are provisions for private shareholding. With its urban and rural power responsibilities, fuel import, storage and bunkering, and rural PV program, MEC is the dominant energy supplier in the RMI with a strong role in both policy and implementation. The board is appointed by Cabinet, chaired by the Minister of Public Works and includes both government (5) and private sector (5) members. MEC is independently audited annually but has not produced an annual operational report for some years. The company's website contains limited operational information and management is currently looking at producing an annual operational report.
- iii) The Ebeye utility, KAJUR, was owned by the Kwajalein Atoll Development Authority (KADA), but after the dissolution of KADA, oversight of KAJUR is now under the Joint Utilities Board. KAJUR shares the same board as MEC, which provides management and technical assistance, but is financially and operationally independent. Substantial operational losses are met through US grant funding specifically allocated for Ebeye. KAJUR also operates the Ebeye water and sewer system and is audited annually.
- iv) Other government offices with energy responsibilities include the Economic Policy, Planning and Statistics Office (EPPSO), the key national development planning and statistics agency which was actively involved in developing rural electrification policy; and the Office of Environmental Planning and Policy Coordination (OEPPC) which is mandated to coordinate planning for and development of climate change policies. The OEPPC is charged with responsibilities to review and identify benefits of multilateral environmental treaties for the RMI, is the focal point for the GEF and authorizes the development of GEF-funded support for the RMI. It has also developed a number of GEF projects, including the RMI - GEF/UNDP project, "Action for the Development of Marshall Islands Renewable Energies" (ADMIRE) which effectively began operationally in June 2009 and is expected

to compliment the RMI's renewable energy activities particularly the Outer Islands Electrification Program by supporting capacity building, awareness training on operations and maintenance of solar PV resulting in more climate change resilience, the reduction of GHG emissions and improved rural livelihoods.

- v) The National Energy Task Force (ETF) with government, MEC and private membership was established by Cabinet in 2005 and revitalized in 2008. Since mid 2008 it has met regularly, typically 2-4 times per month, with MRD as the Secretariat. The ETF plays an influential energy advisory role.

There are overlapping responsibilities for some aspects of energy. To the extent practicable, these will be addressed through activities of the Energy Action Plan.

Issues, Objectives & Strategies for Improved Energy Policy Administration and Implementation

Issues:

- Very limited human and financial capacity to develop, refine and implement energy policies
- No Energy Planning Division work plan or priorities and limited monitoring and evaluation of activities
- Processes for prioritizing appropriate donor assistance and accessing donor funding are weak
- Data on energy imports, production and end-use are inadequate for analysis and policy development, particularly for petroleum
- Limited formal MRD authority on key energy decisions (both electricity and petroleum)
- Annual budget actually available to Energy Planning Division very limited
- Duplication of responsibilities for outer atoll solar PV development, with inconsistent management and financial mechanisms
- Tendency (by donors as well as government) for renewable energy and energy efficiency to be treated as independent project areas, rather than components of an integrated overall energy policy
- Fragmented energy policy and authority landscape, requiring clarification through Cabinet decisions, regulations or law
- Limited real cooperation and coordination among Pacific Island Countries on energy

Objectives:

- Energy Planning Division develops the level of skills necessary to review, update and implement the energy policy framework
- The Energy Planning Division uses its limited human and financial resources effectively, concentrating on important, practical and achievable goals
- MRD influences key energy decisions, shifting RMI toward more sustainable and rational energy use
- National energy database adequate (for analysis and policy development) is developed and regularly updated
- Consistent management and financial mechanism is developed and implemented for all solar PV and

other renewable energy initiatives

- There is investment in renewable energy and energy efficiency as part of all energy initiatives where appropriate; RE/EE, not considered as stand-alone activities or special interests
- Improved cooperation on energy within Micronesia and the wider Pacific region

Strategies:

