

**Utilities
Regulatory
Authority**

Comparative Report

Pacific Region Electricity Bills



June 2015

Letter from the CEO

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

It is a challenging but useful exercise to gather, compile and disseminate current energy pricing. Information could be used to observe trends and major factors influencing electricity prices. Our previous reports were generally well-received with positive feedback from Government officials, development agencies and utilities, thus encouraging the URA to continue this exercise.

This report is designed from the consumer 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 measurement 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 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 March 2015, 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 a sharp drop in raw fuel prices in the global markets during the second half of 2014. The Electricity bill comparison report captures the fuel prices resulting in significant decrease in consumer energy prices across the region. However due to transportation and logistics of supply chain to the pacific islands, the timing of the impact was varied and not immediate. Delays in price drop was observed and attributable to the transportation and frequency of supply differing for each country based on the distance from the port of origin, supply route, the local demand (volumes) and 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, negating somewhat the positive effects of diesel price drops 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 gathering the data.

I want to thank Olivier Fernandez, our Principal Finance Specialist who is the author of this report and who designed and developed this Regional Bill comparison study in 2013, and Maureen Malas who has assisted in this effort.

I welcome any suggestions to improve on this analysis and comparison report.

Sincerely,

Hasso Bhatia, PhD

CEO, Utility Regulatory Authority of Vanuatu

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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. 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 July 2014, 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
- 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
- Rep – 5 : <http://www.rep5.eu>
- Marshalls Energy Company: <http://mecrmi.net>
- Cook Islands energy provider: 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>
- Vanuatu: www.ura.gov.vu

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 vary widely 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 electricity utilities in 25 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 7,000 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 1,000 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. 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

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 $|\cos \varphi| = 0.85$ 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 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 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 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 to convert all foreign currencies into Vatu, on the 15th of the month of the corresponding billing period. In order to avoid currencies fluctuation impact and make our 2015 analysis comparable to the previous report, billing amounts collected from the previous release have been adjusted based on current exchange rates. Countries’ respective rankings were kept identical though.

Table 2: Exchange rates as of 15th March 2015

Country	Exchange rate 1Fx = VUV	Exchange rate 1Fx = USD
Fiji	51.30	0.482
Palau	106.40	1.000
American Samoa	106.40	1.000
Western Samoa	42.41	0.399
PNG	40.15	0.377
New-Caledonia	0.93	0.009
Kiribati	94.04	0.884
Tuvalu	94.04	0.884
Niue	77.86	0.732
Nauru	94.04	0.884
Marshall Islands	106.40	1.000
Solomon Islands	13.82	0.130
Tonga	52.75	0.496
Cook Islands	77.86	0.732
FSM - Chuck	106.40	1.000
FSM - Kosrae	106.40	1.000
FSM - Pohnpei	106.40	1.000
FSM - Yap Island	106.40	1.000
FSM - Falalop	106.40	1.000
Saipan	106.40	1.000
Saipan	106.40	1.000
Guam	106.40	0.009
Tahiti	0.93	0.009
Vanuatu UNELCO	1.00	0.009
Vanuatu VUI	1.00	0.009

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.

