

**Utilities
Regulatory
Authority**

Electricity Fact Sheet

2012 – 2017

December 2018

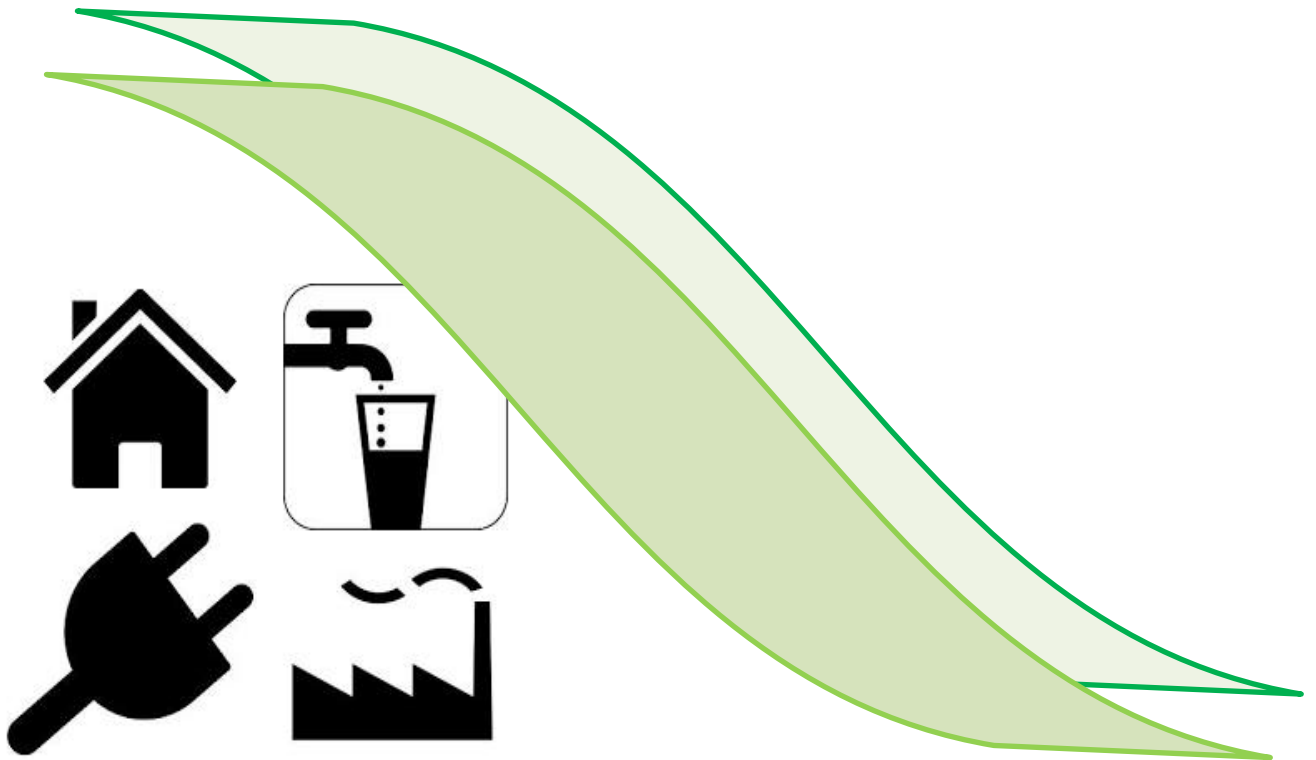


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1 Executive Summary

The presentation of statistical data via diagrams and graphs provide readers a full appreciation of changes and developments affecting the electricity market. This Electricity Fact Sheet intends to build on this principle regarding the electricity sector or services in Vanuatu strictly within the four (4) concession areas.

On a general view, the electricity sector in Vanuatu is affected by the following changes in 2017 from previous year:

- Available electricity generation sources in Vanuatu is comprised of diesel, copra oil, hydro, wind and solar in 2017;
- Overall generation installed capacity decreased by 0.18 MW in 2017, a 0.6% reduction from preceding year's capacity;
- Consolidated peak demand decrease by 0.36%;
- Gross electricity generation increased by 2.5 GWh in 2017, a 3.8% increase from preceding year;
- Overall renewable penetration decrease by 7.2% given the increase in generation requirements;
- Diesel consumption increased by 1.1 Million litres in 2017 while copra oil was not utilized;
- Number of electricity users continue to consistently increase with 1,551 new additional users in 2017;
- Electricity network length increased in all concession areas showing commitment from respective utilities. Overall LV and HV network lines increased by 6.2% and 6.4% respectively; and
- Number of planned and unplanned outages increased respectively for the reporting year by 68% and 56% respectively.