- Informal training of Energy Planning Division staff through Energy Adviser, their inclusions in RE/EE training, and possible diploma or degree level training in energy
- Maintain an up-to-date active registry of opportunities for donor support in cooperation with Foreign Affairs
- MRD's Energy Planning Division to work in close collaboration with the OEPPC in mainstreaming of climate change activities, particularly support for appropriate and practical RE/EE, capacity building for environmental sustainability and economic opportunities
- Production by MEC of annual reports (including KAJUR, Jaluit & Wotje) on generation, sales, fuel operations and finances
- Annual work plan developed for MRD's Energy Planning Division with clear objectives, priorities and timeframe, reviewed quarterly
- MRD coordinates energy database development production and regular revision with MEC, Finance, importers & EPPSO
- MRD participation in the budget reform process, including advocacy of performance-based budgeting within the government with energy criteria as performance measures for each government ministry and agency
- MRD membership on MEC board and inclusion in any government mechanism that is established to monitor petroleum pricing
- MRD to coordinate development of a framework for development and implementation of all government solar and other RE initiatives
- Integration of renewable energy and energy efficiency considerations into mainstream energy policy, planning, studies, proposals and implementation
- legislative amendments, a new energy law, regulations or a Nitijela resolution will be considered as appropriate to clarify powers and responsibilities within government for energy
- independent assessment of organizational changes (MRD, other ministries, MEC) that may be necessary to implement the energy policy
- The Marshall Islands to play an active role in developing the proposed Micronesia Energy Challenge and in future revisions to the Pacific Islands Regional Energy Policy and Plan

5. Petroleum and Liquid Fuels

Policy Statement

The Government of the Marshall Islands recognizes that nearly total national dependence on imported petroleum fuels results in great social and economic vulnerability. It will:

develop and enforce international standards for the storage, handling and transport of petroleum products; develop a mechanism for obtaining competitive fuel prices and monitor results; ensure that there are fair wholesale and retail fuel prices; require suppliers as a part of the supply contract to provide monthly data on imports and sales by product; and place high priority on developing the infrastructure and capacity to process coconut oil for use as a petroleum fuel replacement.

Petroleum imports overwhelmingly dominate energy use in the Marshall Islands. Efforts to shift toward more sustainable energy use require access to petroleum fuels at a fair price, assurance of the quality of products supplied, more efficient use of petroleum, and a shift to locally-produced liquid fuels to replace petroleum where this is practical. The MEC tank farm is a valuable national asset but its real value to the economy has not been determined.



MEC Fuel Storage, Majuro

Issues, Objectives and Strategies for Improved Petroleum and Liquid Fuel Use

Issues:

- Lack of reliable time-series data on total imports and retained imports of petroleum fuel products
- Limited understanding within the RMI of the value to the national economy and to MEC of the MEC fuel storage facilities
- Limited ability to effectively negotiate and monitor the terms of supply of petroleum fuels, and assure competitive supply terms
- Limited knowledge of the potential benefits and pitfalls for the RMI of the proposed regional bulk purchase of petroleum fuels
- Weak enforcement of regulations regarding safe storage, handling and transport of petroleum products and disposal of waste oil
- Ineffective mechanism for fair wholesale and retail prices in Majuro and elsewhere for petroleum products (including propane) to protect consumers, as well as suppliers and service station owners
- Limited knowledge of the technical, environmental, economic and financial issues related to development of local liquid fuels, especially coconut-derived, to reduce petroleum imports

Objectives:

- Up-to-date and reliable data on the volume of petroleum product imports, sales and end-use
- An understanding of the real value of the MEC storage facilities for the Marshall islands and ways to maximize its value
- Better understanding of the pros and cons of participation in the regional bulk petroleum purchase scheme
- Equitable wholesale and retail prices of fuel products on Majuro and elsewhere in the RMI
- Safe storage and distribution of petroleum products
- Development of a local biofuel industry where economically, environmentally and financially practical

Strategies: *

- Independent evaluation of the MEC tank farm and MEC bunkering operations
- In the short term arrange expert, neutral advice on tendering, negotiating and monitoring of petroleum supply contracts, including likely costs and benefits of participation in the proposed bulk fuel purchase scheme
- In the medium term, develop expertise within the government as appropriate to tender, negotiate and monitor petroleum supply contracts
- Establish and maintain a system for inspection and certification of storage, handling and safety procedures and licensing of petroleum storage and distribution facilities
- Arrange an independent study of gasoline, diesel fuel and propane pricing on Majuro and outer atolls to determine benefits and costs of a mechanism to establish allowable wholesale and retail price margins, and develop clear pricing and price monitoring system for Majuro and outer islands
- Establish and enforce regulations to require all petroleum suppliers to provide quarterly reports (to MRD, EPPSO (additional to Customs requirements) on volumes of fuel imported and sold
- Arrange independent study of technical, economic, environmental and financial practicality of developing local biofuels with different assumptions regarding the landed cost of petroleum fuels

* For data, see the section on 'Energy Policy Administration and Implementation'