2.5 Interaction with on-going regulatory cases

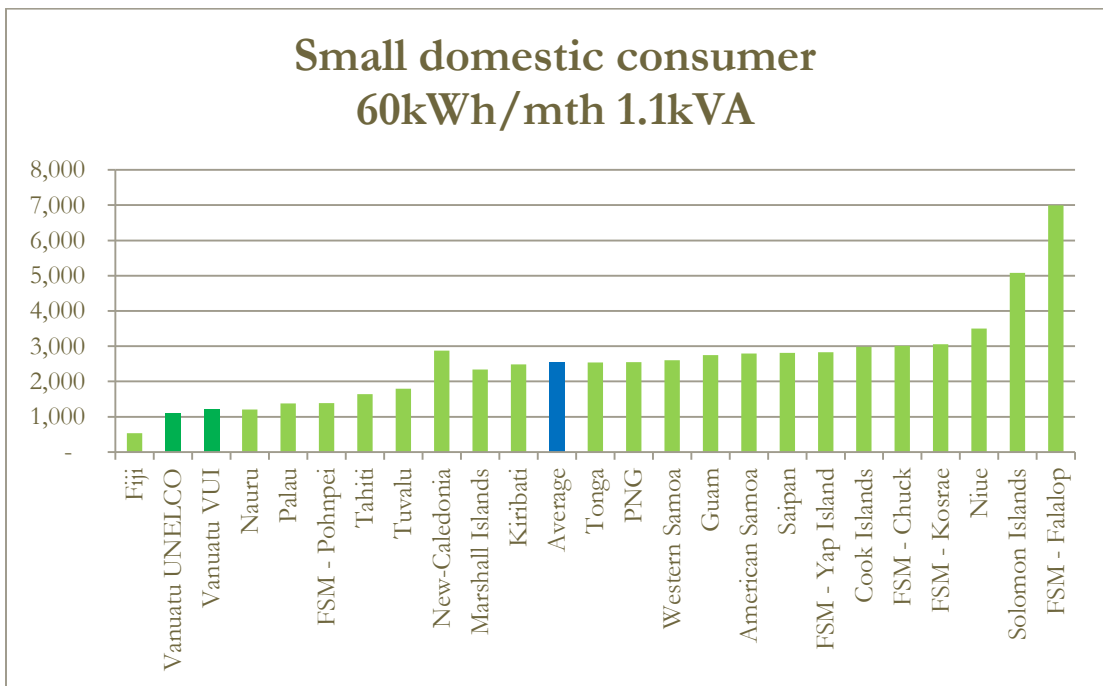
URA Staff underlines that the following report was finalized at the time of an ongoing tariff review for VUI which would consider the impact of drop in diesel prices that is not reflected yet in the tariffs used for the comparison.

3. Electricity price comparison and analysis

3.1 Small domestic consumers category

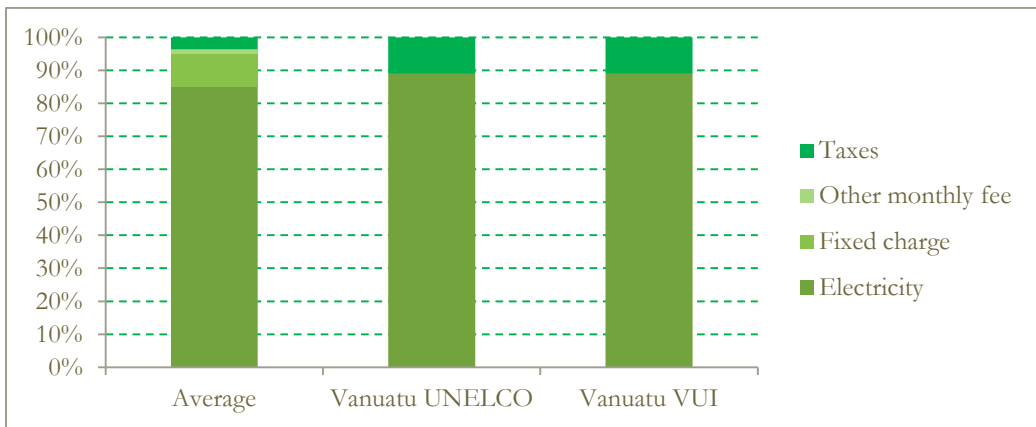
The following chart shows the total bill for monthly consumption of 60kWh on a 5A connection for the sample of 25 electricity companies across the Pacific region.

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



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 2nd and 3rd cheapest out of the 25 utilities in the sample. The typical bill paid for these customers in Vanuatu is VUV 1,098 for UNELCO customers, and VUV 1,207 for VUI customers, based on March 2015 prices. This compares to an average bill of VUV 2,560 for the Pacific area. UNELCO is 58% below the Pacific average, and VUI is 54% below the Pacific average.

