



Te Atamoa o te Uira Natura no te PA-ENUA TAKITAI E TUMUTEVAROVARO

Cook Islands Renewable Energy
Chart Implementation Plan

Island Specific

This Implementation plan is outlined specific to each island of the Cook islands which articulates the costs, technology, time lines, and the processes. It is noted this document must be read in conjunction with the 'Cook Islands Renewable Energy Chart Implementation Plan' towards 2020.



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Executive Summary

Government of The Cook Islands has taken an audacious step towards transforming its country from dependency to fossil fuel as an energy source to a future of Renewable Energy means as its source of electrical power generation. To guide it in its progress towards achieving this target, it has developed an Implementation Plan that is; island specific, simple to understand and succinct.

This implementation Plan cannot be read on its own but with the backdrop of the “Cook Islands Renewable Energy Chart Implementation Plan.” This report provides the analytical data, advice and comments from which this island specific Implementation Plan has been developed.

The island specific plans will indicate information that is pertinent to the “how” of the roll out of the Renewable Energy projects on each island:

- **Island Energy Sector set up:**
This data indicates the electric distribution, generation and customer details of the island.
- **Technology Type:**
There are various proven renewable energy technologies of which a specific type will be identified here for each island.
- **Cost:**
The projects have indicative costs (capital & operational) based on scoping studies already undertaken on several islands, the local knowledge of each island electrical infrastructure and available electrical data of each island. The full cost will be determined once a full project study has been completed.
- **Project Time line:**
This is self-explanatory in that a timeline, of a beginning and an end, will be indicated for each island project.
- **Governance:**
Accordingly, the projects involve various stakeholders. The processes and reporting lines along with identified responsibilities will be outlined.
- **Approach:**
The transformation for each island will be undertaken in two approaches; the Northern and Southern Group of islands will be undertaken in a one goer approach as they are small enough to do so with the exception of Aitutaki and Rarotonga. Both these islands will have a phased transformation over time to the year 2020.

The island specific implementation plan is a living document and will be amended as time and progress ensues. A monitoring and evaluation of timelines and data will be undertaken every year to keep it current.

Introduction

There is no secret to the intentions of the Government of the Cook Islands in relation to its power shift towards a Renewable Energy future. Government has established a Renewable Energy Development Division with the Office of the Prime Minister as an indicator of leadership; and has openly voiced to the International Community, the Region and the Country of its commitment to achieving, by Renewable Energy means, the electricity demand of the country by 2020.

Government, in its endeavour to achieve its Goal, has produced the “Cook Islands Renewable Electricity Chart” the “Cook Islands Renewable Energy Chart Implementation Plan” as its guiding papers to which the Island Specific Implementation Plan is developed.

To fully appreciate the degree of complexity and scope of the project it would be advisable to read the aforementioned papers.

The purpose of this Plan is to convey, in its simplest form, to the reader what is to be undertaken and how it will be done for each island.

Governance

Over the last 20 or so years the Ministry of Energy never operated within a stable environment in that it never could find a permanent place in the whole machinery of government. The Ministry, supported by the Energy Act 1998 and National Energy Policy 2003, underwent further restructuring in 2011 by the establishment of a Renewable Energy Development Department (REDD) within the Office of the Prime Minister and the regulatory functions of the Ministry remained with the Ministry of Infrastructure and Planning. During this same period the Government established its renewable energy goal. The Cook Islands had now established vision, leadership, and commitment in renewable energy.

REDD is tasked to roll out the Implementation Plan working in conjunction with Te Aponga Uira (Power Company on Rarotonga), The Island Administration and Councils (11) who are responsible for their island energy needs, the Donor partners, Aid Management Division of the Ministry of Finance and Economic Management (MFEM) and the Renewable Energy Committee chaired by the Prime Minister.