It is believed this Fact Sheet will communicate to interested readers useful insights about the electricity market in Vanuatu.

2 Introduction

The Utilities Regulatory Authority (the 'Authority') is pleased to present this updated Electricity Fact Sheet providing statistical information on the electricity sector in Vanuatu particularly within the four concession areas of Port Vila, Luganville¹, Malekula (Lakatoro) and Tanna (Lenakel) in which the two main utilities, UNELCO² and VUI³ operate. The Fact Sheet does not embrace information/data on areas outside the concession areas that also generate and use electricity.

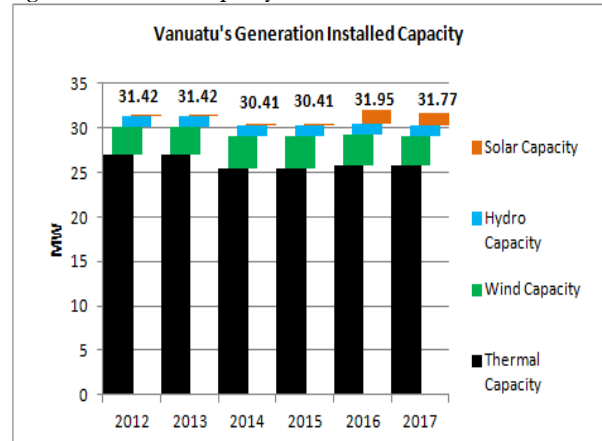
Data presented is consolidated for all concession areas. For specific details for any elements of the electricity market presented in this Fact Sheet corresponding to a particular concession area, you can always refer to the appendixes of this Fact Sheet. The Fact Sheet is an update to the previous Fact Sheet issued in November of 2017.

The electricity statistics are updated for the last six years (2012 to 2017) consistently with 2017 electricity statistics being the newly added figures conveying to interested readers the overall trend in the electricity sector within the concession boundaries.

3 Generation installed capacity in Vanuatu

Figure 1 below shows the total installed capacity of the available generation resources in Vanuatu. Refer to Appendix 13.1 for details of each concession areas.

Figure 4: Generation capacity in Vanuatu

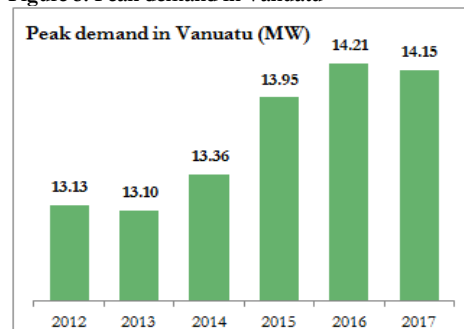


Source: UNELCO & VUI Regulatory Reports

The overall generation capacity has recorded a slight decrease in 2017 by 0.18 MW. Details of change by type of generation source saw no change in hydro and solar capacity. Thermal generation source has increased in 2017 with an additional capacity of 0.06 MW in Malekula and 0.04 MW in Luganville (Port Olry) Concession while Wind capacity has declined by 0.28 MW showing the effect of one wind turbine being removed from service in 2017. It is important to note that in the previous Fact Sheet, the 2016 overall installed capacity had a difference of 0.26 MW with current Fact Sheet due to an omitted data in the Malekula thermal capacity which increased in mid-2016 by 0.22 MW and the inclusion of Port Olry data in the 2016 electricity statistics with thermal capacity of 0.04 MW. At the time this Fact Sheet was prepared, the Kawene solar farm with installed capacity of 1.5 kW has been completed, commissioned and in operations. The additional capacity as a result will be captured in the next issue of this Fact Sheet reporting on the 2018 developments.