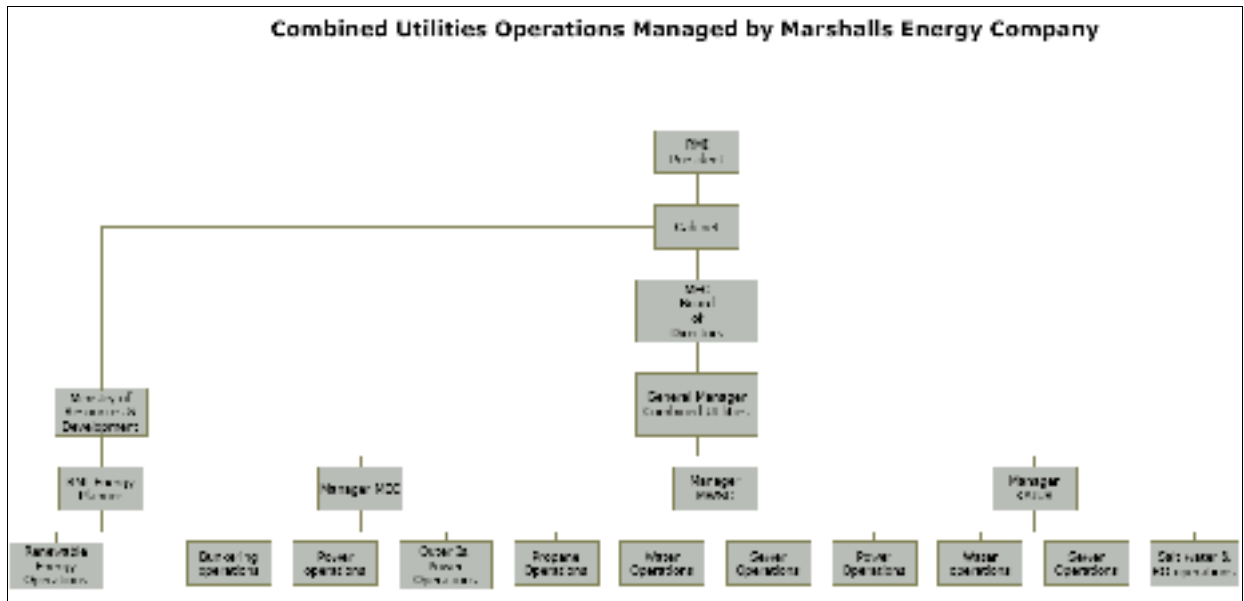
6. Electric Power

Policy statement

The Government of the Marshall Islands recognizes the importance of electrifying all households on all islands with sustainable and environmentally appropriate energy supplies. The Government will develop and enforce:

clear and equitable electricity tariffs, laws and regulations necessary to provide MRD with the authority required for effective and transparent implementation of this policy including electric power legislation, clear guidelines for the MEC board, mechanisms for allowing renewable energy to feed into the grid, and a consistent management system for all government renewable energy programs

Electricity is a versatile and high-value form of energy. The RMI aims to provide affordable and environmentally responsible forms of electricity to all households over time, though a resourceful, efficient, well-managed MEC which recovers the real costs of supply to its customers. With nearly total dependence on petroleum fuel, MEC costs will inevitably increase with petroleum fuel price increases, unless less-expensive local alternatives are found for large-scale electricity production.



Issues, Objectives and Strategies for Improved Electricity Supply

Issues:

- Lack of a legislative and regulatory framework for the electric power sector
- MEC supply side losses that may be excessively high
- For urban consumers, the electricity tariff does not recover full costs of supply
- non-transparent policy regarding free electricity to landowners and some others
- Although MEC has a 'lifeline' tariff designed to subsidize costs for low-income households, the maximum monthly consumption level of 500 kWh is too high (reducing MEC revenue) while the savings to low-income consumers are too low (providing limited financial relief to them)
- A common tariff for MEC, KAJUR, Jaluit and Wotje requires very high rural subsidies
- The monthly charge for solar home PV electric systems is too low to recover O&M costs and does not provide revenue for battery replacement
- It is not known whether the current solar home PV systems meet the aspirations of outer island communities for electric power supply
- The monthly charge for larger solar PV electric systems (e.g. schools, health) is unclear but probably far too low to recover O&M costs including battery and inverter replacement
- Unclear costs and benefits of pre-pay metering on Majuro, which could allow re-connection of defaulting customers and recovery of some of the outstanding debt
- Lack of a clear affordable alternative to diesel fuel for large-scale power generation

Objectives:

- Clear authority and responsibilities for electric power supply, including a regulatory system that allows private supply to the grid under conditions fair to MEC and the supplier
- Reduction of MEC supply side energy losses by 20% of 2009 levels by 2015, consistent with sound technical and financial criteria
- A transparent tariff structure for those receiving full electricity supply that covers the real costs at each island system, with a lifeline tariff that genuinely benefits low-income consumers without adversely affecting MEC income
- A management and financial system for outer island PV electrification that is sustainable and recovers O&M and battery replacement costs, for household and institutional systems (e.g. health, fisheries, telecoms, and school installations)
- Use of appropriate mechanisms, possibly including pre-pay meters, for defaulting customers to be reconnected and repay arrears over time
- Development of alternatives to diesel fuel for power generation where economically sound

Strategies:

- Development of appropriate legislation and regulations with clearly-defined authority, obligations and responsibilities for electric power supply in Majuro and throughout the RMI
- Development of appropriate technical guidelines and regulations for self-generation through renewable energy sources and feed-in tariffs* under conditions fair to MEC and the supplier.
- Technical study on the level of MEC supply side losses and practical means to reduce them at reasonable cost
- Development and implementation of a revised electricity tariff structure for MEC and utilities it manages based on actual costs at each island, with a lifeline tariff set at a level that provides clear benefits to the bottom quintile of MEC's household consumers without adversely affecting MEC income.
- Assessment of the real costs of rural PV electrification (households, schools, etc) and appropriate management and financial systems for sustainability including training needs.
- Assessment of the attitudes of rural households regarding the quality of the solar PV program, with recommended improvements where necessary to improve supply.
- Study of appropriate mechanisms, including pre-pay meters, for reconnecting defaulting customers with a strong likelihood of regular payment of charges
- Independent study of the viability of alternatives to diesel fuel for power generation where economically sound (e.g. coconut oil, heavy fuel oil, grid-connected solar).
- Assessment of costs and benefits to the government and MEC of free electricity as part of government efforts to rationalize payments to landowners and others.
- Collaboration of MRD with the OEPPC to develop RMI's greenhouse gas emissions report, including coverage of the comparative advantages and costs of savings through efficiency and conservation, reporting obligations and exploration of funding opportunities to support the energy policy

* Feed-in tariffs offer a minimum guaranteed price for energy sold to the utility, which is obliged to allow generators to connect to the grid, and to buy an agreed amount of electricity at the agreed- price

7. Transport and Energy Use

Policy Statement

The Government of the Marshall Islands recognizes that land, sea and air transport is the largest user of imported energy in the country and measures to improve the energy efficiency of transport are at the core of an energy policy that focuses on reducing foreign energy dependence. It will:

take the lead in the procurement of more efficient vehicles, ships and boats, and establish rules for improved maintenance and operations with the goal of improving transport efficiency and lowering imported transport fuels by 20% by 2020

adjust tax structures to encourage the import and sale of energy efficient forms of transport; and

mandate the use of locally produced biofuel in diesel powered government vehicles by 2015.

Available data suggest that transport – land, sea and domestic aviation – probably accounts for more petroleum fuel use in the Marshall Islands than all other uses combined. Although there are opportunities to reduce transport energy use, these generally require some years to have a substantial impact. In the short term, improved maintenance can have measurable impacts.



Majuro traffic is frequently congested, increasing fuel consumption

Issues, Objectives and Strategies for Improved Energy Use in Transport

Issues:

- Import duties and taxes do not discriminate between energy-efficient and inefficient vehicles
- Past policies restricting government vehicle purchases to efficient vehicles not strictly enforced
- No standards for allowable vehicle emissions, although high emissions are linked to poor efficiency
- Government budgets are inadequate for proper vehicle maintenance
- Limited capacity for proper vehicle maintenance
- Interisland transport energy efficiency is probably low
- Need for improved capacity for financial management and strategic uses of funds

Objectives:

- A fleet of well-maintained vehicles, government and private, that is increasingly energy-efficient over time
- A more energy efficient transport network for urban and rural Marshallese

Strategies:

- Amend import duties and taxes, with higher rates for energy inefficient vehicles (or to simplify administration, for vehicles of varying engine displacements and fuels used)
- Mandate all government vehicles purchased to be energy-efficient and develop mechanisms to assure this.
- Introduce spot-checks on vehicle emissions with penalties for emissions above a specified level
- Establish and enforce clear guidelines for the efficient use and maintenance of the Government vehicle fleet and ships, including strict servicing and maintenance procedures, with an adequate budget allocation
- Enforce the RMIEPA regulations regarding ozone depleting substances in vehicle air conditioning
- Investigate the practicality of retrofits to reduce fuel use in sea transport, e.g. more efficient propellers, sail-assist technologies, etc.
- Short term practical training for proper maintenance of vehicles

8. Energy Efficiency

Policy Statement

The Government of the Marshall Islands recognizes that improving the efficiency of energy use has greater short term value for reducing dependence on foreign sources of energy than any other action. The MRD will develop an energy management plan for government, including processes for its implementation and monitoring. Government will:

revise taxes to encourage the import and sale of appliances, vehicles and boats having the highest energy efficiency;

develop energy efficiency standards for new buildings and renovations including homes, businesses and government premises, with financing on subsidized terms for designs and construction meeting the standards;

carry out energy audits on government facilities, with the responsible departments each developing and submitting an investment plan for the capitalization of energy efficiency improvements for the facilities; and

require government departments to each name an energy manager who will develop and implement an energy management plan. Monitoring will be by MRD and annual reports detailing energy usage will be submitted.