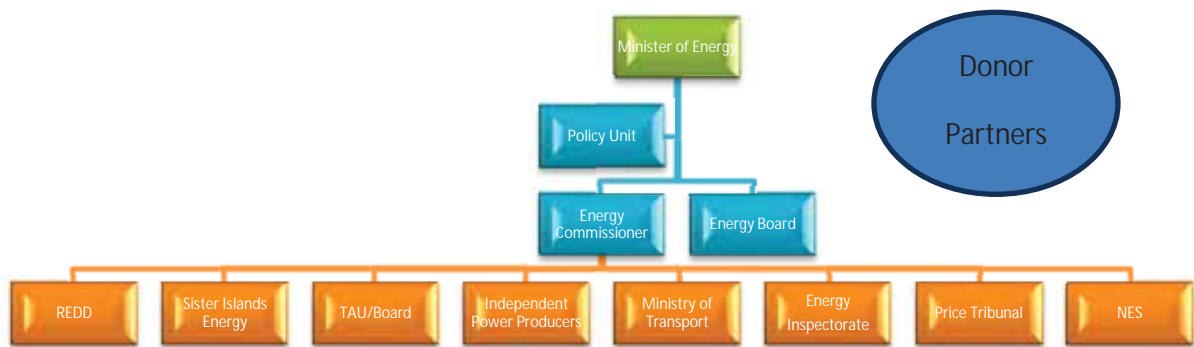
When rolling out the renewable energy projects the following studies are generally required to be undertaken. They may be grouped together or done individually – time and expertise driven. A tendering process (governed by established tendering processes – National & Donor) is undertaken. This process will be undertaken, grouping islands together for a one approach, or individually for the more complex and bigger islands such as Rarotonga and Aitutaki. The tendering process would be for the purpose of undertaking the following studies/reports:

- a. Scoping/Project Feasibility Study

- b. EIA report
- c. Verification study
- d. Design study
- e. Procurement & Installation
- f. Installation Supervision
- g. Terminal Report

The timeline for this process can be elongated for up to 3 months to finalize the successful tender and therefore REDD has taken measure and will continue to do so to harmonize donor partner processes along with National processes towards achieving its project timelines.

In ensuring there is a holistic coordinated approach to rolling out the IP, a proposed further restructuring of the energy sector is in the planning stages.



The above proposal would improve upon an already defragmented energy sector and increase synergy between all stakeholders.

IP: Rakahanga



Northern Group: 1,250 km north of Rarotonga.

Area: 4 sq. km

Infrastructure								
Power System		<ul style="list-style-type: none"> 1 x 27 KVA Generator 415 V - 3 Phase low voltage underground reticulation system 						
Electricity Statistics								
Installed Capacity (kW)	Maximum Demand (kW)	Sales (kWh)/yr	Daily Supply (hrs)	Customers		Fuel Use l/kWh	Fuel kl	Reported Losses %
				Domestic	Commercial			
56	18	76,000	18	50	17	?	?	9?
Tariff Structure								
Domestic				Commercial				
42 c/kWh, plus 12.5% VAT				62 c/kWh, plus 12.5% VAT				
Electricity Ratios								
Total Households	Total Population	'000 kWh/Person		'000 kWh/Household/yr				
50	77	0.99		1.5				
Activity								
Technology:		<ul style="list-style-type: none"> Solar PV Mini Grid System Battery storage One new diesel back up 						
Timeline:		2012 - 2013						
Cost:		NZ\$1.2 million						
Donor:		PEC Fund						

Approach:

One Goer

IP: Pukapuka



Northern Group: 1,300 km northwest of Rarotonga

Area: approx 3 sq. km

Infrastructure

Power System

Some Solar PV Stand alone with Battery Storage for each household.
21 kW Diesel Generator for Government premises only.
No reticulation system.

Electricity Statistics¹

Installed Capacity (kW)	Maximum Demand (kW)	Sales (kWh)/yr	Daily Supply (hrs)	Customers		Fuel Use l/kWh	Fuel kl	Reported Losses %
				Domestic	Commercial			
21	?? estimated	Estimate required	24	?	?	N/A	?	N/A

Tariff Structure²

Domestic	Commercial
95 c/kWh, plus 12.5% VAT	75 c/kWh, plus 12.5% VAT

Electricity Ratios

Maximum Demand kW	Total Households	Total Population	'000 kWh/Person	'000 kWh/Household/yr
??	97	450	?	?

