



# Pacific Region Electricity Bills

## Comparison Report 2013

### ELECTRICITY SECTOR

September 2013

**UTILITIES  
REGULATORY  
AUTHORITY**





### Letter from the Chairman

In recent times, the price of electricity has become a controversial topic: it is often mentioned that the prices paid in Vanuatu are high, but these statements are rarely supported by fact and evidence. In order to inform the debate on electricity prices in Vanuatu, the Utilities Regulatory Authority (the Authority) has performed analysis of bills for electricity customers across the Pacific. This report provides the summary findings.

It is a complex process to compare electricity costs between different countries. Each utility and country has a different structure of tariffs that can vary by customer category, levels of consumption, and even time of day. Tax regimes vary across the region as well. The approach taken in this study has been customer-centric: bills have been calculated based on a set of “typical” customers’ consumption patterns.

This report does not include any analysis of other factors that impact the cost of electricity, for example quality. If a country has lower electricity prices than another, but electricity is not available at all times, this has not been taken into account. Additionally, many electricity suppliers in the Pacific region are state-owned, and may not charge prices that cover the full cost of the service. This has also not been examined in this study.

If there is interest among our stakeholders in this report, then the Authority will consider repeating this exercise on an annual basis, and potentially including some analysis of other factors that impact electricity costs, and other countries in the region.

I hope that this study is of use to anyone interested in the electricity industry in the Pacific region. As Chairman of the Authority, I am proud to release the “Pacific Region Electricity Bills Comparison Report 2013”.

Yours sincerely,

**Johnson Naviti Matarulapa Marakipule**

*Chairperson*

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# 1. Introduction

## 1.1 Purpose of this paper

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

Due to variations in electricity prices depending on customer categories and levels of consumption, this report uses a methodology that compares the total cost of electricity for certain levels of consumption. This avoids differences in average levels of consumption and customer mix when comparing average electricity prices across countries.

Quality of service, availability, and reliability of service also vary widely between electricity suppliers across the Pacific. 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 **'Other publications of interest'** describes other related monthly and half-yearly publications by the URA.

## 1.3 About the Utilities Regulatory Authority

The Utilities Regulatory Authority was established on the 11 February 2008 under the *Utilities Regulatory Authority Act No 11 of 2007* (the URA Act). The URA Act established the Authority as an independent economic regulator for pricing, access, standards and monitoring of concession agreements. The regulated services defined in the URA Act are the supply of electricity or water services.

The Authority provides continued and expanded support to the Vanuatu Government's microeconomic reform program. This program was designed to improve the efficiency and competitiveness of Vanuatu's economy through the reform of the electricity, water and other current and former government business enterprises.

The Government perceived the establishment of an independent regulatory body as necessary to ensure that the benefits of the industry structuring and concession arrangements were passed on to household, commercial and industrial customers.

The primary objective of the Authority is to 'improve access to electricity and water services and to protect the long-term interests of Vanuatu's consumers with regards to the price, quality and reliability of electricity and water services.'

This objective is central to the framework of economic regulation that facilitates the efficiency and financial viability of regulated utilities, prevents misuse of monopoly power and ensures that customers benefit from quality improvements and efficiency gains over the longer term.

The functions of the Authority, as expressed in the URA Act under which it is constituted, are:

- to exercise the functions and powers conferred by the URA Act or by any other Act in furtherance of the purpose of the Act;
- to provide advice, reports and recommendations to the Government relating to utilities;
- to inform the public of matters relating to utilities;
- to assist consumers to resolve grievances;
- to investigate and act upon offences under the URA Act ;
- to advise the Minister on any other matter referred to the Authority by the Minister; and
- to administer and monitor compliance of Concession Agreements under the URA Act.

In accordance with its Charter of Consultation and Regulatory Practice the Authority aims to be:

- independent, balanced and fair by ensuring its advice does not reflect undue influences and is consistent with its statutory objectives; and
- open and transparent by publishing its findings and conclusions.

## 1.4 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: [www.ppuc.com](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-Chuuck Public Utilities Corp.: <http://www.cpuc.fm>
- Guam Power Authority: <http://guampowerauthority.com>

## 2. Methodology

This section describes the methodology used to compare electricity costs in this report. Each utility included in this survey charges different prices for different categories of customer, and for different levels of consumption. Pricing structures include a mixture of monthly fixed charges, and per-unit charges, as well as any applicable taxes and other fees. This report is based on a comparison of bills, using three typical customer consumption levels.