Government policy is to offer incentives and opportunities to private citizens and businesses for increasing the efficiency of energy use through improved information, tax reform, access to finance, and regulation where appropriate but primarily through reliance on market mechanisms.

Standards for new or renovated buildings offer considerable opportunity for lowering energy use. The local climate is conducive to comfort without the need for high levels of air conditioning. Shading and orientation of buildings to take account of prevailing breezes and the sun's position can reduce heating of the building while the addition of reflective roof paint and attic heat radiation barriers can greatly reduce the need for air conditioning. Government itself will strive to set an example through better energy efficiency in its own facilities.



With no insulation, many urban and rural homes are uncomfortably hot

Issues, Objectives and Strategies for Improved Energy Efficiency

Issues:

- Lack of adequate technical capacity within government to identify, appraise, develop and implement energy efficiency initiatives
- limited capacity within the private sector to provide energy management services to government, businesses or households
- Import duties and taxes do not encourage energy efficient appliances or equipment
- Relatively poor knowledge by the public about affordable ways to reduce energy costs
- Perception of high investment risks by financiers along with lack of affordable and accessible finance for energy efficiency improvements
- No standards for energy efficiency in building design or building renovation
- No mandatory labelling or energy efficiency standards for key electrical appliances
- No incentives within government for individual departments or officers to reduce the government's own energy use

Objectives:

- Measurable and substantial improvement of energy efficiency by 2020, in at least 50% of households and businesses and 75% of government buildings.
- An improved stock of more energy-efficient appliances and equipment within government, businesses, and private homes

Strategies:

- Training of government, MEC and private sector in energy auditing and energy management techniques, possibly using CMI facilities as a model
- Revision of Import duties and taxes to encourage the purchase of energy efficient appliances and equipment (e.g. refrigeration, air conditioning, major appliances, lighting)
- Continuation of the public awareness campaign of late 2008/early 2009 (e.g. providing Energy Saving Tips with MEC bills, and TV/radio campaigns) strengthened through linkages to global warming awareness with respect to energy efficiency and socio-economic welfare
- All new or renovated government buildings will incorporate energy-efficient designs and the RMI govt will work with Compact and other funding sources to develop mechanisms for effective implementation
- Development of low interest loans, rebates and other innovative financing mechanisms through the banking system for energy efficiency investments by households and businesses

- Establish and enforce codes for new construction with mandatory minimum energy standards (possibly based on simplified version of a new tropical building code being developed for Guam and other US territories)
- Develop a practical appliance labelling scheme and mandatory minimum energy performance standards (MEPS) for refrigerators, air conditioners and other electrical appliances to remove the poorest performing appliances from the market
- Establishment of practical mechanism for reduction of energy use within the government, with incentives (carrots and sticks) for individual departments
- Develop and implement a practical program to replace inefficient lighting (household, business, government and street lighting) with efficient lighting on Majuro and Ebeye and throughout the Marshall Islands.

9. Renewable Energy

Policy statement

The Government of the Marshall Islands recognizes that socio-economic development will require an increased level of energy production and that only through the development of local renewable energy resources can there be a reduction in long-term dependence on imported petroleum. The government will:

aggressively support the development of all environmentally appropriate, practical and economic Indigenous energy resources so that local renewable energy will provide 20% of electrical energy generated in the Marshall Islands by the end of 2020;

mandate that Imported energy for land transport will be replaced where practical by locally produced biofuel and for sea transport both wind energy and biofuel will be increasingly used;

take the lead in the use of indigenous energy to replace imported petroleum with a goal of a 40% total reduction in energy from petroleum fuels within government by the end of 2020

ensure that all outer island energy development will be through the use of indigenous energy sources where technically practical; and

require that all renewable energy technologies accepted by government for use in the Marshall Islands shall be commercially proven and shall have more than five years of successful service in remote, tropical islands through installations of a similar type and size as those needed in the Marshall Islands.

