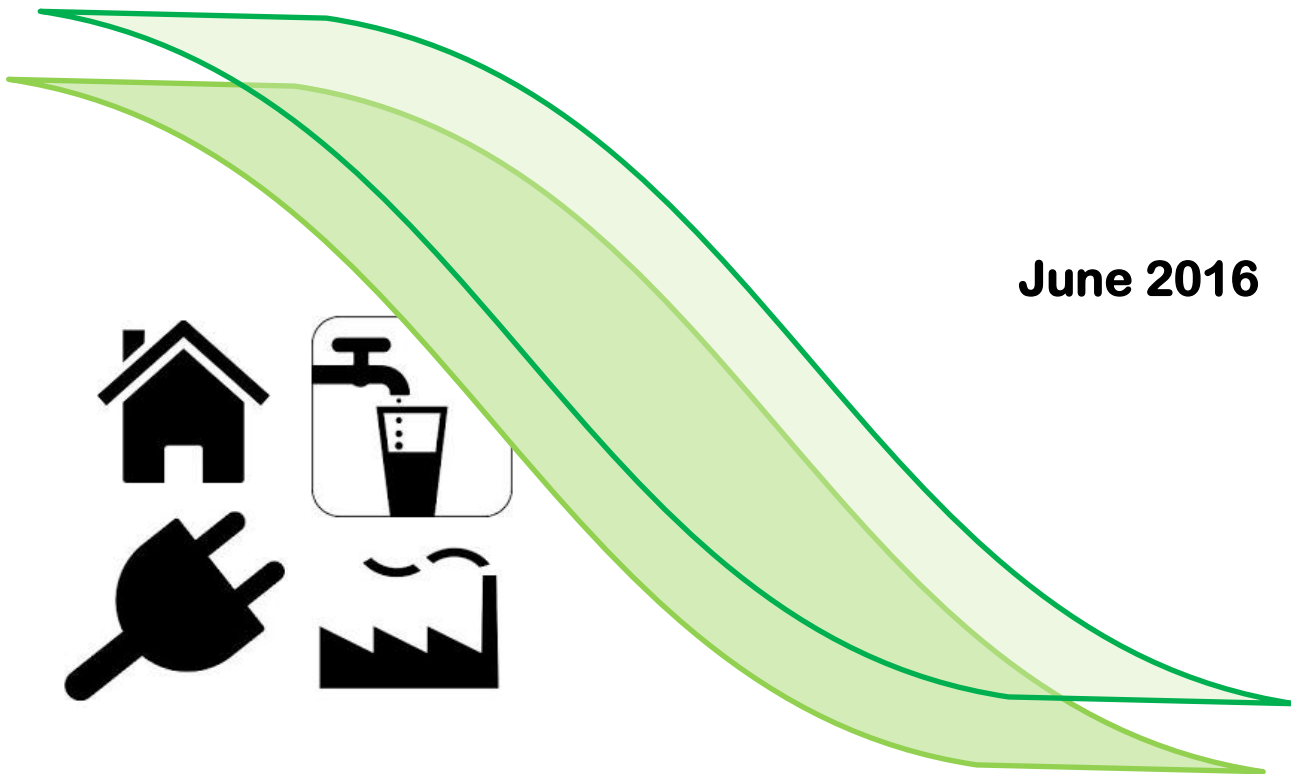


**Utilities  
Regulatory  
Authority**

# **Comparative Report**

## **Pacific Region Electricity Bills**



## Letter from the CEO

This is the fourth report of the Utilities Regulatory Authority (URA) on electricity bills comparisons for the small Pacific island countries and territories.

It has been our effort to conduct this annual exercise to gather, compile and disseminate current energy pricing. Information presented in this report can be used to observe trends and major factors influencing electricity prices. This report is designed from a consumer's standpoint, computing the total bill a consumer pays, including the costs related to energy use, fixed charges and all applicable taxes. In contrast, most studies are performed from the utility perspective, capturing generation, distribution and supply fixed and variable costs, return on investments or profits, but not necessarily reflecting the total retail price paid by the customers.

Section 4 of this report illustrates the movement of tariffs over time. The aim is to track the impact of regulatory programs including subsidy regime, energy infrastructure development, renewable energy contribution and efficiency efforts across the Pacific region, and measure their combined impact on ultimate consumer bills. As the region is dependent on diesel fuel for at least the base load, we have flagged the component of diesel in the generation mix for each utility, to provide some reference point for their ranking in the cost index.

To study comparability in the current bills, we have used the spot currency exchange rates in January 2016, since the trend in rankings is only meaningful by holding exchange rates constant at the last version of the report.

This year's bill comparison study is marked by the continuous drop in raw fuel prices as reported in the Regional Petroleum Fuel and Gas Price Review<sup>1</sup> during the second half of 2015. This electricity comparison report captures the drop in fuel prices resulting in decrease in consumer energy prices across the Pacific region. However due to transportation and logistics of the fuel supply chain from refinery port (Singapore) to the Pacific islands, the timing of the impact was varied and not immediate. The delay in fuel price drop differs for each country based on the distance from the port of origin, supply route, frequency of supply, the local demand (volumes) and the respective storage capacities. Another effect that was measured in Vanuatu and is reflected in this report was the appreciation of US dollar against local currencies for some countries in the region including Vanuatu, alleviating benefits of dropping diesel price to electricity consumers as diesel and other derivative products are priced in US dollar.

I hope that this report is of some value to those interested in the electricity pricing in the Pacific island region, and take this opportunity to thank all the professionals involved, the regulatory agencies and electricity companies who assisted our URA team in providing the data.

I welcome any suggestions to improve future analysis and reports.

Sincerely,

**Hasso Bhatia, PhD**

CEO, Utility Regulatory Authority of Vanuatu

---

<sup>1</sup> Regional Petroleum Fuel and Gas Price Review, Issue: 1 February 2016, [www.spc.int/edd](http://www.spc.int/edd)  
Utilities Regulatory Authority – Pacific Region Electricity Bills Comparison Report, June 2016  
Page 2 of 22

# Contents

Contents .....	3
1. Introduction.....	4
1.1 Purpose of this paper.....	4
1.2 Structure of this paper .....	4
1.3 Useful links .....	4
2. Methodology.....	5
2.1 Scope .....	5
2.2 “Typical” customer bills .....	5
2.3 Foreign currencies exchange rate.....	6
2.4 Taxes and government subsidies.....	7
3. Electricity price comparison and analysis .....	8
3.1 Small domestic consumers category .....	8
3.2 Domestic consumer category .....	9
3.3 Business consumer category .....	10
3.4 Factors that impact electricity costs.....	12
3.4.1 The generation mix.....	12
3.4.2 Country characteristics.....	13
3.4.3 Other key determinants.....	13
4. Electricity price evolution over time.....	15
4.1 Small domestic consumers price evolution .....	15
4.2 Domestic consumers price evolution.....	16
4.3 Business consumers price shift.....	17
4.4 Factors that impact electricity price over time.....	18
5. Conclusions.....	20