This report only compares these “typical” bills across different utilities in the Pacific Region: there is no detailed examination of factors such as quality, availability, or reliability of service. These factors vary widely across different electricity suppliers, and should be taken into account when considering different price levels. Another factor that influences the cost of electricity is the method of generation. Each utility has a different mix of generation methods, which influences the cost of electricity. Generation methods are not compared in this report.

### 2.1 Scope

This report is focused on the Pacific region. Information from utilities in 24 different islands and states has been collected and reviewed. Published tariff information was used to calculate customer bills based on typical consumption levels for three different types of customer. All applicable taxes and fees were included, representing the full cost of electricity to customers in each country. This comparison focused purely on the billed amount: factors such as generation mix, quality, availability and reliability are excluded from this analysis.

Australia and New Zealand were also included in the research phase of this project. It has not, however, been possible to include them in the analysis. The competitive nature of the electricity retail sector in these countries means that different tariffs are available to customers within the same area. It may be possible to include some comparable utility companies in Australia and/or New Zealand in future studies, but none are included in this report.

### 2.2 “Typical” customer bills

In order to compare between 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 customers” are households that only use small amounts of electricity. There are approximately 4,500 customers of this type in Vanuatu, with an average consumption of approximately 60kWh per month;
- “Other low voltage” are non-commercial customers that have moderate electricity consumption. There are approximately 4,000 customers of this type in Vanuatu, with an average consumption of approximately 300kWh per month;

- “Business customers” are commercial and industrial customers. There are approximately 1,000 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. For customers of this size, the connection could be either low voltage or high voltage. The costs of both options are shown for Vanuatu, but connections in other countries are assumed to be low voltage. High voltage tariffs in some other countries are more complex, with different rates for day/night consumption, making comparison 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**

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

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

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 none of these customer categories have access to different day and night rates, which simplified the comparison by avoiding the need to estimate the spread of load across day/night hours.

## 2.3 Foreign currencies exchange rate

Among the electricity suppliers included in this comparison, there are sixteen nations and ten different currencies. The fluctuation of currencies varies the results of the tariff comparison. Since this exercise is to compare the cost of electricity at a given point in time, a spot exchange rate has been used from a single source to convert all foreign currencies into Vatus, at the date of September 10<sup>th</sup> 2013.



**Table 2: Exchange rates as of 10th September 2013**

Country	Exchange rate 1Fx = VUV
<b>Fiji</b>	51.84
<b>Palau</b>	96.60
<b>American Samoa</b>	96.60
<b>Western Samoa</b>	41.43
<b>PNG</b>	39.55
<b>New-Caledonia</b>	1.07
<b>Kiribati</b>	89.92
<b>Tuvalu</b>	89.92
<b>Niue</b>	77.89
<b>Nauru</b>	89.92
<b>Marshall Islands</b>	96.60
<b>Solomon Islands</b>	13.48
<b>Tonga</b>	52.04
<b>Cook Islands</b>	77.89
<b>FSM - Chuck</b>	96.60
<b>FSM - Kosrae</b>	96.60
<b>FSM - Pohnpei</b>	96.60
<b>FSM - Yap Island</b>	96.60
<b>FSM - Falalop</b>	96.60
<b>Saipan</b>	96.60
<b>Guam</b>	96.60
<b>Tahiti</b>	1.07
<b>Vanuatu UNELCO</b>	1.00
<b>Vanuatu VUI</b>	1.00