Renewable energy technologies tend to have a higher profile than energy efficiency actions. They are more visible as new installations and are generally perceived as more cutting-edge by governments and donors alike, despite often higher initial capital costs than energy efficiency measures. The RMI policy on any energy technology, system, product or venture that is unproven commercially and that has not already been successfully operating in a coral atoll environment will be to exercise great caution. The RMI will not assume any financial, technological, legal or any other form of risk. For such technologies, systems, products or ventures, the RMI will demand that all costs and risks must be born fully by the promoter or developer, and will ensure that alternative sources of energy will remain available in the event of failure.



Outer atoll solar energy system for fisheries

Objectives and Strategies for Expanded Use of Renewable Energy

Issues:

- Lack of information on indigenous renewable energy resources, particularly wind and wave energy
- Inadequate training for those developing RE project proposals, trainers of those who manage outer island systems and trainers of household users in the proper operation and maintenance of solar installations
- Different and incompatible management systems for various government programs implementing rural renewable energy installations
- High initial costs and, for some RE resources and locations, imprecise knowledge of likely energy production (e.g. kWh output per year)
- Although grid-connected renewable energy may be important in the future, there is very limited experience with it in the Marshall Islands, with two small grid-connected systems operating in mid 2009.
- Outer island household electrification schemes have a “one size fits all” mentality but actual needs can vary widely
- Poor access to land suitable for indigenous energy development
- Promoters visiting the RMI sometimes advocating and trying to sell unproven or untried RE systems or those of doubtful quality. At best this causes confusion and wastes time; at worst it results in investment of funds for energy projects that cannot provide promised results

Objectives:

- Improved capacity within the RMI to plan, develop, implement and manage renewable energy systems (small and medium-scale rural; large scale urban)
- provision of 20% of electrical energy through indigenous renewable resources by 2020
- Outer island energy development to be through indigenous energy sources where technically practical and economically attractive

Strategies: *

- Arrange wind measurements over 12- 18 months and obtain an independent analysis of the wind energy potential for Majuro
- Arrange independent assessment of the technical, environmental and economical feasibility of waste to energy conversion for Majuro
- Develop and implement training of trainers programs covering PV system design, installation and management; develop training programs for village level O&M
- Develop and implement consistent mechanisms for the design and O&M of PV systems of different ministries to provide for consistent management, operational and financial mechanisms

- Develop and implement a program for solar water heating, particularly in Majuro, Ebeye and the hotel industry to replace electricity based water heating
- Continue the program of outer island household solar energy installations and develop a mechanism for covering full user costs (through user fees and possibly a sustainable RE fund)
- Arrange with donor support a pilot program to introduce renewable energy into the MEC or KAJUR grids to gain experience in integrating RE into the grid
- Assess options for RE development that do not require access to private land (i.e.. at government facilities, possibly reef-based installations)
- Ensure Cabinet is kept up-to-date regarding the capabilities of and progress in renewable energy technologies, particularly ocean energy from waves, tides and ocean thermal gradients (OTEC).

* Some strategies, (e.g. MEC management of solar PV, user fees, biofuels development and regulatory reform) have been covered in earlier chapters of this policy. There is also some overlap among the chapters.

Annex 1: The Public Consultation Process

The SWOT Energy Workshop. A SWOT workshop ('Strengths, Weaknesses, Opportunities and Threats') to consider a more sustainable approach to energy development and use in the RMI was held at the Marshall Islands Resort on December 3rd, 2008. Invitations were widely circulated. In addition to facilitators, it was attended by 22 participants from government, civil society and the private sector and covered by the Marshall Islands Journal. Discussions were open, constructive and spirited, with nearly all participants remaining long after the workshop was scheduled to end. In the views of the facilitators, this was among the most productive of many similar SWOT energy workshops held in the Pacific in recent years. A full report is available from MRD.



One of the discussion Groups, SWOT Workshop, Dec 2008

Participants developed a list of issues and recommended actions that they felt could realistically be implemented within 6-12 months:

- More aggressive energy awareness / education so people agree on the issues and can have more impact on decisions and actions;
- Encouragement of “green” products (e.g. tax breaks for energy-efficient lights and appliances) and discouragement of inefficient appliances (e.g. outlaw highly inefficient products and enforce the rules; high taxes for SUVs);
- Reform government transport and vehicle policy (e.g. establish a government bus service);*
- Power utilities should initiate programs of energy audits (e.g. for government sector lighting) and produce publications on opportunities for improved efficiency;
- Establish and enforce building codes for energy-efficient design (including for government buildings);
- Continue the current program for financing outer island solar energy installations;
- Develop, endorse (Cabinet) and implement a national energy policy and action plan;
- Develop, endorse and implement a national electric code;
- Establish and fund a genuine National Energy Fund for fuel and renewable energy, with a real monetary injection, not just apparent funding;
- Specific proposals for energy projects should be developed, completed and submitted to financing agencies;
- Develop a national policy for reducing carbon emissions, with support for specific targets;
- Strengthen public/private partnerships for renewable energy and energy efficiency;
- Develop a local biofuel industry;*
- Improve enforcement of laws/regulations against illegal power connections and tampering with power lines and meters; Attorney General should prosecute offenders; and
- Strengthen the MRD’s Energy Planning Division.