## List of tables and Figures

Figure 1: Comparison of bills paid by "Small domestic consumers" across the Pacific region in VUV/kWh ...	8
Figure 2: Vanuatu vs. Pacific avg. – Bill breakdown comparison for “Small domestic consumers” .....	8
Figure 3: Comparison of bills paid by "Domestic consumer" across the Pacific region in VUV/kWh.....	9
Figure 4: Vanuatu vs. Pacific avg. – Bill breakdown comparison for “Domestic consumers”.....	10
Figure 5: Comparison of bills paid by "Business consumers" across the Pacific region in Vt/kWh.....	11
Figure 6: Vanuatu vs. Pacific avg. – Bill breakdown comparison for “Business consumers”.....	11

# 1. Introduction

## 1.1 Purpose of this paper

The aim of this paper is to provide a comparison of electricity prices paid by customers in Vanuatu with different countries across the Pacific island region. Data is based on publicly available information on electricity rates for different utilities and includes all applicable taxes and fees.

The methodology used in this report is the same as used in earlier reports. That is comparison of the total cost of electricity for certain given levels of consumption and by major customer categories. This avoids differences in country-specific average or typical levels of consumption and customer mix when comparing average prices across countries.

Quality of service, availability, and reliability of service also vary widely between electricity suppliers across the Pacific which affects pricing. These factors have not been considered in this report.

## 1.2 Structure of this paper

This paper is structured into the following sections:

- Chapter 2, **'Methodology'**, describes the approach used to compare the cost of electricity services across the Pacific region.
- Chapter 3, **'Electricity price comparison and analysis'**, provides a comparison of electricity bills across the Pacific region and gives summary conclusions.
- Chapter 4, **'Electricity price evolution'**, shows how the tariffs have changed and trends in energy prices across the region since June 2015, time of our last release.

## 1.3 Useful links

Readers of this report may find it useful to consult the following sources:

- Fiji Electricity Authority: [www.fea.com.fj](http://www.fea.com.fj)
- Palau Public Utilities Corporation: <http://www.ppuc.com>
- American Samoa Power Authority: <http://www.aspower.com>
- PNG Power Ltd.: <http://www.pngpower.com.pg>
- EEC New-Caledonia: <http://www.eec.nc/>
- Tuvalu Electricity Corporation: <http://www.tectuvalu.tv>
- Republic of Kiribati Island report series: [www.climate.gov.ki](http://www.climate.gov.ki)
- Rep – 5 : <http://www.rep5.eu>
- Marshalls Energy Company: <http://mecrmi.net>
- Cook Islands energy provider: [www.teaponga.com](http://www.teaponga.com)
- Tonga Power Ltd.: <http://www.tongapower.to>
- FSM-Chuuk Public Utilities Corp.: <http://www.cpuc.fm>
- Guam Power Authority: <http://guampowerauthority.com>
- Vanuatu: [www.ura.gov.vu](http://www.ura.gov.vu)
- Pacific Power Association: <http://www.ppa.org.fj>

## 2. Methodology

This section describes the methodology used to compare the Pacific region electricity costs, the analysis and findings presented in this report. Each utility included in the survey charges different prices for different categories of customer, and for different levels of consumption. Typical pricing structures include a mixture of monthly fixed charge and per-kWh charge which may vary with consumption within the category, as well as any applicable taxes and other fees. Therefore this report is based on a comparison of bills, using three typical customer consumption categories across utilities in the Pacific region.

There is no detailed examination of factors such as quality, availability, or reliability of service. These factors may vary across the electricity utilities in the Pacific, and should be taken into account when considering the price levels.

Another factor that influences the cost of electricity is the method of generation. Each utility has a different mix of generation sources, which heavily influences the cost of electricity. Generation methods are not compared in this report. However diesel generation in total output for a utility is flagged for better understanding of price differences.

### 2.1 Scope

Information from 24 electricity utilities in different islands and territories in the Pacific region had been collected and reviewed. Tariff information published by regulatory agencies or the utilities was used to calculate customer bills based on typical consumption levels for three different customer categories. All applicable taxes and fees were included, representing the total price of electricity to customers in each country and territories.

### 2.2 “Typical” customer bills

In order to compare electricity suppliers using different customer categories and tariff structures, “typical” bills for three customer categories have been estimated. These represent three main customer categories in Vanuatu:

- “Small domestic consumers” are households that only use small amounts of electricity. There are over 10,000 customers of this type in Vanuatu, with an average consumption of 60kWh per month;
- “Domestic consumers” are non-commercial customers that have moderate electricity consumption. There are approximately 5,000 customers of this type in Vanuatu, with an average consumption of 300 kWh per month;
- “Business consumers” are commercial and industrial customers. There are approximately 1,500 customers of this type in Vanuatu. Consumption levels vary widely, so for this analysis we have assumed a “typical” consumption level to be 10MWh (10,000kWh) per month, on a 100kVA connection. As certain countries monitor the actual demand and charge the consumers based on their monthly peak use instead of subscribed capacity, to make comparable analysis, we assumed that the consumer will use a constant load of 100kVA and be charged accordingly. For customers of this size, the connection could be either low voltage or high voltage. The costs of both options are shown for Vanuatu although customers would be high voltage, but connections in other countries are assumed to be low voltage three-phase connection in a 190v to 415v voltage range depending on the country. High voltage tariffs are excluded from the scope of our study as they are structured in a more complex way, with different rates for day/night consumption, making comparisons more difficult.

The characteristics of each “typical” customer category used in this report are summarized in the table below:

**Table 1: Typical customer bill definitions**

<b>Small domestic customer</b>		
Consumption per month	60	kWh
Subscribed capacity	1.1	kVA
<b>Other low voltage</b>		
Consumption per month	300	kWh
Subscribed capacity	3.3	kVA
<b>Business customer</b>		
Consumption per month	10,000	kWh
Subscribed capacity	100	kVA
<b>Power factor conversion</b>		
Cos phi	0.85	

As some energy suppliers use kVA instead of kW to calculate the fixed charge billed for subscribed capacity, we used an average power factor rate of  $|\cos \varphi| = 0.85$  to convert kVA into kW.

Whenever there was an option allowing customers to choose between different offers and rates, we picked the cheapest comparable option according to our selection criteria. Note that these customer categories are assumed not to have access to time of day tariffs, which simplified the comparison by avoiding the need to estimate the spread of consumption across day/night hours.