¹ Estimated

² Estimated based on other Islands.

Activity	
Technology:	<ul style="list-style-type: none"> Solar PV Mini Grid Battery storage Diesel Generator Back up
Timeline:	2012 - 2014
Cost:	NZ\$1.83m
Donor:	PEC Fund (Government of Japan)
Approach:	One Goer

IP: Nassau



Northern Group: 1,300 km northwest of Rarotonga

Area: 1.2 sq. km

Infrastructure								
Power System		1 x 21 kW Diesel Generator No reticulation system						
Electricity Statistics								
Installed Capacity (kW)	Maximum Demand (kW)	Sales (kWh)/yr	Daily Supply (hrs)	Customers		Fuel Use l/kWh	Fuel kl	Reported Losses %
				Domestic	Commercial			
21	10	39,000	24	?	N/A	?	?	?
Tariff Structure								
Domestic				Commercial				
95 c/kWh, plus 12.5% VAT				75 c/kWh, plus 12.5% VAT				
Electricity Ratios								
Maximum Demand kW	Total Households	Total Population	'000 kWh/Person		'000 kWh/Household/yr			
10	32	75	0.5?		1.2?			

Activity	
Technology:	<ul style="list-style-type: none"> • Solar PV Mini Grid • Battery Storage • Diesel Generator back up
Timeline:	2013 - 2014
Cost:	NZ\$0.9m
Donor:	PEC Fund
Approach:	One Goer

IP: Manihiki



Northern Group: 1,160km north of Rarotonga

Area: 4 sq. km

Infrastructure	
Power System	2 x Power Stations (Tauhunu & Tukao) 2 x 68 kW Diesel Generator in Tauhunu 1 x 68 kW Diesel Generator in Tukao Underground reticulation system

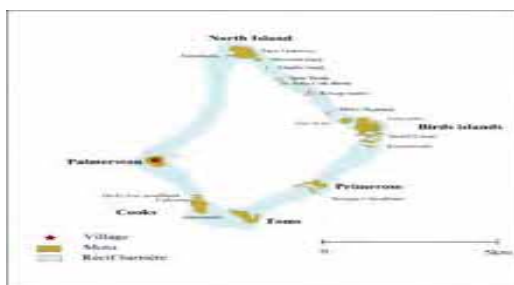
Electricity Statistics								
Installed Capacity (kW)	Maximum Demand (kW)	Sales (kWh)/yr	Daily Supply (hrs)	Customers		Fuel Use l/kWh	Fuel kl	Reported Losses %
				Domestic	Commercial			
136	50	300,000	24	?	?	?	?	?

Outer Island Tariff Structure	
Domestic	Commercial
56 c/kWh, plus 12.5% VAT	78 c/kWh, plus 12.5% VAT

Electricity Ratios				
Maximum Demand kW	Total Households	Total Population	'000 kWh/Person	'000 kWh/Household/yr
30	97	243	1.2	3.1

Activity	
Technology:	<ul style="list-style-type: none"> Solar PV Mini Grid Battery Storage Diesel Generator back up
Timeline:	2012 - 2013
Cost:	NZ\$1.2m
Donor:	PEC Fund & NZAID
Approach:	One Goer