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



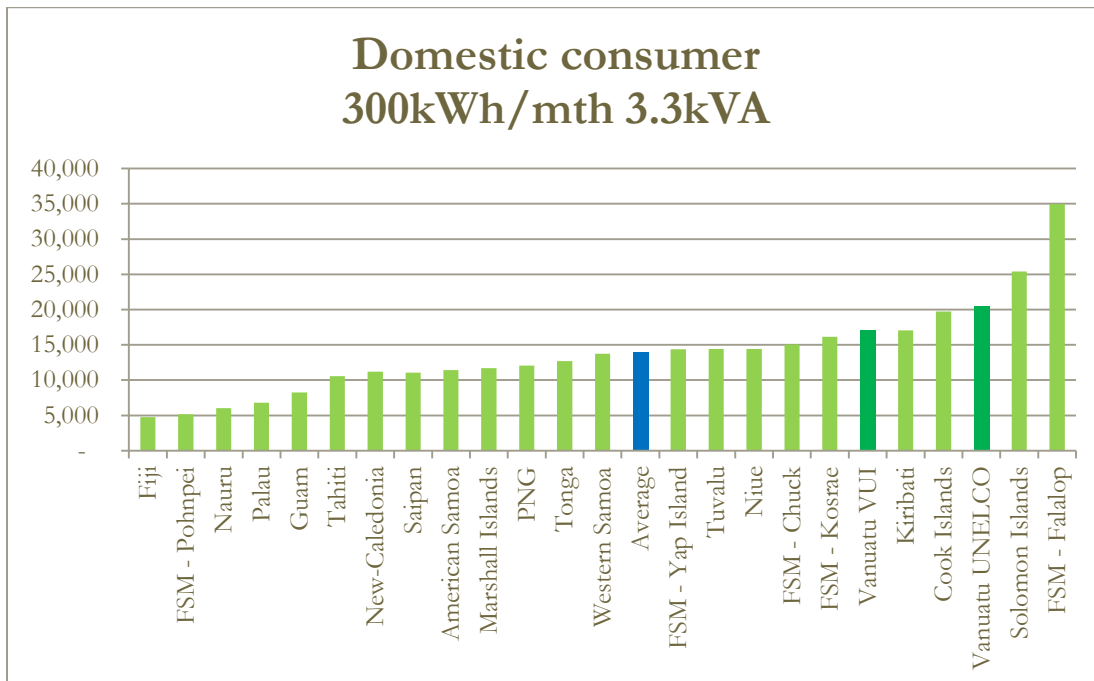
The comparison between Vanuatu and the Pacific area shows that a higher proportion of the electricity bill is made up of Government taxes in Vanuatu. This consists of 12.5% VAT charged on all electricity bills, compared to a Pacific average of 4% tax.

There are no fixed charges for this particular consumer category in Vanuatu, compared to 10% fixed charges and other fees on average across the Pacific.

3.2 Domestic consumer category

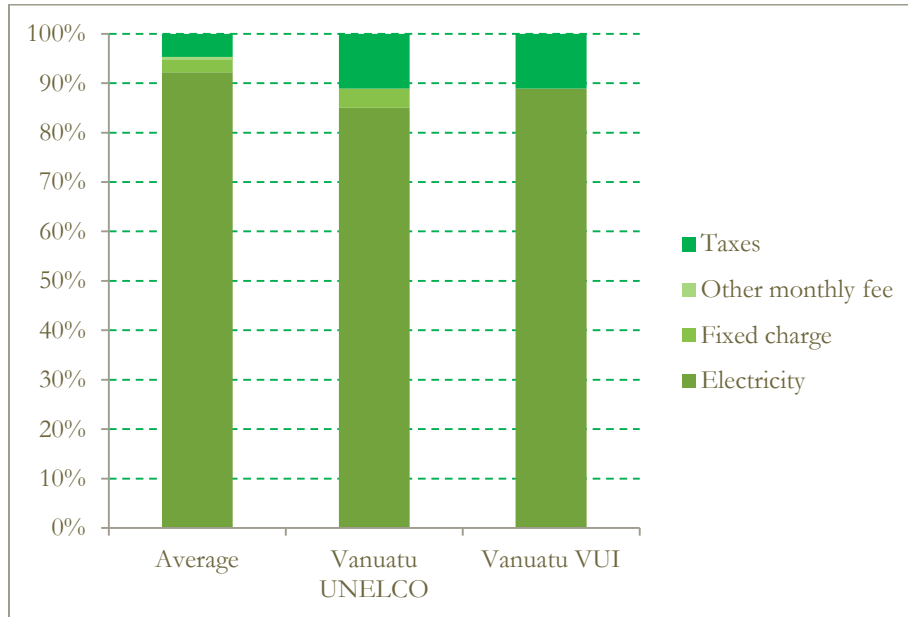
The following chart shows the total bill for monthly consumption of 300kWh on a 15A connection for the sample of 25 electricity companies across the Pacific region.