## 2.3 Foreign currencies exchange rate

Among the electricity suppliers included in this comparison, there are nineteen nations and ten different currencies. The fluctuation of currencies impacts the results of the tariff comparison. Since this exercise is about comparing the cost of electricity at a given point in time, and across time, a spot exchange rate has been used from a single source<sup>2</sup> to convert all foreign currencies into Vatu, on the 20<sup>th</sup> of the month of the corresponding billing period. In order to avoid the impact of currency fluctuations and ensure that the 2016 analysis is comparable to the 2015 Pacific area price comparison report, billing amounts collected from the previous release have been adjusted based on current exchange rates. Countries’ respective rankings were kept identical though.

<sup>2</sup> <http://www.oanda.com/currency/converter/20thJan2016>

Table 2: Exchange rates as of 20th January 2016

Country	Exchange rate 1Fx = VUV	Exchange rate 1Fx = USD
Fiji	50.53	0.463
Palau	109.05	1.000
American Samoa	109.05	1.000
Western Samoa	48.06	0.441
PNG	36.82	0.338
New-Caledonia	1.00	0.009
Kiribati	75.30	0.690
Tuvalu	75.30	0.690
Niue	70.54	0.647
Nauru	75.30	0.690
Marshall Islands	109.05	1.000
Solomon Islands	13.52	0.124
Tonga	48.00	0.440
Cook Islands	70.54	0.647
FSM - Chuuk	109.05	1.000
FSM - Kosrae	109.05	1.000
FSM - Pohnpei	109.05	1.000
FSM - Yap Island	109.05	1.000
FSM - Falalop	109.05	1.000
Saipan	109.05	1.000
Saipan	109.05	1.000
Guam	109.05	0.009
Tahiti	1.00	0.009
Vanuatu UNELCO	1.00	0.009
Vanuatu VUI	1.00	0.009

Source: Oanda currency converter

## 2.4 Taxes and government subsidies

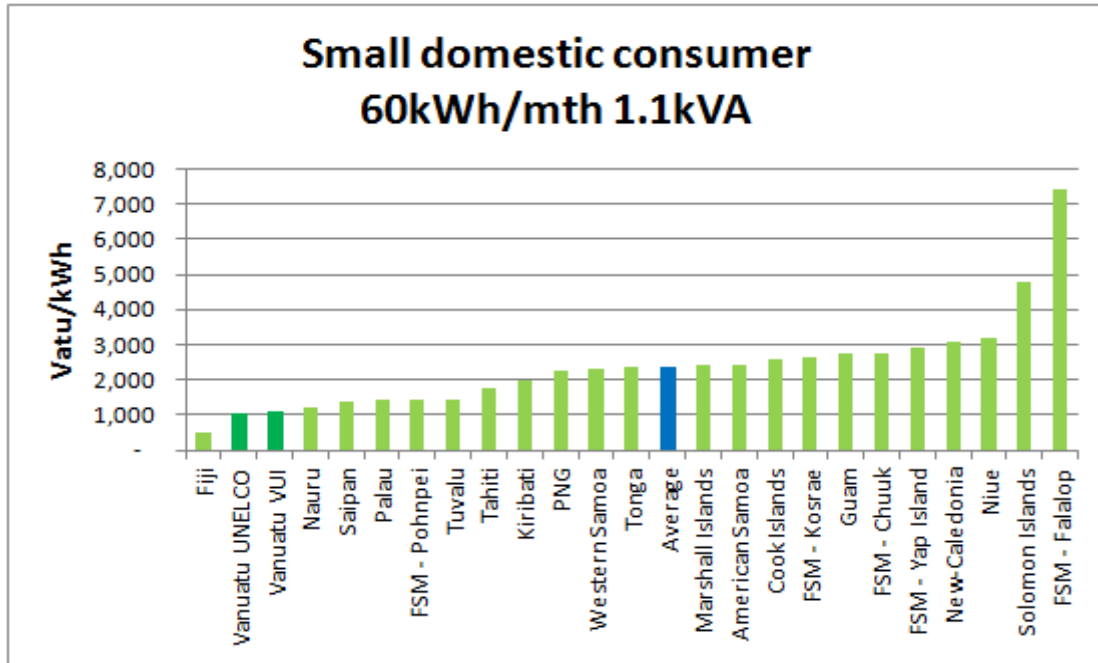
Taxes and government subsidies on the price of electricity are factors that electricity suppliers have no control over other than to include them on customer bills. In order to compare electricity costs from a customer standpoint, all applicable taxes, fees and other charges included in an electricity bill are included in our analysis.

## 3. Electricity price comparison and analysis

### 3.1 Small domestic consumers category

The following chart shows the total bill for monthly consumption of 60kWh on a 5A connection for the sample of 24 electricity companies across the Pacific region.

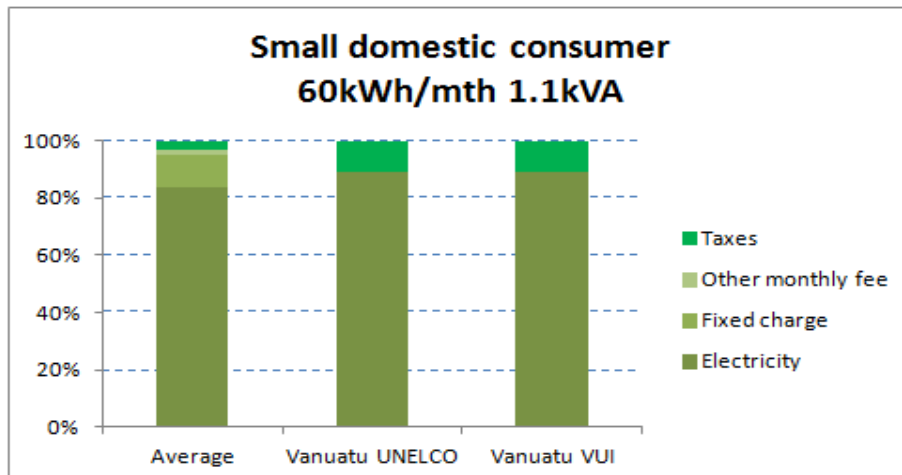
Figure 1: Comparison of bills paid by "Small domestic consumers" across the Pacific region in VUV/kWh



Source: URA

The electricity costs for the “small domestic consumers” category in Vanuatu are among the cheapest in the Pacific region, with UNELCO and VUI ranking respectively 2<sup>nd</sup> and 3<sup>rd</sup> cheapest out of the 24 utilities in the sample. The typical bill paid for these customers in Vanuatu is VUV 1,054 for UNELCO customers, and VUV 1,121 for VUI customers, based on January 2016 prices. This compares to an average bill of VUV 2,379 for the Pacific area. UNELCO is 56% below the Pacific average, and VUI is 53% below the Pacific average.

Figure 2: Vanuatu vs. Pacific avg. – Bill breakdown comparison for “Small domestic consumers”



Source: URA



The comparison between Vanuatu and the Pacific area average shows that a higher proportion of the electricity bill in Vanuatu is made up of Government taxes. This consists of 12.5% VAT charged on all electricity bills, compared to a Pacific average of 5% tax.