IP: Palmerston



Northern Group: 500km northwest of Rarotonga
Area: 2.6 sq. km

Infrastructure								
Power System		1 x 21 Kw Diesel Generator						
		Underground reticulation system						
Electricity Statistics								
Installed Capacity (kW)	Maximum Demand (kW)	Sales (kWh)/yr	Daily Supply (hrs)	Customers		Fuel Use l/kWh	Fuel kl	Reported Losses %
				Domestic	Commercial			
21	8	28,700	14	?	?	?	?	9?
Tariff Structure								
Domestic				Commercial				
58 c/kWh, plus 12.5% VAT				74 c/kWh, plus 12.5% VAT				
Electricity Ratios								
Maximum Demand kW	Total Households	Total Population	'000 kWh/Person	'000 kWh/Household				
8	18	60	0.5	1.6				
Activity								
Technology:	<ul style="list-style-type: none"> Solar PV Mini Grid Battery Storage Diesel Generator as back up 							
Timeline:	2013 - 2014							
Cost:	\$0.6m							
Donor:	SIDS-STOCK (Require further funds or a donor partner to PIGGAREP)							
Approach:	One Goer							

IP: Penrhyn



Northern Group: 1400 kms north by north east of Rarotonga.

Area 9.8 sq. kms

Infrastructure

Power System

1 x 48 kw Diesel Generator in Tetautua
 1 x 68 Kw Diesel Generator in Omoka
 Underground reticulation system

Electricity Statistics

	Installed Capacity (kW)	Maximum Demand (kW)	Sales (kWh)/yr	Daily Supply (hrs)	Customers		Fuel Use kWh/l	Fuel kl	Reported Losses %
					Domestic	Commercial			
Omoka	68	48	88,000	18	N/A	N/A	2.4	40	9
Tetautua	48	20		18					

Tariff Structure

Domestic	Commercial
54 c/kWh, plus 12.5% VAT	58 c/kWh, plus 12.5% VAT

Electricity Ratios

	Maximum Demand kW	Total Households	Total Population	'000 kW/person	'000 kW/household/yr
Omoka	35	66	203	0.4	1.3
Tetautua	15				

Activity

Technology:	<ul style="list-style-type: none"> Solar PV Mini Grid Battery storage Diesel Generator back up
Timeline:	2012 - 2014
Cost:	NZ\$1.7m
Donor:	Donor Funding has not been secured
Approach:	One Goer

IP: Mitiaro



Southern Group: 228 km northeast by east of Rarotonga

Area: 22.3 sq. km

Infrastructure								
Network		1 x 77 kw Diesel Generator Underground reticulation system						
Electricity Statistics								
Installed Capacity (kW)	Maximum Demand (kW)	Sales (kWh)/yr	Daily Supply (hrs)	Customers		Fuel Use l/kWh	Fuel kl	Reported Losses %
				Domestic	Commercial			
77	39	120,000	24	?	N/A	?	?	9?
Tariff Structure								
Domestic				Commercial				
75 c/kWh, plus 12.5% VAT				95 c/kWh, plus 12.5% VAT				
Electricity Ratios								
Maximum Demand kW	Total Households	Total Population	'000 kWh/Person		'000 kWh/Household/yr			
39	145	189	0.5		0.8			

Activity	
Technology:	<ul style="list-style-type: none"> Solar PV Mini Grid Battery Storage Diesel Generator Back up
Timeline:	2012 - 2013
Cost:	NZ\$1.7m
Donor:	NZAID
Approach:	One Goer

IP: Atiu



Southern Group: 187 km northeast by east of Rarotonga. Area: 27 sq. Km

Infrastructure								
Power System		1 X 242 kw Diesel Generator 3.3 kV high voltage overhead reticulation system						
Electricity Statistics								
Installed Capacity (kW)	Maximum Demand (kW)	Sales (kWh)/yr	Daily Supply (hrs)	Customers		Fuel Use l/kWh	Fuel kl	Reported Losses %
				Domestic	Commercial			
242	100	332,000	24	?	?	?	?	9?
Tariff Structure								
Domestic				Commercial				
48 c/kWh, plus 12.5% VAT				68 c/kWh, plus 12.5% VAT				

Electricity Ratios				
Maximum Demand kW	Total Households	Total Population	'000 kWh/Person	'000 kWh/Household/yr
100	158	480	0.7	2.1
Activity				
Technology:	<ul style="list-style-type: none"> Solar PV Mini Grid Battery Storage Diesel Generator Back up 			
Timeline:	2012 – 2014			
Capital Cost.	NZ\$3.0m			
Donor:	No funding has been secured			
Approach:	One Goer			