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



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 3rd and 6th most expensive out of the 25 utilities in the sample. The typical bill paid for these customers in Vanuatu is VUV 20,415 for UNELCO customers, and VUV 16,998 for VUI customers, based on March 2015 prices. This compares to an average bill of VUV 13,928 for the Pacific area. UNELCO is 47% above the Pacific average, and VUI is 22% above the Pacific average.

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



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 3.9% of the total bill, while there are no fixed charges for VUI customers. This is compared to an average fixed charge of 2.6% across the Pacific region.

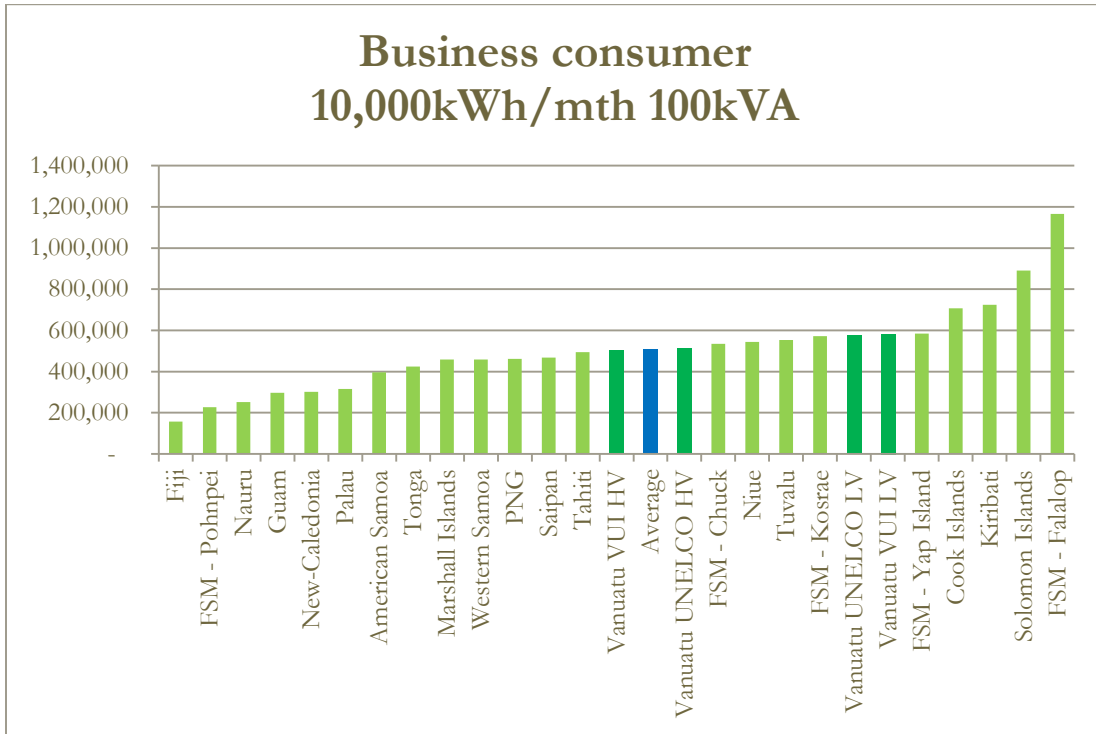
3.3 Business consumer category

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 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 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 domestic customers with no fixed charge.