## 2.4 Taxes and government subsidies

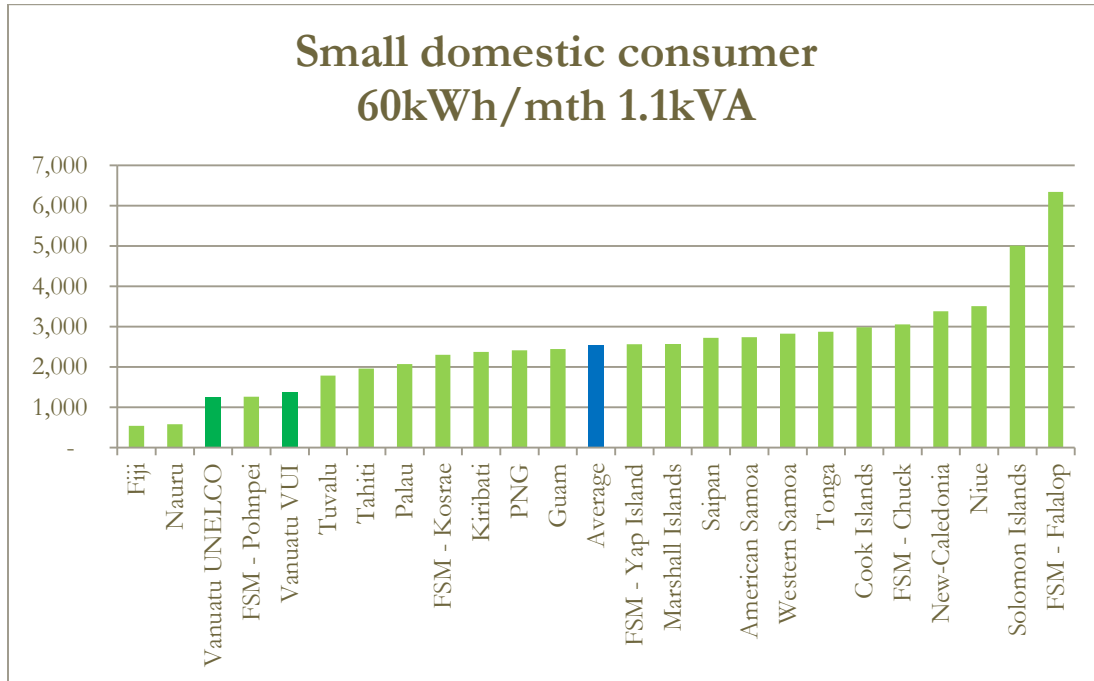
Taxes and government subsidies on the price of electricity are factors that electricity suppliers have no control of other than to include them on customer bills. In order to compare electricity costs from a customer standpoint, all applicable taxes, fees and charges included on an electricity bill are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

## 3. Electricity price comparison and analysis

### 3.1 Small domestic customers

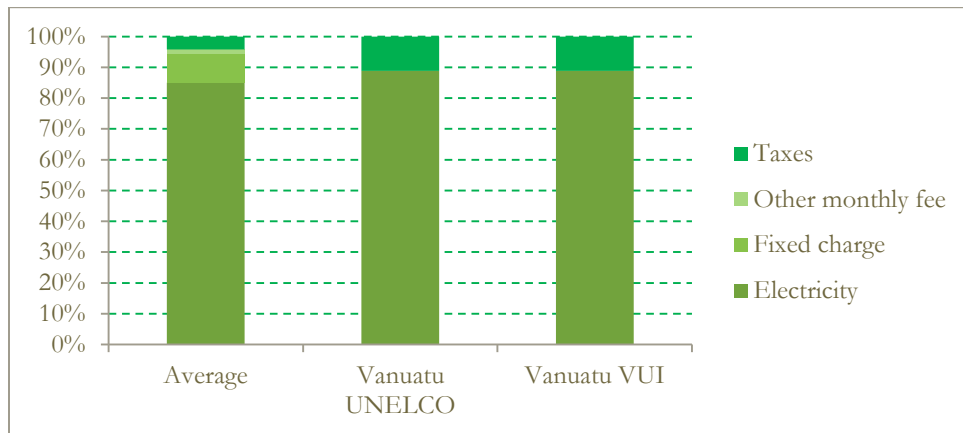
The following chart shows the total bill for monthly consumption of 60kWh on a 5A connection for the sample of 24 electricity companies across the Pacific region.

**Figure 1: Comparison of bills paid by "Small domestic customers" across the Pacific region**



The electricity costs for the “small domestic customer” category in Vanuatu are among the cheapest in the Pacific region, with UNELCO and VUI ranking respectively 3<sup>rd</sup> and 5<sup>th</sup> cheapest out of the 24 utilities in the sample. The typical bill paid for these customers in Vanuatu is VUV 1,247 for UNELCO customers, and VUV 1,369 for VUI customers, based on September 2013 prices. This compares to an average bill of VUV 2,537 for the Pacific area. UNELCO is 51% below the Pacific average, and VUI is 46% below the Pacific average.