IP: Mauke



Southern Group: Access: flights from Rarotonga

Area: sq. Km

Infrastructure								
Power System		1 x 130 kw Diesel Generator 3.3kV underground, LV overhead reticulation system						
Electricity Statistics								
Installed Capacity (kW)	Maximum Demand (kW)	Sales (kWh)/yr	Daily Supply (hrs)	Customers		Fuel Use l/kWh	Fuel kl	Reported Losses %
				Domestic	Commercial			
130	90	220,000	24	?	N/A	?	?	9?

Tariff Structure				
Domestic			Commercial	
45 c/kWh, plus 12.5% VAT			55 c/kWh, plus 12.5% VAT	
Electricity Ratios				
Maximum Demand kW	Total Households	Total Population	'000 kWh/Person	'000 kWh/Household/yr
90	106	310	0.7	2.1
Activity				
Technology:	<ul style="list-style-type: none"> Solar PV Mini Grid Battery Storage Diesel Generator back up 			
Timeline:	2012 – 2015			
Cost:	NZ\$3.19m			
Donor:	No funding has been secured			
Approach:	One Goer			

IP: Mangaia



Southern Group: 177 km southeast of Rarotonga

Area: 51.8 sq. km

Infrastructure							
Power System		1 x 330 kw Diesel Generator 11KV high and low voltage underground reticulation system					
Electricity Statistics							
Installed	Maximum	Sales	Daily	Customers	Fuel Use	Fuel	Reported Losses

Capacity (kW)	Demand (kW)	(kWh)/yr	Supply (hrs)	Domestic	Commercial	l/kWh	kl	%
330	120	441,000	24	?	?	?	?	9?
Tariff Structure								
Domestic				Commercial				
58 c/kWh, plus 12.5% VAT				74 c/kWh, plus 12.5% VAT				
Electricity Ratios								
Maximum Demand kW	Total Households	Total Population	'000 kWh/Person	'000 kWh/Household/yr				
120	177	573	0.7	2.5				
Activity								
Technology:	<ul style="list-style-type: none"> Solar PV & Wind Mini Grid Battery Storage Diesel Generator back up 							
Timeline:	2012 - 2014							
Cost:	NZ\$3.4m							
Donor:	No funding secured							
Approach:	One Goer							

IP: Aitutaki



Southern Group: 264 km north of Rarotonga

Infrastructure								
Power System		3 x Diesel Generator 11kV underground, 3.3kV underground & LV overhead reticulation system						
Electricity Statistics								
Installed	Maximum	Sales	Daily	Customers	Fuel	Fuel	Reported Losses	

Capacity (kW)	Demand (kW)	(kWh)/yr	Supply (hrs)	Domestic	Commercial	Use l/kWh	kl	%
880	620	3,291,000	24	650	100	?	?	9?
Tariff Structure								
Domestic				Commercial				
69 c/kWh, plus 12.5% VAT				69 c/kWh, plus 12.5% VAT, 1 st 1000kWh, 53 c/kWh above				
Electricity Ratios								
Maximum Demand kW	Total Households	Total Population	'000 kWh/Person	'000 kWh/Household/yr				
620	535	2035	1.6	6.2				
Activity								
Technology:	<ul style="list-style-type: none"> • Solar PV & Wind Mini Grid • Battery Storage • Diesel Generator back up 							
Timeline:	2012 - 2015							
Cost:	NZ\$16.9m							
Donor:	No funding secured							
Approach:	Phased							

IP: Rarotonga



Area: 67.39 sq. km

Infrastructure

Power System	1 x 1200 kW Diesel Generator (derated) 1 x 900 kW Diesel Generator (derated) 1 x 2000 kW Diesel Generator (derated) 2 x 1500 kW Diesel Generator (derated) 2 x 800 kW Diesel Generator (derated) 2 x 400 kW Diesel Generator (derated) 14,320 kVA (70.7 km) overhead reticulation system
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Electricity Statistics

Installed Capacity (kW)	Maximum Demand (kW)	Sales (kWh)/yr	Daily Supply (hrs)	Customers		Fuel Use l/kWh	Fuel KI	Reported Losses %
				Domestic	Commercial			
9500	4800	28,830,000	24	?	?	?	?	9?