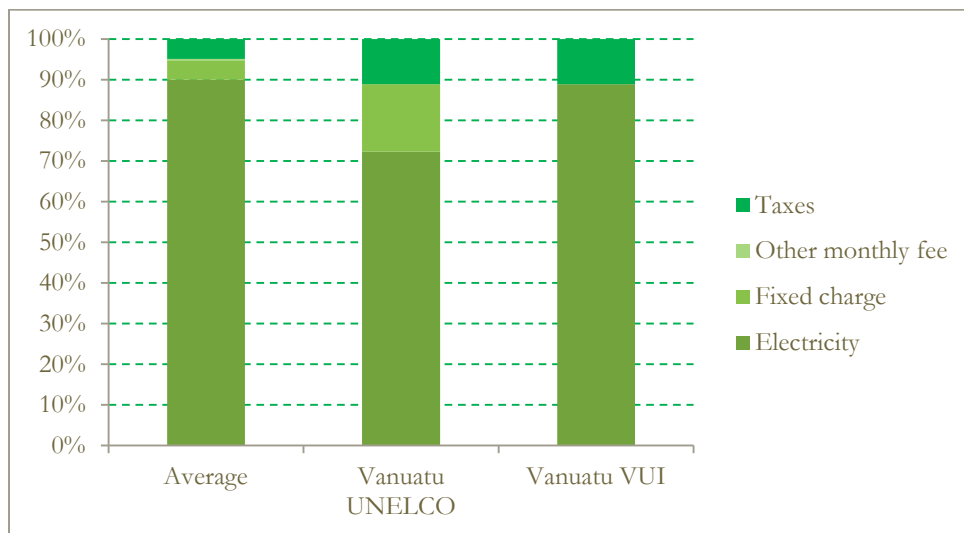
The bills for high voltage customers with the same connection and consumption are also provided for UNELCO and VUI as customers with similar consumption patterns would be on HV connection.

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



The electricity costs for the “business consumers” category in Vanuatu are, for VUI, just under regional average for HV connection and above regional average for LV connection. Both UNELCO’s and VUI’s tariffs are in line with the regional average for HV types of connection. The typical bill paid for HV customers in Vanuatu is VUV 503,061 for VUI customers, and VUV 511,031 for UNELCO customers, based on March 2015 prices, assuming a low voltage connection. This compares to an average bill of VUV 505,924 for the Pacific area. LV type connections in Vanuatu are about 15% above the Pacific average.

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



The comparison between Vanuatu and the Pacific area shows that a higher proportion of the electricity bill is made up of Government taxes in Vanuatu. 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 16.6% of the total bill. There are no fixed charges for VUI customers. This is compared to an average fixed charge of 4.7% 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 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 are both impacting the price paid by the consumers for electricity services. Diesel and 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 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 \$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.
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.

4. Electricity price evolution over time

The following section focuses on electricity tariffs evolution across the region.

4.1 Small domestic consumers price evolution

In the Small domestic consumer category, prices in the region have dropped in average by 6% since July 2014, the time of the previous release. Variations in the ranking were mostly driven by a significant 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 40%. Although energy remains one of the cheapest in the region, in Nauru it is important to flag a significant increase reflecting the implementation of a new tariff in line with actual operating costs of the local utility. A need for improvement of the revenue collection management was flagged in our previous report.