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



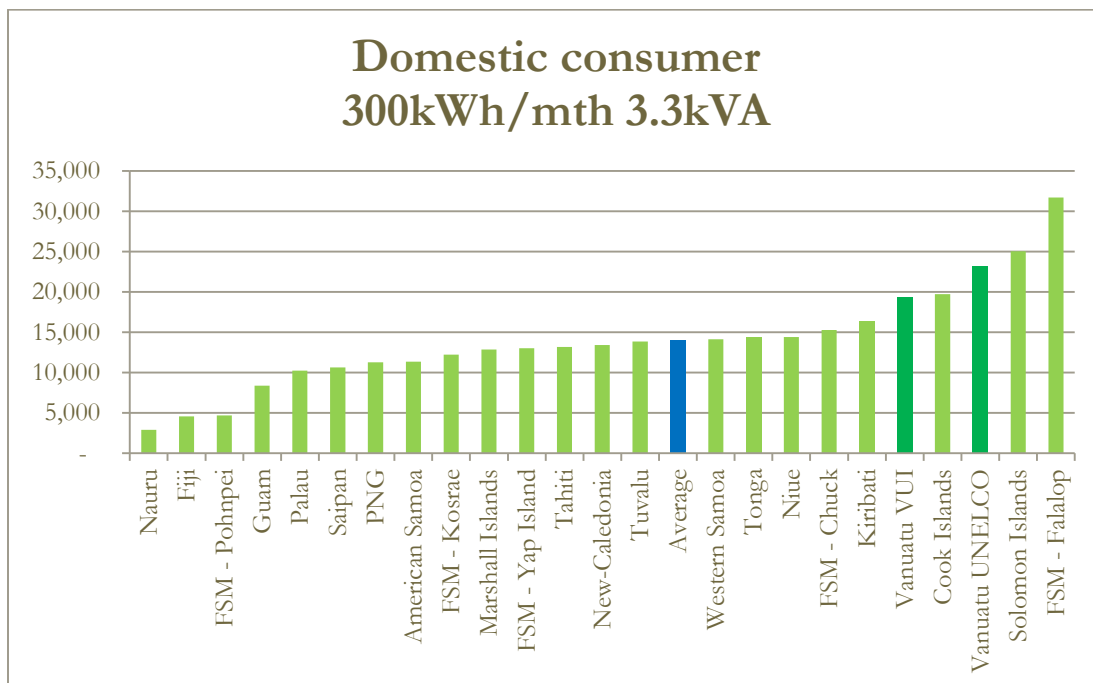
The comparison between Vanuatu and the Pacific area shows that a higher proportion of the electricity bill is made up of Government taxes. This consists of 12.5% VAT charged on all electricity bills, compared to a Pacific average of 4% tax.

There are no fixed charges for this particular consumer category in Vanuatu, compared with of 11% fixed charges and other fees on average across the Pacific.

### 3.2 Domestic consumer category

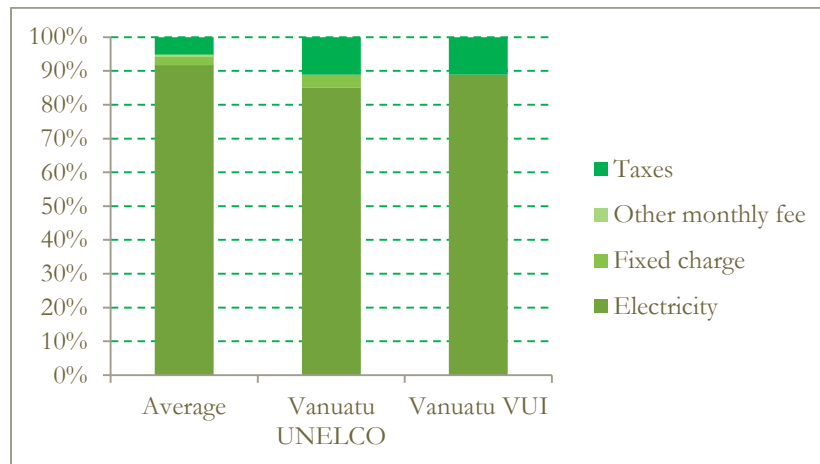
The following chart shows the total bill for monthly consumption of 300kWh on a 15A connection for the sample of 24 electricity companies across the Pacific region.

**Figure 3: Comparison of bills paid by "Other low voltage" across the Pacific region**



The electricity costs for the “other low voltage” customer category in Vanuatu are among the most expensive in the Pacific region, with UNELCO and VUI ranking respectively 3<sup>rd</sup> and 6<sup>th</sup> most expensive out of the 24 utilities in the sample. The typical bill paid for these customers in Vanuatu is VUV 23,196 for UNELCO customers, and VUV 19,277 for VUI customers, based on September 2013 prices. This compares to an average bill of VUV 13,997 for the Pacific area. UNELCO is 66% above the Pacific average, and VUI is 38% above the Pacific average.