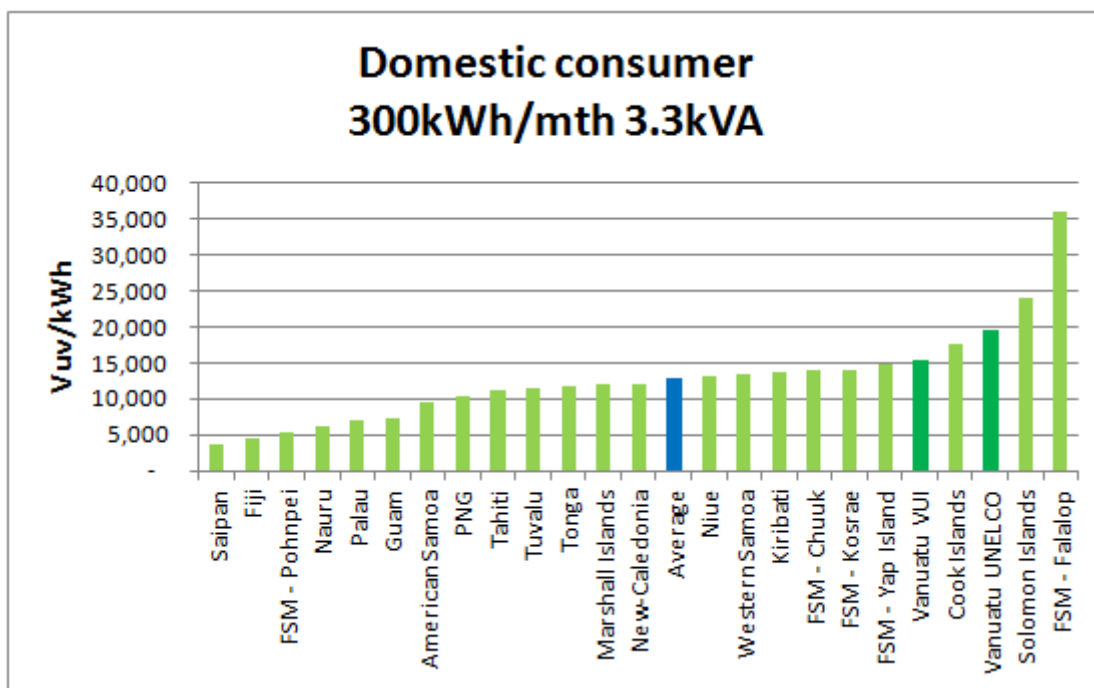
There are no fixed charges for this particular consumer category in Vanuatu, compared to 12% fixed charges and other fees on average across the Pacific.

Significant lower than average bill in this consumption level in Vanuatu reflects the fact that tariff is highly cross subsidized.

### 3.2 Domestic consumer category

The following chart shows the total bill for monthly consumption of 300kWh on a 15A connection for the sample of 24 electricity companies across the Pacific region.

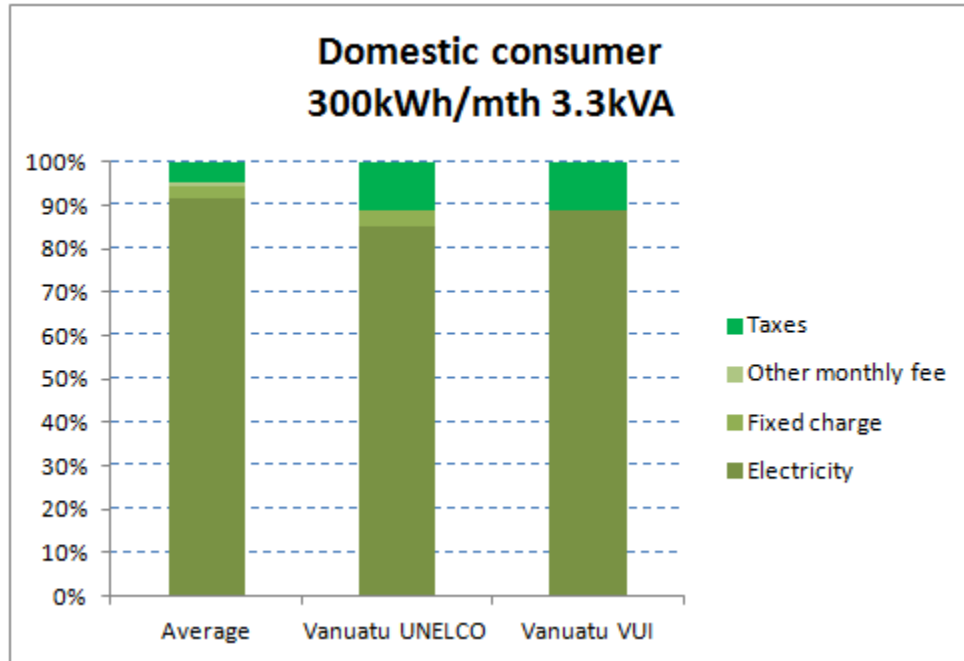
**Figure 3: Comparison of bills paid by "Domestic consumer" across the Pacific region in VUV/kWh**



Source: URA

The electricity costs for the “Domestic consumer” category in Vanuatu are among the most expensive in the Pacific region, with UNELCO and VUI ranking respectively 3<sup>rd</sup> and 5<sup>th</sup> most expensive out of the 24 utilities in the sample. The typical bill paid for these customers in Vanuatu is VUV 19,604 for UNELCO customers, and VUV 15,316 for VUI customers, based on January 2016 prices. This compares to an average bill of VUV 12,818 for the Pacific area. UNELCO is 53% above the Pacific average, and VUI is 19% above the Pacific average.

Figure 4: Vanuatu vs. Pacific avg. – Bill breakdown comparison for “Domestic consumers”



Source: URA

The comparison between Vanuatu and the Pacific area shows that a higher proportion of Vanuatu’s domestic consumer’s electricity bill is made up of Government taxes. This consists of 12.5% VAT charged on all electricity bills, compared to a Pacific average of 5% tax.

In Vanuatu, there are fixed charges for UNELCO domestic customers of 3.9% of the total bill, while there are no fixed charges for VUI customers. This is compared to an average fixed charge of 3% across the Pacific region.