Note: * Indicates considerable discussion and some disagreement

The Energy Public Policy Forum. A public forum to discuss national energy issues and means to address them was held on January 30th, 2009 at the International Conference Center, and attended by about 50 participants. The entire Forum was broadcast on national radio, resulting in considerable attention, including those in the outer islands. The resulting declaration and recommendations are attached as a separate annex. The forum deliberations and declaration constituted a vital and important input into this policy.

The Energy Fair. An Energy Fair attended by hundreds of people was organized by MRD and opened by the President of the RMI on February 28th, 2009, with speeches on energy issues, and demonstrations of various renewable energy and energy efficiency technologies and energy efficient appliances. The Energy Fair program was broadcast nationally. Although this was not formally part of consultations for the energy policy, there were numerous discussions that have contributed to the process of the policy development.



Volunteers at the Energy Fair, February 2009

Interviews with importers. Key importers of appliances (air conditioners, refrigeration, lighting, etc.) and vehicles were interviewed for their views and advice on how to encourage the use of more energy-efficient equipment and automobiles.

Annex 2: The Majuro Energy Declaration 2009

Joint Declaration on Energy Policy Priorities RMI Energy Public Policy Forum Majuro, Republic of the Marshall Islands International Conference Center, January 30, 2009

Mindful that in July of 2008 the Republic of the Marshall Islands issued a Proclamation declaring a State of (Economic) Emergency due to soaring commodity prices;

Reaffirming our common belief that concrete adjustments have to be introduced at multiple levels, particularly at the policy level, to effectively deal with high energy prices and to promote clean, reliable, accessible and sustainable energy;

Agreeing that addressing energy issues requires collaborative leadership, common goals, and a shared national vision;

Having participated in the 2009 Energy Public Policy Forum, and having presented and discussed our respective views and opinions on the current situation and the necessary responses that must be taken by the nation over the coming years;

Now, therefore, we, the undersigned, hereby declare and proclaim the following policy priorities and actions to be duly implemented by the People and Government of the Republic of the Marshall Islands to ensure stronger energy security and sustainability moving forward:

We make these declarations and commit to their full and proper implementation.

We commit to ensuring that proper resources are made available to implement these recommendations in an effective and timely manner.

We further commit to revisiting these recommendations in exactly one year's time, in January of 2010, to review and evaluate progress made in implementing these recommendations.

Given under our hands this 30th day of January, 2009

Iroij Kotak Loeak
Chairman, Council of Iroij
Republic of the Marshall Islands

Casten Nemra
Chief Secretary
Republic of the Marshall Islands

Daisy Alik-Momotaro
Director WUTMI and
Member Marshall Islands Council of NGOs

Hirobo Obeketang
President
Marshall Islands Chamber of Commerce

Kiyoshi Nakamitsu
RMI Country Officer
Pacific Operations Department
Pacific Department, Asian Development Bank

Recommendations As Endorsed by RMI Energy Public Policy Forum

Recommendations from the Council of Iroij

- the MEC begin using pre-paid meters to improve its cash-flow and assist disconnected households get back on line;
- the National Government strengthen its Renewable Energy (RE) and Energy Efficiency (EE) programs as much as possible;
- the National Government give serious consideration to the establishment of loans or financing programs for families who want to switch to more efficient air-conditioning, refrigeration, lighting and cooking systems;
- the National Government continue to invest in and expand the Outer Island Solar Program; and
- we explore and utilize alternative energy sources, including appropriate renewable energy technologies and energy efficient measures, to mitigate against economic hardship while promoting sustainable environmental practices.