Small domestic consumers						
Country	Average bill 2014	Ranking 2014	Average bill 2013	Ranking 2013	Tariff variation	Ranking shift
Fiji	529	1	529	1	0%	0
Vanuatu UNELCO	1,098	2	1,253	4	-12%	2
Vanuatu VUI	1,207	3	1,207	3	0%	0
Nauru	1,208	4	604	2	100%	-2
Palau	1,379	5	2,375	8	-42%	3
FSM - Pohnpei	1,385	6	1,385	5	0%	-1
Tahiti	1,637	7	1,654	7	-1%	0
Tuvalu	1,796	8	1,732	6	4%	-2
New-Caledonia	2,870	9	3,384	21	-15%	12
Marshall Islands	2,341	10	2,829	14	-17%	4
Kiribati	2,483	11	2,483	9	0%	-2
Average	2,560		2,723		-6%	
Tonga	2,540	12	2,864	16	-11%	4
PNG	2,551	13	2,446	10	4%	-3
Western Samoa	2,605	14	2,964	17	-12%	3
Guam	2,751	15	2,719	11	1%	-4
American Samoa	2,795	16	3,091	15	-10%	-1
Saipan	2,808	17	2,808	12	0%	-5
FSM - Yap Island	2,827	18	2,827	13	0%	-5
Cook Islands	2,982	19	2,982	18	0%	-1
FSM - Chuck	3,010	20	3,691	20	-18%	0
FSM - Kosrae	3,056	21	3,649	19	-16%	-2
Niue	3,504	22	3,504	22	0%	0
Solomon Islands	5,080	23	5,377	23	-6%	0
FSM - Falalop	6,990	24	6,990	24	0%	0

4.2 Domestic consumers price evolution

For similar reasons as the small domestic the “Domestic consumers” category has registered significant drop in prices over the period. With the exception of Nauru, where tariffs were ad-in tariffs adjusted to match actual operating costs, the most significant variations were observed in Palau (-48%), the Federated States of Micronesia in Chuck and Kosrae islands (respectively -18% and -16%), and the Marshall islands (-17%). These tariff drops are combined with unchanged tariffs in a third of the countries of the panel. It results in a steady drop in the regional average by 6%. Bills variations are in line with the trends observed in the Small domestic consumer category, thus reflecting a proportional imputation of additional savings resulting in tariff changes across all domestic categories.

Domestic consumers						
Country	Average bill 2014	Ranking 2014	Average bill 2013	Ranking 2013	Tariff variation	Ranking shift
Fiji	4,759	1	4,516	2	5%	1
FSM - Pohnpei	5,139	2	5,139	3	0%	1
Nauru	6,038	3	3,019	1	100%	-2
Palau	6,794	4	13,142	8	-48%	4
Guam	8,222	5	8,911	4	-8%	-1
Tahiti	10,544	6	11,308	10	-7%	4
New-Caledonia	11,202	7	11,651	13	-4%	6
Saipan	11,063	8	11,063	5	0%	-3
American Samoa	11,424	9	12,900	7	-11%	-2
Marshall Islands	11,707	10	14,143	9	-17%	-1
PNG	12,065	11	11,430	6	6%	-5
Tonga	12,702	12	14,515	14	-12%	2
Western Samoa	13,739	13	15,886	16	-14%	3
Average	13,928		14,866		-6%	
FSM - Yap Island	14,349	14	14,349	11	0%	-3
Tuvalu	14,396	15	13,859	12	4%	-3
Niue	14,405	16	14,405	15	0%	-1
FSM - Chuck	15,049	17	18,454	18	-18%	1
FSM - Kosrae	16,131	18	19,137	20	-16%	2
Vanuatu VUI	16,998	19	16,998	19	0%	0
Kiribati	17,069	20	17,069	17	0%	-3
Cook Islands	19,726	21	19,726	21	0%	0
Vanuatu UNELCO	20,415	22	23,319	22	-12%	0
Solomon Islands	25,399	23	26,884	23	-6%	0
FSM - Falalop	34,949	24	34,949	24	0%	0

4.3 Business consumers price shift

Electricity tariffs charged to Business consumers across the region dropped by 8% 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 Palau (-52%) and Fiji (-27%) showing commitment to support local economies. For countries passing on the drops in diesel prices, the average tariff decrease ranges from 12% to 17% as shown in the following table:

Business consumers						
Country	Average bill 2014	Ranking 2014	Average bill 2013	Ranking 2013	Tariff variation	Ranking shift
Fiji	157,369	1	216,064	2	-27%	1
FSM - Pohnpei	227,350	2	227,350	1	0%	-1
Nauru	251,564	3	251,564	3	0%	0
Guam	296,531	4	321,268	4	-8%	0
New-Caledonia	301,198	5	312,715	5	-4%	0
Palau	314,659	6	655,512	20	-52%	14
American Samoa	396,425	7	445,646	6	-11%	-1
Tonga	423,395	8	483,843	9	-12%	1
Marshall Islands	457,903	9	539,108	10	-15%	1
Western Samoa	457,981	10	529,540	13	-14%	3
PNG	461,676	11	436,758	8	6%	-3
Saipan	467,373	12	465,854	7	0%	-5
Tahiti	494,670	13	506,535	17	-2%	4
Vanuatu VUI HV	503,061	14	503,061	11	0%	-3
Average	505,924		547,513		-8%	
Vanuatu UNELCO HV	511,031	15	583,706	18	-12%	3
FSM - Chuck	535,251	16	648,758	19	-17%	3
Niue	543,485	17	543,095	15	0%	-2
Tuvalu	552,972	18	532,752	12	4%	-6
FSM - Kosrae	572,006	19	673,895	21	-15%	2
Vanuatu UNELCO LV	575,595	20	657,495	22	-12%	2
Vanuatu VUI LV	582,015	21	582,706	16	0%	-5
FSM - Yap Island	584,117	22	584,117	14	0%	-8
Cook Islands	706,811	23	706,811	24	0%	1
Kiribati	724,129	24	724,129	23	0%	-1
Solomon Islands	890,490	25	938,076	25	-5%	0
FSM - Falalop	1,164,974	26	1,164,974	26	0%	0

4.4 Factors that impact electricity price over time

In the Pacific region, most of the generation capacity is diesel fueled. It 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. For the countries passing the fuel price variations onto electricity consumers, time gap observed vary between countries and are driven by the supply chain and 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. The 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 price change occurs when fuel from previous delivery has been fully exhausted, using first-in first out inventory method. This means that based on how much stock is left in the storage the day the tanker lands at the wharf, the price change from cheaper fuel delivered 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 this cheaper fuel may increase the time lag in price transfer again. All together we observed a three to four months lag in price transfer in Vanuatu, a process we detailed in our monitoring report "Diesel Pricing for Electricity Services" released in January 2015 and available on the URA's website.

In order to avoid distortions in the comparison of shift in rankings over time, we keep the exchange rates 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 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 concessions with VUI charging below average pacific rate and UNELCO charging higher prices than average based on the type of connection. It should be noted that the URA reduced VUI prices in March 2014, while Unelco prices are adjusted monthly reflecting current 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 third release of the URA's Electricity tariff comparison reflects the significant drops in diesel prices driving down energy prices across the region, although appreciation of US dollar currency played against certain countries like Vanuatu who have seen a portion of the benefits from diesel prices drop taken away by the depreciation of local currencies against US dollar used to price petroleum products. It 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 diesel prices drop 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
Small domestic consumer												
Average use per month	60 kWh											
Amperage	1.1 kVa											
Electricity in VUV	529	964	2,157	2,315	1,717	1,793	2,257	1,777	2,336	1,129	2,209	5,080
Fixed charge in VUV	-	319	638	-	602	382	-	-	1,168	-	-	-
Other monthly fee in VUV	-	-	-	-	-	558	-	-	-	-	-	-
Taxes in VUV	-	96	-	289	232	137	226	18	-	79	133	-
Estimated bill in VUV	529	1,379	2,795	2,605	2,551	2,870	2,483	1,796	3,504	1,208	2,341	5,080
Domestic consumer												
Average use per month	300 kWh											
Amperage	3.3 kVa											
Electricity in VUV	4,401	6,001	10,785	12,213	10,366	8,965	15,517	13,777	13,237	5,643	11,044	25,399
Fixed charge in VUV	-	319	638	-	602	1,145	-	-	1,168	-	-	-
Other monthly fee in VUV	-	-	-	-	-	558	-	-	-	-	-	-
Taxes in VUV	358	474	-	1,527	1,097	533	1,552	618	-	395	663	-
Estimated bill in VUV	4,759	6,794	11,424	13,739	12,065	11,202	17,069	14,396	14,405	6,038	11,707	25,399
Business consumer												
Average use per month	30000 kWh											
Amperage	100 kVa											
Electricity in VUV	138,874	291,536	351,205	407,094	419,698	205,441	658,299	526,640	541,928	235,107	431,984	890,490
Fixed charge in VUV	1,180	1,170	45,220	-	7	80,760	-	-	1,168	-	-	-
Other monthly fee in VUV	-	-	-	-	-	654	-	-	-	-	-	-
Taxes in VUV	17,314	21,953	-	50,887	41,971	14,343	65,830	26,332	389	16,457	25,919	-
Estimated bill in VUV	157,369	314,659	396,425	457,981	461,676	301,198	724,129	552,972	543,485	251,564	457,903	890,490