Tariff Structure

Domestic	Commercial
56 c/kWh, plus 12.5% VAT Plus stepped tariff	78 c/kWh, plus 12.5% VAT

Electricity Ratios

Maximum Demand kW	Total Households	Total Population	'000 kWh/Person	'000 kWh/Household/yr
4800	3009	13097	2.1	9.6

Activity	
Technology: Opportunity will be given to Independent Power Producers (IPP) & Power Purchasing Agreements (PPA).	<ul style="list-style-type: none"> • Solar PV, Wind, Bio Mass, Waste to Energy Network • Battery Storage • Diesel Generator back up
Timeline:	2012 – 2020
Cost:	NZ\$208m
Donor:	Te Aponga Uira (requires donor partner)
Approach:	Phased Out

Figure 3

Indicative Cost of the Rarotonga Project

Rarotonga	Exp	TOTAL \$m	2012				2013				2014				2015				2016				2017				2018				2019				2020							
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4								
Waste to Energy	Capex	0.1	0.0	0.1																																						
Energy Storage	Capex	0.1	0.0	0.1																																						
Network Options - Renewables to 50%	Capex	0.2	0.1	0.1																																						
PPA or Alternate Framework	Capex	0.2	0.1	0.1																																						
Net Metering Development	Capex	0.1	0.0	0.1																																						
Establish Project Team	Capex	0.2	0.0	0.1	0.1																																					
Project Program to 2020	Capex	0.1	0.1																																							
Confirm Strategy	Capex	0.1	0.1																																							
Implement Network Stage 1	Capex	10.0	0.2	0.5	1.5	2.5	2.5	1.5	0.5	0.3																																
Implement Private Sector Generation	Capex	83.7	0.1	0.2	0.5	1.5	2.5	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.7	3.2	3.0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Implement Network Stage 2	Capex	10.0														0.5	1.0	2.0	2.5	2.2	1.5	0.3																				
Implement TAU Control & Generation	Capex	45.2														0.1	0.5	1.2	1.5	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0			
To be determined	Capex	34.7														0.3	0.3	0.3	0.5	0.5	1.2	1.5	1.4	1.2	1.0	1.0	0.2	0.2	0.5	0.8	2.5	2.8	2.8	2.8	2.3	1.3	1.3	1.3	1.1	0.9	0.5	0.1
Project Management	Opex	23.7	0.0	0.1	0.3	0.6	0.7	1.0	1.1	1.2	1.1	1.2	1.0	0.9	0.9	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7		
Longer Term monitoring, evaluation, reporting, training	Opex	5.8	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		
TOTAL	Capex	184.7	0.0	0.7	1.0	1.3	3.3	5.5	7.1	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2			
	Opex	29.5	0.0	0.1	0.2	0.4	0.7	0.8	1.1	1.3	1.4	1.3	1.4	1.2	1.1	1.1	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9			
	TOTAL	214.2	3.1																																							
			3.1				21.1				34.1				32.8				32.7				32.8				32.8				21.9				2.9							

Figure 4

Summary of possible Technology types and approach to roll out of each island project