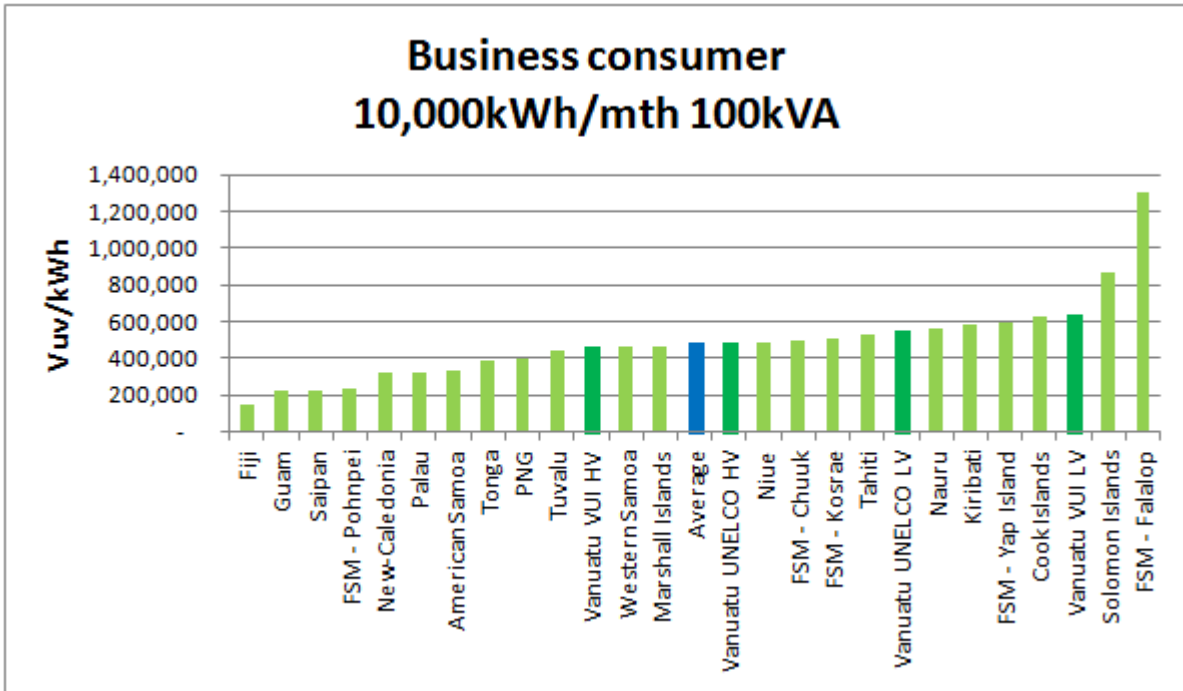
### 3.3 Business consumer category

The following chart shows the total bill for a commercial customer with a monthly consumption of 10,000kWh on a 100kVA connection for the sample of 24 electricity companies across the Pacific region. Businesses with this level of consumption have an option to have a high voltage connection.

For the purpose of this comparison, it is assumed that these high voltage (HV) customers have a low voltage connection. There is a difference in the tariffs for this type of customers in Vanuatu: there is a specific low voltage business tariff for UNELCO, which includes a fixed monthly charge whereas VUI business customers requesting low voltage connection are charged the same progressive tariff as the domestic customers with no fixed charge.

The bills for UNELCO and VUI HV customers, with the same connection and consumption, are also provided as customers with similar consumption patterns would be on HV connection.

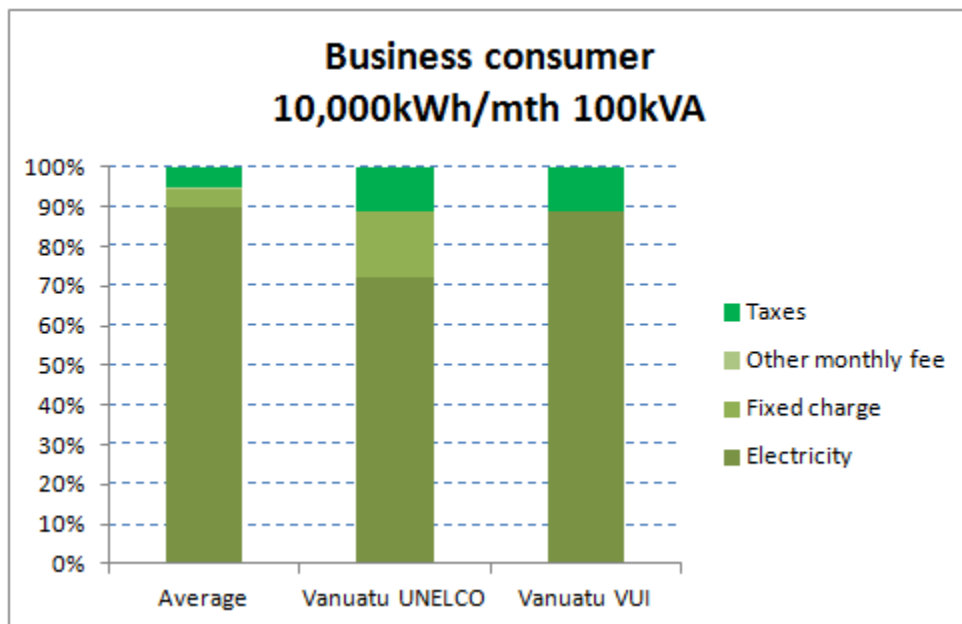
Figure 5: Comparison of bills paid by "Business consumers" across the Pacific region in Vt/kWh



Source: URA

The electricity costs for the “business consumers” category in Vanuatu are, for VUI, 5% below regional average for HV connection and 31% above regional average for LV connection. UNELCO’s “business consumers” subscribing to HV connections is closely in line with the regional average while LV connections are 13% above regional average. A typical bill paid by HV customers in Vanuatu is VUV 464,963 for VUI customers and VUV 490,725 for UNELCO customers. This is based on January 2016 prices with the assumption of a high voltage connection. UNELCO and VUI bills are compared to an average bill of VUV 487,759 for the Pacific area.

Figure 6: Vanuatu vs. Pacific avg. – Bill breakdown comparison for “Business consumers”



Source: URA

The comparison between Vanuatu and the Pacific area shows that a higher proportion of the electricity bills in Vanuatu are made up of Government taxes. This consists of 12.5% VAT charged on all electricity bills, compared to a Pacific average of 5% tax.

In Vanuatu, there are fixed charges for UNELCO customers with low voltage connection averaging 16.6% of the total bill. There are no fixed charges for VUI customers with low voltage connection. This is compared to an average fixed charge of 4.8% across the Pacific region. For customers with high voltage connection in Vanuatu, the monthly fixed charge represents approximately 23% of the bill for UNELCO customers and 22% fixed charge for VUI customers.

## 3.4 Factors that impact electricity costs

### 3.4.1 The generation mix

The available technologies making up the generation mix and the proportion of diesel based generation both impact the price paid by the consumers for electricity services. Diesel fuel based generation are amongst the most expensive ways of generating power. The following table shows respective countries reliance on diesel based generation.