**Figure 4: Vanuatu vs. Pacific avg. – Bill breakdown comparison for “Other low voltage customers”**



The comparison between Vanuatu and the Pacific area shows that a higher proportion of the 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 customers of 4% 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.

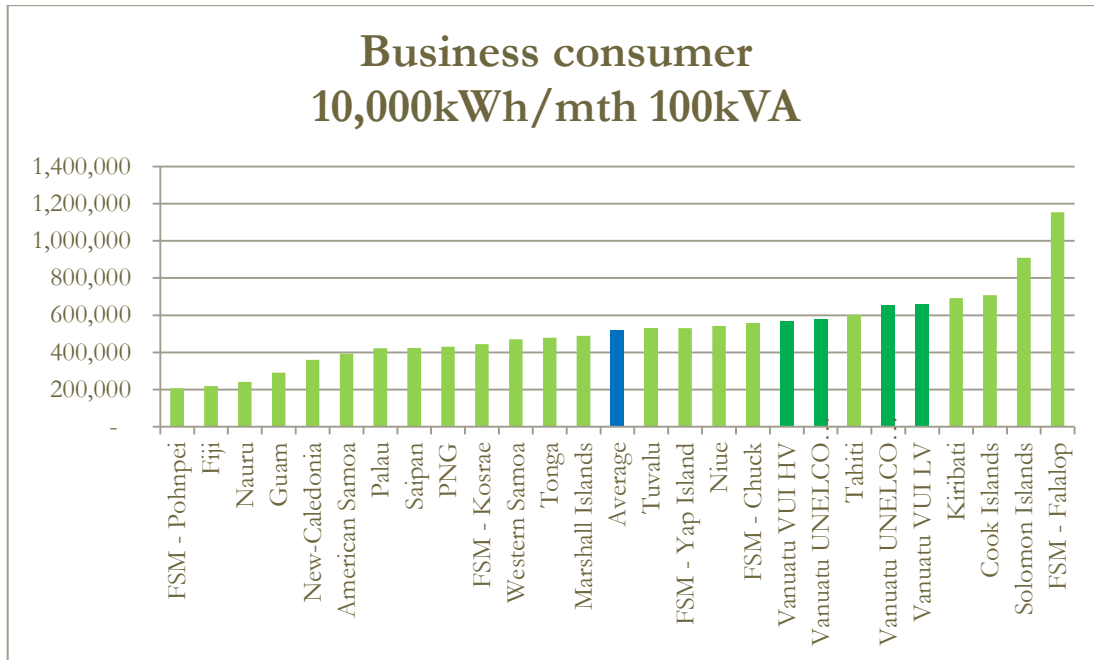
### 3.3 Business consumer category

The following chart shows the total bill for a commercial customer with monthly consumption of 30,000kWh on a 100kVA connection for the sample of electricity companies across the Pacific region.

Businesses with this level of consumption have an option to have a high voltage connection. For the purposes of this comparison, it is assumed that the 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. There is no specific category for low voltage business customers for VUI: all low voltage customers have no fixed charge, and a variable per-unit charge based on level of consumption.

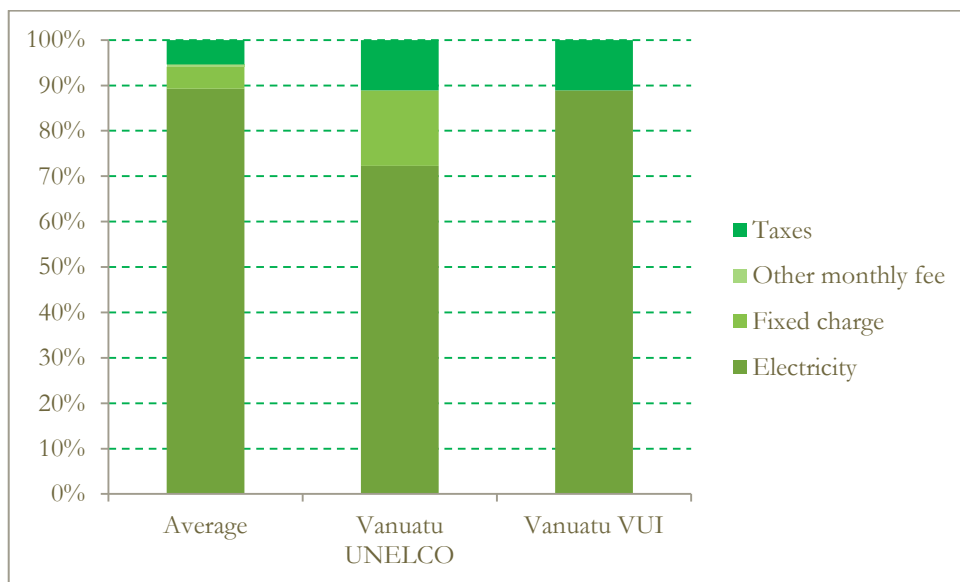
The bills for high voltage customers with the same connection and consumption are also provided for UNELCO and VUI.