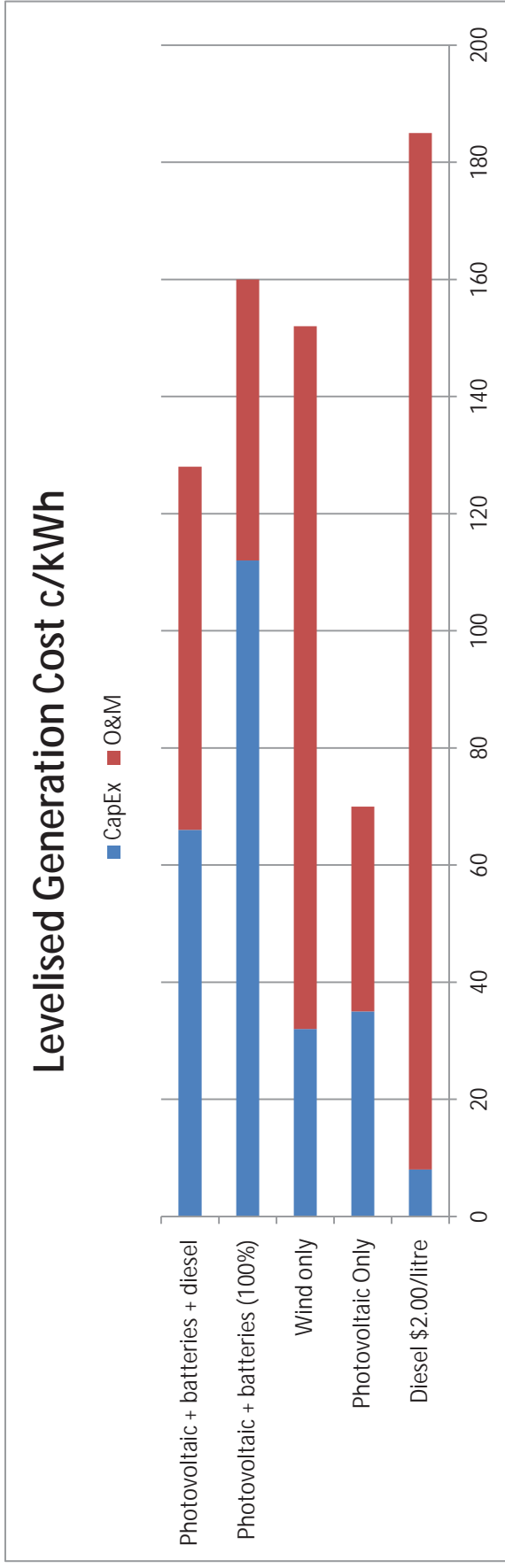
	Island	Peak Demand kW	Solar PV	Battery Storage	Wind	Diesel Back Up	Hydro Pumped Storage	Others (bio, waste to energy)	Energy Efficiency	Controlled Appliances
One-Goer Approach	Rakahanga	18	X	X	0	X		0	X	X
	Pukapuka	29	X	X	0	X		0	X	X
	Nassau	21	X	X	0	X		0	X	X
	Manihiki	36	X	X	0	X		0	X	X
	Palmerston	8	X	X	0	X		0	X	X
	Penrhyn	50	X	X	0	X		0	X	X
	Mitiaro	39	X	X	0	X		0	X	X
	Atiu	100	X	X	X	X	X	X	X	
	Mauke	90	X	X	X	X	X	0	X	
	Mangaia	120	X	X	X	X	X	0	X	
Phased Approach	Aitutaki	620	X	X	X	X	X	0	X	
	Rarotonga	5000	X	X	X	X	X	0	X	

Figure 6

Island Electrification										
Island	Maximum Demand Kw	Total Households	Indicative Population	Population/ Household	kWh	kW/		kWh/		Household
						Person	Household	Person	Household	
Rakahanga	18	51	77	1.5	76,000	0.2	0.4	987	1490	
Pukapuka	29	97	453	4.7	33,649	0.1	0.3	74	347	
Nassau	21	32	73	2.3	39,420	0.3	0.7	540	1232	
Manihiki	36	97	243	2.5	300,000	0.1	0.4	1235	3093	
Palmerston	8	18	60	3.3	28,733	0.1	0.4	479	1596	
Penrhyn	50	66	203	3.1	124,000	0.2	0.8	611	1879	
Mitiaro	39	145	189	1.3	120,000	0.2	0.3	635	828	
Atiu	100	158	481	3.0	332,000	0.2	0.6	690	2101	
Mauke	90	106	307	2.9	220,000	0.3	0.8	717	2075	
Mangaia	120	177	573	3.2	441,000	0.2	0.7	770	2492	
Aitutaki	620	535	2035	3.8	3,291,000	0.3	1.2	1617	6151	
Rarotonga	5000	3009	13097	4.4	28,828,000	0.4	1.7	2201	9581	