Country	Tonga	Cook Islands	FSM - Chuck	FSM - Kosrae	FSM - Pohnpei	FSM - Yap Island	FSM - Falalop	Saipan	Guam	Tahiti	Vanuatu UNELCO HV	Vanuatu VUI HV
Small domestic consumer												
Average use per month	60 kWh											
Amperage	1.1 kVa											
Electricity in VUV	2,540	2,663	2,866	3,056	894	2,426	6,990	2,064	1,368	1,065	976	1,073
Fixed charge in VUV	-	-	-	-	-	-	-	-	-	-	-	-
Other monthly fee in VUV	-	-	-	-	-	-	-	-	-	-	-	-
Taxes in VUV	-	-	-	-	-	-	-	-	-	-	-	-
Estimated bill in VUV	2,864	2,864	2,864	2,864	2,864	2,864	2,864	2,864	2,864	2,864	2,864	2,864
Domestic consumer												
Average use per month	300 kWh											
Amperage	3.3 kVa											
Electricity in VUV	12,702	17,613	14,332	16,131	4,469	13,399	34,949	10,318	6,839	7,704	17,358	15,109
Fixed charge in VUV	-	-	0	-	426	266	-	745	1,383	1,217	789	-
Other monthly fee in VUV	-	-	-	-	-	-	-	-	-	1,121	-	-
Taxes in VUV	-	2,114	717	-	245	683	-	-	-	502	2,268	1,889
Estimated bill in VUV	12,702	19,726	15,049	16,131	5,139	14,349	34,949	11,063	8,222	10,544	20,415	16,998
Business consumer												
Average use per month	30000 kWh											
Amperage	100 kVa											
Electricity in VUV	423,395	630,692	509,762	572,006	127,680	555,770	1,164,974	466,309	283,768	401,545	334,700	329,490
Fixed charge in VUV	-	389	-	-	86,184	532	-	1,064	12,763	32,217	119,550	117,675
Other monthly fee in VUV	-	-	-	-	2,660	-	-	-	-	37,353	-	-
Taxes in VUV	-	75,730	25,488	-	10,826	27,815	-	-	-	23,556	56,781	55,896
Estimated bill in VUV	423,395	706,811	535,251	572,006	227,350	584,117	1,164,974	467,373	296,531	494,670	511,031	503,061

Utilities Regulatory Authority

Vanuatu

You can access the Pacific Region Electricity Bills Comparison Report 2015 on our website www.ura.gov.vu, or by contacting us by telephone (+678) 23335, email: breuben@ura.gov.vu or regular mail at Comparative Report “Electricity price – Pacific area” Utilities Regulatory Authority, PMB 9093, Port Vila, Vanuatu.