Recommendations from the Chamber of Commerce

- we promote vehicle fuel saving tips to reduce commercial and private expense and thus provide funds for other energy saving measures (e.g. address road policies, improve engine performance, and enforce government vehicle use hours);
- electricity saving measures be pursued to reduce dependence on fossil fuels (e.g. adjust import duties to promote energy efficient products, retrofit streetlights to more efficient systems, reduce excess lighting, improve building efficiencies, encourage pay-before-you-use systems, and encourage green technology);
- we explore how biomass including vegetable waste, can be converted to fuel;
- we cease needless duplication, achieve greater effectiveness, and encourage more start-up businesses (eliminate duplication in equipment and services in government that are offered by private sector, outsource certain government functions, and retrofit all public buildings with more efficient systems); and
- we pursue coordinated solutions to solve a variety of problems (reconsider taxes altogether).

Recommendations from Women United Together Marshall Islands and Marshall Islands Council of NGOs

- the government capital development and housing loan programs incorporate both energy-saving and energy-production construction/renovation guidelines;
- all households, particularly those located in the urban centers, are equipped with energy-production units for lighting, heating, and cooking;
- teaching and learning indicators related to saving and production of energy are developed and incorporated in the existing or to-be-developed school curricula and training syllabi;
- all socio-economic and environmentally related programs incorporate energy-saving and/or energy-production objectives and measures;
- the National government promote collection and use of disaggregated data to identify and quantify energy needs and uses of women/men and design and implement programs for current and transformational uses;
- That the National Government promotes investments and promotes awareness about alternative energy technologies that can transform women's lives;
- we support affirmative action to increase women's decision-making authority in energy sector institutions such as MEC;
- training of women in technical fields and involvement in design, promotion, and use of energy technologies and resources be strengthened;
- we incorporate "green" energy options wherever possible and that we identify early in the process who will develop, implement, and enforce guidelines for green options;
- we ensure that hardware used (solar panels, wind generators, etc.) do not quickly become landfill – that is, they are of a quality that will last for many years;
- we explore using waste and ocean as sources of energy; and
- we explore how we can increase copra production to use the oil as a renewable energy source.

Recommendations from the Asian Development Bank

- RMI adopt policies and plans that maximize energy efficiency as its immediate priority –encouraging energy efficient products, being more careful about consumption patterns and promoting efficient lighting, air conditioning and refrigeration systems and also consider encouraging switching from electric cooking to gas stoves and incentivizing the importation of more fuel-efficient vehicles;
- RMI adopt renewable energy technologies as a high priority, as the RMI has already done with its impressive solar program;
- RMI promotes energy conservation in each community, government office, and all households;
- RMI prioritizes the completion of its new National Energy Policy and medium-term Energy Action Plan; and
- the National government improves its budget management, financial efficiency, and reduce its high wage bill so as to reduce budgetary pressures and improve its preparedness for future energy emergencies.

Recommendations from the RMI National Government

- even as energy prices have fallen sharply in recent months, that RMI from a policy basis assume that global fossil fuel based energy prices will eventually rise again;
- RMI expedite the finalization of its new RMI National Energy Policy and Medium Term Energy Action Plan and that these emphasize Energy Efficiency and Renewable Energy;
- energy efficiency campaigns targeting the general public be aggressively pursued and sustained;
- we strive to reduce the cost of imported fossil fuels by exploring the regional bulk procurement initiative and related options;
- our utilities, MEC and KAJUR, improve operational efficiency – in particular, reduce technical losses, reduce non-technical losses, and aggressively explore alternative generation options;
- MEC and KAJUR reform their tariff templates to reflect the full costs of their services;
- MEC phase in pre-pay meters;
- National government lower or reduce import taxes on energy efficient products and restrict imports on inefficient appliances and vehicles; and
- we establish loans to help households finance energy efficient home improvements.

Additional Recommendations from Forum Participants

- Emphasize the private sector's role in the growth of new energy jobs and industries;
- Consider providing a matching fund to assist people with purchase of energy efficient products;
- As a matter of urgency, investigate the current gasoline pricing issue and determine why retail gasoline prices are so high, the investigation to include all gasoline suppliers;
- Widen the energy policy analysis to include more analysis of environmental issues (e.g. waste).
- Emphasize simple, low-tech options for the RMI;
- Consider traditional practices and how they can improve current energy policies;
- Reconsider suggestion to switch from electric to propane cooking;
- MEC and other companies consider providing energy audits to individual households as an additional service;
- Emphasize performance-based budgeting in the government and include energy criteria as a performance measure for each government ministry and agency;
- Emphasize coconut and other bio-fuel production in the RMI as a means to raise our energy independence;
- Emphasize the diversification of energy sources;
- Consider the reduction of work hours in the national government as a means to save funds;
- Emphasize capacity development in the energy sector and facilitate more active partnerships among academia, donors, and the National Training Council; and
- Provide renewable energy assistance (e.g. solar panels) to urban families in addition to outer islands.