**Table 3: Diesel contribution in energy generation mix**

Country	Generation capacity in MW	Diesel contribution %
American Samoa	54	98%
Cook Islands	10	100%
Fiji	245	49%
Federated states of Micronesia	28	90%
Guam	552	100%
Kiribati	5	52%
Marshall Islands	17	90%
Nauru	4	100%
New-Caledonia	499	73%
Niue	1	100%
Palau	28	98%
PNG	700	77%
Saipan	105	100%
Solomon Islands	36	45%
Tahiti	186	74%
Tonga	12	98%
Tuvalu	3	100%
Vanuatu UNELCO *	24	71%
Vanuatu VUI *	4	21%
Western Samoa	41	64%

\* In Vanuatu, the two electricity service providers (UNELCO and VUI) operate separate networks in different islands. The numbers shown in the table above reflect the operators' respective energy mix.

### 3.4.2 Country characteristics

Besides the energy mix and diesel contribution, several country-specific characteristics affect final prices of energy. We are highlighting the following factors for the reader's consideration:

- Country's isolation and distance from mainland (impacts the need for redundancy, cost of logistic and time lag on repairs);
- Geographical dispersion of the country (where islands spread over long distances and are not interconnected, each independent system has incompressible fixed costs and limited economy of scale potential);
- Availability of natural resources and alternatives for fuel based electricity generation;
- Customer density and mix of residential, commercial and industrial users (affects system load factor, network development and operations costs, system losses, billings etc);
- Local labor rates, availability of skilled labor and social policies; and
- Country's exposure to natural disasters and associated risk mitigation/prevention costs.

### 3.4.3 Other key determinants

This study has only reviewed the differences between customer bills for different electricity utilities in the Pacific. It has not considered or compared factors that can impact the reliability of electricity systems. These include:

- Reliability measures such as System Average Interruption Duration Index (SAIDI) or System Average Interruption Frequency Index (SAIFI), which indicate how reliable an electricity network is for its customers;
- Availability measures, as some electricity networks in the Pacific do not provide electricity 24 hours a day, 7 days a week;
- Quality measures such as voltage or frequency range;
- Ownership and cost-recovery, as the prices charged by some state-owned utilities across the Pacific do not cover the full costs of production; and
- Aid donation and subsidization, as the impact of aid donation and subsidies will vary across the region, and will have an impact on costs.

The following table provides examples in the Pacific where these factors have an impact on electricity prices:

Country	Observations
Fiji	Fiji generates 50% of its electricity through hydro-electric power stations. The Fiji Electricity Authority (FEA) incurred significant non-commercial obligation (NCO) costs each year when supplying subsidised electricity to rural Viti Levu and the whole of Vanua Levu and Ovalau. These reached a total of FJD \$27.4m in 2014. Although the Public Enterprises Act requires the Fijian government to reimburse the NCO costs to FEA, these have apparently not been refunded. Instead the government has accepted that FEA's non-commercial contribution to social and community services through its electricity subsidies is to be recognised as its annual dividend to the government.
FSM-Pohnpei	The power tariff in Pohnpei consists of (i) base tariff to cover all operating and maintenance expenditure, and (ii) automatically adjusted fuel surcharge which covers fuel expenditure. The base tariff is insufficient to cover routine maintenance costs and has not been increased since 1994.
Vanuatu	In Vanuatu a cross-subsidy mechanism designed to support access to electricity services for modest households impacts the consumer bills. Consumers under the “Small domestic” category are paying low subsidised rates in the first tranche of 0-60kWh. “Domestic consumers” are paying a higher price per kWh as a result. The cross-subsidization is more pronounced for UNELCO consumers. It should also be noted that Unelco tariffs are adjusted monthly to reflect current diesel prices. In recent months this adjustment has resulted in significant lowering of tariffs for all end-users

## 4. Electricity price evolution over time

The following section focuses on electricity tariffs evolution across the pacific region since the last release of this comparative report.

### 4.1 Small domestic consumers price evolution

In the Small domestic consumer category, January 2016 electricity prices in the region had dropped by an average of 6% since the time of the previous release of June 2015. Variations in the ranking were mostly driven by further drop in diesel prices since last release, although this drop was offset in certain countries by an appreciation of the US dollar currency against local currencies. Countries largely relying on diesel for generation have seen significant drops in tariffs ranging from 15% to 50%.

A significant drop of electricity bills by 53% was observed in Saipan. The reason for this is that the infrastructure surcharge previously charged to Saipan's tariff is no longer applicable. In addition sharp decrease in the Fuel Adjustment Charge (FAC) further reduced the price and the public law mandating the utility enforces that the utility is liable to refund to residential ratepayers US\$3.4 million which is embedded into the tariff that results lower tariff.

In addition Nauru's new tariff schedule effective as of 2016 shows an increase of 25% from previous tariff applicable in 2015. The reason for this is that the Nauru Utilities Corporation (NUC) after succeeding Nauru Utilities Authority is focusing on improving its sustainable operations in a long run to enhance its services. In doing so NUC procures new generators, recruits expat staff for capacity building, invests in training local staff by offering full time study scholarships to Fiji National University and others etc... These improvements have stipulated the increase in tariff to further supplement the donor funding and the Nauruan Government support.

Small domestic consumers						
Country	Average bill 2016	Ranking 2016	Average bill 2015	Ranking 2015	Tariff Variation	Ranking shift
Fiji	521	1	521	1	0%	0
Vanuatu UNELCO	1,054	2	1,098	2	-4%	0
Vanuatu VUI	1,121	3	1,207	3	-7%	0
Nauru	1,209	4	967	4	25%	0
Saipan	1,363	5	2,878	17	-53%	12
Palau	1,414	6	1,414	5	0%	-1
FSM - Pohnpei	1,420	7	1,420	6	0%	-1
Tuvalu	1,438	8	1,438	8	0%	0
Tahiti	1,744	9	1,744	7	0%	-2
Kiribati	1,988	10	1,988	11	0%	1
PNG	2,243	11	2,339	13	-4%	2
Western Samoa	2,292	12	2,952	14	-22%	2
Tonga	2,343	13	2,312	12	1%	-1
<b>Average</b>	<b>2,379</b>		<b>2,523</b>		<b>-6%</b>	
Marshall Islands	2,400	14	2,400	10	0%	-4
American Samoa	2,419	15	2,865	16	-16%	1
Cook Islands	2,580	16	2,702	19	-5%	3
FSM - Kosrae	2,639	17	3,132	21	-16%	4
Guam	2,777	18	2,819	15	-1%	-3
FSM - Chuuk	2,780	19	3,085	20	-10%	1
FSM - Yap Island	2,897	20	2,897	18	0%	-2
New-Caledonia	3,074	21	3,059	9	0%	-12
Niue	3,174	22	3,174	22	0%	0
Solomon Islands	4,780	23	4,970	23	-4%	0
FSM - Falalop	7,437	24	7,164	24	4%	0

Source: URA

## 4.2 Domestic consumers price evolution

For similar reasons as the small domestic customer category, the “Domestic consumers” category has also registered significant drop in prices over the period. The most significant variations were observed in Saipan (-67%), American Samoa (-19%), the Federated States of Micronesia (FSM) in Kosrae and Western Samoa (respectively -15% and -14%), and in Guam (-13%). These tariff drops are combined with unchanged tariffs in a third of the countries listed in the table. It results a drop in the regional average electricity price by 6%. Bills variations are in line with the trends observed in the Small domestic consumer category, thus reflecting proportional savings resulting in tariff changes across all domestic categories.