4 Peak demand in Vanuatu

Figure 5: Peak demand in Vanuatu



Source: UNELCO & VUI Regulatory Reports

¹ Inclusive of Port Olry operations commencing 2016

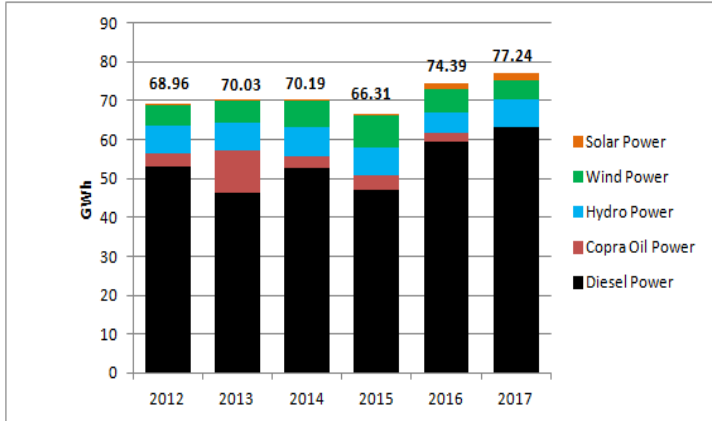
² Union Electrique du Vanuatu Limited (operating in Port Vila (1986), Malekula (2000) & Tanna (2000))

³ Vanuatu Utilities and Infrastructure Limited (operating in Santo, Luganville (2011))

Overall peak demand in Vanuatu has been constantly increasing from 2012 to 2016 when it made a slight drop in 2017 by 0.36%. Peak demand by concession area is detailed in Appendix 13.2 for corresponding years.

5 Energy mix in Vanuatu

Figure 1: Energy Mix in Vanuatu



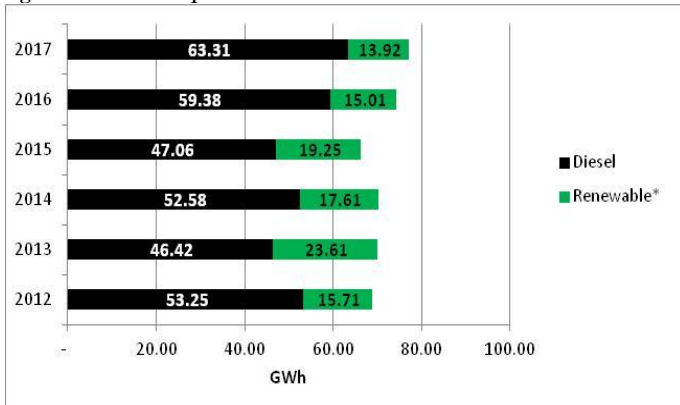
Source: UNELCO & VUI Regulatory Reports

The above graph shows the consolidated gross electricity generation mix in Vanuatu throughout all concession areas. Refer to Appendix 13.3 for gross energy generated by concession area and Appendix 13.4 for energy mix detailed by concession area. Thermal generation continues to dominate share of the energy mix in 2017 by 82%, followed by hydro contributions of 9% while wind contributed 6% and the least contributor by Solar of 3%. The solar contributions are inclusive of the Government Solar Farms. Copra oil was not utilized in 2017.

In terms of energy mix evolution from 2016 to 2017, hydro output increased by 41% followed by diesel generation with 7% while solar output declined by -5% followed by wind generation by -12% from 2016 as a result of decommissioning one of the wind turbines in 2017. The significant increase in hydro contributions results from the 2016 El Niño impact on hydro performance and normalized weather patterns in 2017.

6 Renewable penetration in Vanuatu

Figure 2: Renewable penetration in Vanuatu



* Renewable is inclusive of electricity from Copra oil, Solar, Wind & Hydro
Source: UNELCO and VUI Annual Technical Reports

Renewable penetration decreased by 7.2% in 2017 from 2016 penetration rate. The decrease stems from the decommissioning of

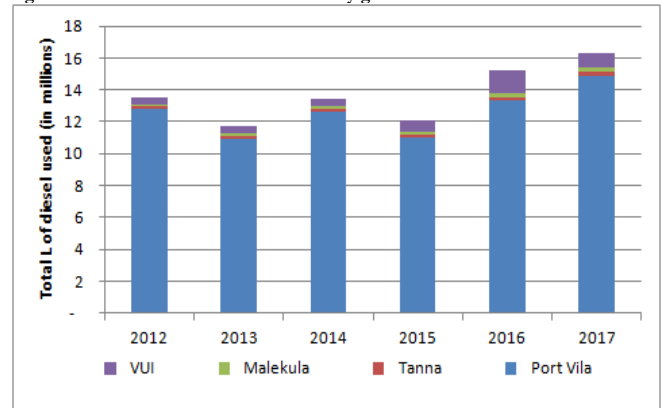
one wind turbine and the non-usage of copra oil in 2017. Other reasons may stem from the increase in electricity demand while renewable capacity slightly declined in that corresponding year.