**Figure 5: Comparison of bills paid by "Business customers" across the Pacific region**



The electricity costs for the “business customer” category in Vanuatu are higher than the regional average. The typical bill paid for these customers in Vanuatu is VUV 654,377 for UNELCO customers, and VUV 660,037 for VUI customers, based on September 2013 prices, assuming a low voltage connection. This compares to an average bill of VUV 521,628 for the Pacific area. UNELCO is 25% above the Pacific average, and VUI is 27% above the Pacific average. For both VUI and UNELCO, customers would reduce their bills by changing their connection to high voltage, if that is technically possible.

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



The comparison between Vanuatu and the Pacific area shows that a higher proportion of the 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 customers of 16% of the total bill. There are no fixed charges for VUI customers. This is compared to an average fixed charge of 5% across the Pacific region. For high voltage customers in Vanuatu, the monthly fixed charge represents approximately 23% of the bill for both UNELCO and VUI customers.

### 3.4 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 customers in Vanuatu are charged significantly more than the regional average
- Business customers in Vanuatu are charged more than the regional average, although this comparison is more difficult due to more complex tariffs for high voltage connections

This shows that the cross-subsidy between large and small customers in Vanuatu is more pronounced than in other parts of the Pacific region.

Another conclusion that is clear from the study is that electricity customers in Vanuatu pay more tax to the government through their bills than in other Pacific countries. The overall tax burden on individuals has not been considered in this analysis, however.

### 3.5 Factors that impact electricity costs

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 electricity costs. 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
- Generation mix, as sources such as hydro-electric power can have a significant impact on costs
- Ownership, subsidization and cost-recovery, as the prices charged by some state-owned utilities across the Pacific do not cover the full costs of production
- 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 some examples of cases in the Pacific where these factors have an impact on electricity prices:

**Table 3: Observations of other electricity utilities in the Pacific**

Country	Observations
Nauru	Electricity is provided in blocks of 4 hours. The reliability of equipment has improved recently so that the Nauru Utilities Authority (NUA) is almost capable of delivering a 24-hour service. However, until adequate demand management strategies and user-pays systems are in place, the cost in fuel for 24-hour operation is beyond Nauru's resources.
Marshall Islands	Electricity is generated solely with diesel generators on Majuro and Kwajalein atolls, with the state-owned Marshalls Energy Company (MEC) providing generation and distribution services on Majuro, and the Kwajalein Atoll Joint Utility Resource (KAJUR) providing grid power on Kwajalein. MEC also operates and maintains small diesel systems as well as small off-grid PV systems on other atolls. Only 13% of households on the outer islands use electricity for lighting, compared to 90% on Majuro. MEC charges USD \$0.37 per kWh for its residential electricity rates, one of the highest in the Pacific.
Fiji	Fiji generates 60% of electricity through hydro-electric power stations, and up to 70% from renewable sources in total. 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 totalled \$25m in 2012. 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.

## 4. Other publications of interest

### **Monthly and Half-year “Energy market snapshots”**

In order to monitor the energy market in Vanuatu and communicate transparently with electricity consumers, the URA provides a monthly energy market snapshot. This monthly report captures technical data on the production of electricity in Vanuatu by source of generation. Volumes of diesel used and amount of kWh sold are reported among other consumption patterns, in order to improve the customer’s understanding of the energy market and how the cost of electricity is affected by these variables.

A half-yearly release of the energy snapshot retraces the evolution of electricity generation factors over the previous 6 months, and provides trends and facts underlining the evolution of electricity prices in Vanuatu. These publications can be found on the URA website at: [www.ura.gov.vu](http://www.ura.gov.vu)



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You can access the Pacific Region Electricity Bills Comparison Report 2013 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.