Domestic consumers						
Country	Average bill 2016	Ranking 2016	Average bill 2015	Ranking 2015	Tariff variation	Ranking shift
Saipan	3,760	1	11,339	8	-67%	7
Fiji	4,535	2	4,687	1	-3%	-1
FSM - Pohnpei	5,267	3	5,267	2	0%	-1
Nauru	6,043	4	4,834	3	25%	-1
Palau	6,963	5	6,963	4	0%	-1
Guam	7,342	6	8,427	5	-13%	-1
American Samoa	9,479	7	11,708	9	-19%	2
PNG	10,480	8	11,062	11	-5%	3
Tahiti	11,238	9	11,238	6	0%	-3
Tuvalu	11,526	10	11,526	15	0%	5
Tonga	11,716	11	11,559	12	1%	1
Marshall Islands	11,999	12	11,999	10	0%	-2
New-Caledonia	12,014	13	11,939	7	1%	-6
<b>Average</b>	12,818		13,644		-6%	
Niue	13,049	14	13,049	16	0%	2
Western Samoa	13,384	15	15,571	13	-14%	-2
Kiribati	13,666	16	13,666	20	0%	4
FSM - Chuuk	13,902	17	15,424	17	-10%	0
FSM - Kosrae	14,066	18	16,533	18	-15%	0
FSM - Yap Island	14,706	19	14,706	14	0%	-5
Vanuatu VUI	15,316	20	16,998	19	-10%	-1
Cook Islands	17,570	21	17,870	21	-2%	0
Vanuatu UNELCO	19,604	22	20,415	22	-4%	0
Solomon Islands	23,902	23	24,849	23	-4%	0
FSM - Falalop	36,092	24	35,820	24	1%	0

Source: URA

### 4.3 Business consumers price shift

Electricity tariffs charged to Business consumers across the region dropped by 4% in average over the period. In several instances the tariff structures have been adjusted along with fuel compensation variables reflecting lower diesel prices. The average energy bill for business consumers dropped significantly in Saipan (-53%) and both American Samoa and Guam (-18%) showing commitment to support local economies. For countries passing on the drops in diesel prices, the average tariff decrease ranges from 1% to 14% as shown in the table below.

In contrast to the previous release, the table shows an increase of bills by 10% for VUI's business customers with a LV connection. This is due to VUI's new tariff structure set by the URA in June 2015.

Business consumers						
Country	Average bill 2016	Ranking 2016	Average bill 2015	Ranking 2015	Tariff variation	Ranking shift
Fiji	150,166	1	154,994	1	-3%	0
Guam	222,941	2	273,212	4	-18%	2
Saipan	226,377	3	479,013	12	-53%	9
FSM - Pohnpei	233,013	4	233,013	2	0%	-2
New-Caledonia	321,125	5	321,021	5	0%	0
Palau	322,496	6	322,496	6	0%	0
American Samoa	332,014	7	406,298	7	-18%	0
Tonga	390,541	8	385,309	8	1%	0
PNG	400,475	9	423,323	11	-5%	2
Tuvalu	442,745	10	442,745	18	0%	8
Vanuatu VUI HV	464,963	11	503,061	14	-8%	3
Western Samoa	466,169	18	519,034	10	-10%	-8
Marshall Islands	469,308	12	469,308	9	0%	-3
<b>Average</b>	<b>487,759</b>		<b>507,826</b>		<b>-4%</b>	
Vanuatu UNELCO HV	490,725	13	511,031	15	-4%	2
Niue	492,001	14	492,001	17	0%	3
FSM - Chuuk	497,742	15	548,581	16	-9%	1
FSM - Kosrae	504,029	16	586,253	19	-14%	3
Tahiti	527,225	17	527,225	13	0%	-4
Vanuatu UNELCO LV	552,758	19	575,595	20	-4%	1
Nauru*	563,973	20	563,973	3	0%	-17
Kiribati	579,785	21	579,785	24	0%	3
FSM - Yap Island	598,665	22	598,665	22	0%	0
Cook Islands	625,018	23	640,314	23	-2%	0
Vanuatu VUI LV	638,747	24	582,015	21	10%	-3
Solomon Islands	865,272	25	871,235	25	-1%	0
FSM - Falalop	1,303,475	26	1,193,988	26	9%	0

\*Nauru's 2015 estimated bill should be the same as in 2016. Error in Nauru's business consumer 2015 estimated bill calculation.  
Source: URA

## 4.4 Factors that impact electricity price over time

In the Pacific region, most of the generation capacity is diesel fueled. This makes fuel cost the main variable impacting the price of electricity, although not all countries are passing these fluctuations to their customers at the same pace and concurrent with the fuel price changes.

For utilities in the Pacific Island Countries that are passing the fuel price variations onto their electricity consumers, the time gap observed varies between countries. This is driven by the fuel supply chain and the country's characteristics. The key drivers are the distance from the port of origin, supply route, the local demand for diesel and the storage capacities. Storage capacity may also impact the time lag between the time when prices are changing on the international trade market and the day the prices are reflected in local electricity prices.

In Vanuatu for example, the change in fuel price occurs when fuel from the previous fuel delivery is being fully exhausted from the storage, using first-in first out inventory method (FIFO). This means that based on how much stock is left in the storage the day the tanker lands at the wharf, the impact of the reduced fuel price may be delayed further.

The billing cycle adopted by the utility company, or the time elapsed between the day the utility is using cheaper diesel in generation and the day the customers are billed based on the reduced fuel price may increase the time lag in price transfer again.

All together it is observed that there is a three to four months time lag of price transfer in Vanuatu, a process we detailed in URA's monitoring report "Diesel Pricing for Electricity Services" released in January 2015. Copy of the report is available on the URA's website.

In order to avoid distortions in the comparison of shift in rankings over time, the exchange rates are kept constant using spot exchange rates to recalculate the corresponding bills for last report. However, fluctuations are only partly neutralized as the costs related to imported fuels and materials are impacted by currency fluctuations and fully reflected in the current tariffs used to calculate the bills. The lack of details in the proportion of operating costs being impacted by currency variations introduces a bias in subsequent analysis.