7 Litres (L) of diesel and copra oil used in electricity production

Figure 5 below shows the total Litres (l) of diesel utilized in all concession areas for electricity production. Overall, the total L of diesel increased by 7% in Vanuatu in 2017.

By concession area, litres consumed in Port Vila concession increased by 12% and similarly for Tanna by 10%. Both Luganville and Malekula reliance on diesel decreased by 32% and 1% respectively. In Luganville, the decline came as a result of normalised weather patterns in 2017 while in Malekula, new thermal generation facilities have improved generation efficiency rate despite increase in generation requirements. This has resulted in a slight decrease in diesel consumption.

Figure 6: Total L of diesel used in electricity generation in all concession area

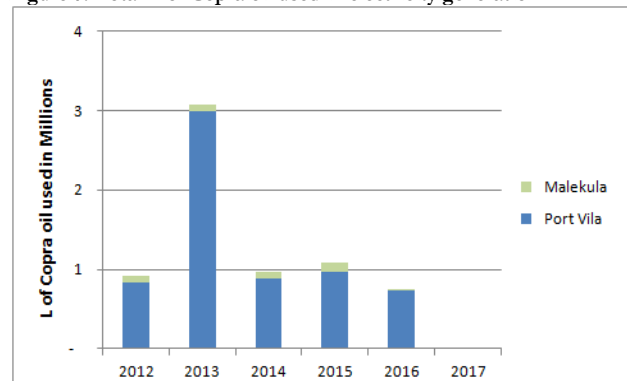


Source: UNELCO monthly tariff submission and Luganville concession reports

Refer to Appendix 13.5 for detail on litres of diesel consumed per concession site.

Figure 6 below conveys the total litres of copra oil used in the corresponding years. Copra oil is limitedly used for electricity production in the concessions of Port Vila and Malekula.

Figure 7: Total L of Copra oil used in electricity generation



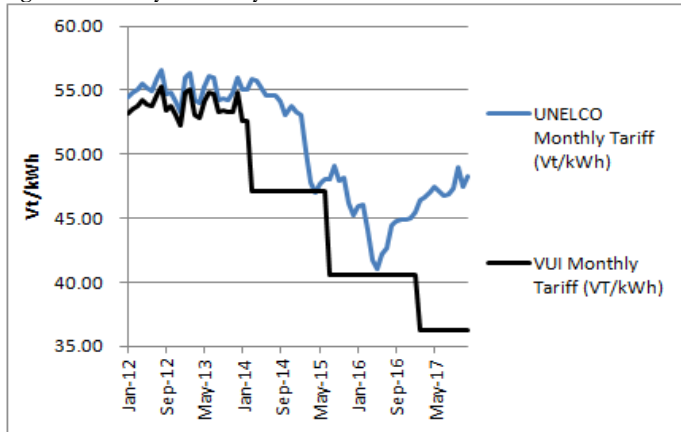
Source: UNELCO monthly tariff submission

Copra oil is not efficient as diesel. That said there are cases whereby the diesel cost exceeds the copra cost extremely which would favour the use of copra oil over diesel. It can be noted that in 2017, no litres of copra was consumed in neither Port Vila nor Malekula.

Appendix 13.6 presents the data on liters of copra oil used in generation per concession for the respective years.

8 Electricity Prices

Figure 3: Monthly Electricity Prices Evolution



Source: UNELCO monthly tariff submission and Luganville concession reports

Electricity in Vanuatu continues to remain one of the costly services after high cost of importing diesel into the country coupled with taxes and the great reliance on diesel based generation. You can access the Electricity comparison report⁴ to evaluate electricity prices around the pacific region and compare with Vanuatu.

Electricity prices charged in the UNELCO concessions are adjusted monthly to transfer the changes in diesel cost and other cost drivers – material cost, labour cost etc – such costs which are beyond the utility’s influence and are controlled by the market. In the Luganville Concession given the thermal generation is quite low, electricity tariffs are revised on an annual basis to cater for changes in the cost drivers thus a time lag of one year usually prevails before changes in the cost drivers can be recognised and passed onto customers.

At the time this Fact Sheet is finalised, the tariff in Luganville has increased from 36.29 Vatu per kWh to 38.52 Vatu per kWh – an increase by 6.14%.