Figure 7

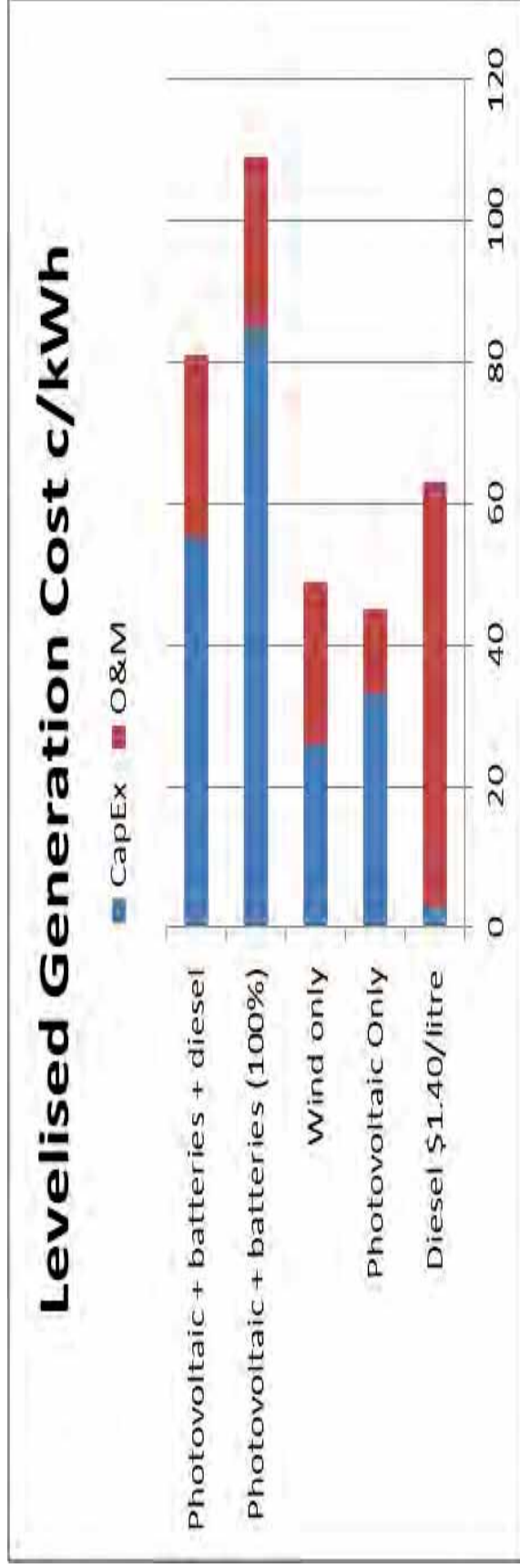
The following plot presents an indication of the levelised cost of generation for the technologies considered most immediately viable on the Outer Islands.³



³ Assumes Outer Island Councils do not pay tax other than VAT.
Diesel at \$2 per litre.
Based on Rakahanga Power Study Report December 2006 and other sources.
Allowances are included for both capital and operating costs for the remote locations and small scale effects.

Figure 8

The following table ranks the levelised unit costs for the options which meet two screening criteria⁴ (maturity of technology and social or environmental showstoppers)⁵. All options will benefit from improving information as projects are implemented.



⁴ TAU pays corporate tax. (Diesel at \$1.40 per litre)

⁵ Situational Analysis on Cook Islands Renewable Energy Implementation Plan towards 2020.