## 5. Conclusions

Based on the comparison of customer bills, the overall picture for Vanuatu is mixed, with significant differences in the relative position depending on customer category:

- Small domestic customers in Vanuatu are charged significantly less than the regional average;
- Other low voltage domestic customers, which means relatively high domestic users in Vanuatu are charged significantly more than the regional average and are subsidizing the low users; and
- Business customers in Vanuatu are now divided geographically between utilities with VUI charging below average Pacific rate and UNELCO charging slightly higher prices than Pacific average based on the type of connection. It should be noted that the URA further reduced VUI's base price in June 2015, along with a new tariff structure which significantly impacted the price of VUI's business customers connecting with a low voltage. UNELCO prices are adjusted monthly reflecting current invoiced fuel prices.

In general, we observe that the cross-subsidy from large to small customers is more pronounced in Vanuatu than in other parts of the Pacific region.

This fourth release of the URA's Electricity tariff comparison report reflects further drop in diesel prices as seen in the previous release of this report in June 2015 driving down energy prices across the Pacific region. The appreciation of US dollar currency played against certain countries like Vanuatu mitigates a portion of the benefits from diesel prices drop as petroleum products are priced in US dollar. This highlights the risks and exposure to currency fluctuations in most countries of the region with no or limited hedging measures adopted. Such risks may also be mitigated with the increasing contribution of renewable energy sources in the energy mix of the respective countries.

Another effect to be expected from the drop of diesel prices is the loss in renewable energy competitiveness against fossil fuel generation. In Vanuatu the effect resulted in a significant decrease of coconut oil use as an alternative to diesel, as processing costs for locally made fuel became higher than imported fuels.

The URA team wishes to thank all the persons involved with the regulatory agencies and utility companies across the region who helped us compile the information necessary to issue this report.

## Annexe I. Electricity bill breakdown

Country	Fiji	Palau	American Samoa	Western Samoa	PNG	New-Caledonia	Kiribati	Tuvalu	Niue	Nauru	Marshall Islands	Solomon Islands
<b>Small domestic consumer</b>												
Average use per month	60	kWh										
Amperage	1.1	kVa										
Electricity in VUV	521	988	1,765	2,235	1,487	1,925	1,807	1,423	2,116	1,129	2,264	4,780
Fixed charge in VUV	-	327	654	-	552	407	-	-	1,058	-	-	-
Other monthly fee in VUV	-	-	-	-	-	595	-	-	-	-	-	-
Taxes in VUV	-	99	-	58	204	146	181	15	-	79	136	-
Estimated bill in VUV	521	1,414	2,419	2,292	2,243	3,074	1,988	1,438	3,174	1,209	2,400	4,780
<b>Domestic consumer</b>												
Average use per month	300	kWh										
Amperage	3.3	kVa										
Electricity in VUV	4,335	6,150	8,825	12,168	8,975	9,626	12,424	11,031	11,991	5,647	11,319	23,902
Fixed charge in VUV	-	327	654	-	552	1,220	-	-	1,058	-	-	-
Other monthly fee in VUV	-	-	-	-	-	595	-	-	-	-	-	-
Taxes in VUV	201	486	-	1,216	953	572	1,242	495	-	395	679	-
Estimated bill in VUV	4,535	6,963	9,479	13,384	10,480	12,014	13,666	11,526	13,049	6,043	11,999	23,902
<b>Business consumer</b>												
Average use per month	10,000	kWh										
Amperage	100	kVa										
Electricity in VUV	136,779	298,797	285,667	405,365	363,406	219,061	527,077	421,662	490,943	527,077	442,743	865,272
Fixed charge in VUV	1,163	1,200	46,346	-	663	86,075	-	-	1,058	-	-	-
Other monthly fee in VUV	-	-	-	-	-	697	-	-	-	-	-	-
Taxes in VUV	12,225	22,500	-	60,805	36,407	15,292	52,708	21,083	-	36,895	26,565	-
Estimated bill in VUV	150,166	322,496	332,014	466,169	400,475	321,125	579,785	442,745	492,001	563,973	469,308	865,272

Country	Tonga	Cook Islands	FSM - Chuuk	FSM - Kosrae	FSM - Pohnpei	FSM - Yap Island	FSM - Falalop	Saipan	Guam	Tahiti	Vanuatu UNELCO HV	Vanuatu VUI HV
<b>Small domestic consumer</b>												
Average use per month	60	kWh										
Amperage	1.1	kVa										
Electricity in VUV	2,343	2,243	2,648	2,639	916	2,487	7,164	599	1,141	1,135	937	997
Fixed charge in VUV	-	-	-	-	436	273	273	763	1,636	288	-	-
Other monthly fee in VUV	-	-	-	-	-	-	-	-	-	239	-	-
Taxes in VUV	-	336	132	-	68	138	-	-	-	83	117	125
Estimated bill in VUV	2,343	2,580	2,780	2,639	1,420	2,897	7,437	1,363	2,777	1,744	1,054	1,121
<b>Domestic consumer</b>												
Average use per month	300	kWh										
Amperage	3.3	kVa										
Electricity in VUV	11,716	15,278	13,240	14,066	4,580	13,733	35,820	2,996	5,706	8,211	16,668	13,614
Fixed charge in VUV	-	-	-	-	436	273	273	763	1,636	1,297	758	-
Other monthly fee in VUV	-	-	-	-	-	-	-	-	-	1,194	-	-
Taxes in VUV	-	2,292	662	-	251	700	-	-	-	535	2,178	1,702
Estimated bill in VUV	11,716	17,570	13,902	14,066	5,267	14,706	36,092	3,760	7,342	11,238	19,604	15,316
<b>Business consumer</b>												
Average use per month	10,000	kWh										
Amperage	100	kVa										
Electricity in VUV	390,541	543,141	474,040	504,029	130,860	569,612	1,302,929	225,286	204,846	427,971	321,400	312,000
Fixed charge in VUV	-	353	-	-	88,331	545	545	1,091	18,095	34,337	114,800	101,300
Other monthly fee in VUV	-	-	-	-	2,726	-	-	-	-	39,811	-	-
Taxes in VUV	-	81,524	23,702	-	11,096	28,508	-	-	-	25,106	54,525	51,663
Estimated bill in VUV	390,541	625,018	497,742	504,029	233,013	598,665	1,303,475	226,377	222,941	527,225	490,725	464,963

---

**Utilities Regulatory Authority**

**Vanuatu**

You can access the Pacific Region Electricity Bills Comparison Report 2016 on our website [www.ura.gov.vu](http://www.ura.gov.vu), or by contacting us by telephone (+678) 23335, email: [breuben@ura.gov.vu](mailto:breuben@ura.gov.vu) or regular mail at Comparative Report “Electricity price – Pacific area” Utilities Regulatory Authority, PMB 9093, Port Vila, Vanuatu.