It is further worth mentioning that UNELCO’s tariff review is now taking the course of Arbitration and UNELCO’s electricity customers will be informed of the Arbitration Award once conferred.

9 Electricity users and use in Vanuatu

Table 1 provides the categorization of electricity users allocated to major user classification in order to present the number of electricity users and their respective consumptions.

Table 1: User Classifications Details

User Classification	Details
Industrial	Private High Voltage Users, Government High Voltage Users, Water Usage
Commercial	Business Users
Non-Commercial	Small Domestic Customers, Prepaid Users, Other Low Voltage Users, Government Low Voltage
Others	Street Lights/Sports Field, Energy not invoice (utility’s office usage, employee usage and installations)

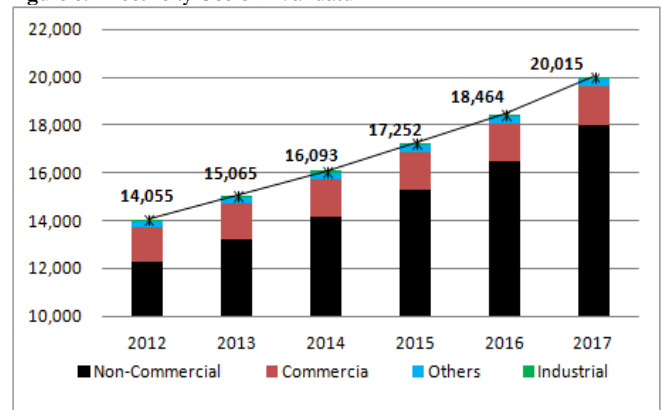
Subsections 9.1 and 9.2 will present and report data per user classifications defined in Table 1 above. Note that number of utility employees is now captured including the water usage as well.

Appendixes 13.7 and 13.8 details user count by classifications as in Table 1 above presented by concession areas including the user energy consumption as well.

9.1 Electricity user numbers

Figure 8 below presents the trend in user numbers through the years under focus. The user numbers are reported as at 31st December for the respective years.

Figure 8: Electricity Users in Vanuatu



Source: UNELCO and VUI Annual Technical Reports

Electricity users in Vanuatu continue to grow consistently and prominently, particularly for the non-commercial users which comprises significantly of residential users. The number of non-commercial users increased by 9% in 2017 from 2016 followed by others with 5%, commercial users by 1% with no change observed for industrial users. The notable change in the number of non-commercial users stems partly from the significant uptake of residential customers in the North East of Malekula subsequently to the completion of the North East Electrification Project of Malekula funded through the European Development Funding (EDF) commissioned in early 2017. Figure 10 below highlights network length on Malekula Concession which substantiate the network length in Malekula.

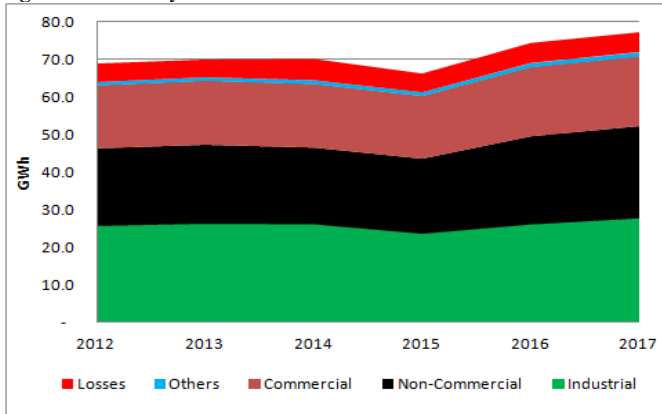
⁴ http://www.ura.gov.vu/index.php?option=com_content&view=article&id=106&Itemid=219&lang=en

Additionally, the Global Partnership on Output-Based Aid (GPOBA) financed by the world bank which was launched and implemented in 2014 as a subsidising avenue reducing customer connection cost promoting connection to electricity network particularly for small domestic/residential users contributed to growth in user numbers as well. This funding mechanism is available to all electricity customers throughout the four concessions with ending date as at end of 2018.

9.2 Electricity usage in Vanuatu

Figure 9 shows the growth of electricity use by major user classification as detailed in table 1. In 2017, all users of electricity recorded increase in electricity their respective consumptions from 2016 with the largest increase observed for the industrial users by 6% pursued by non-commercial users with 5%, others by 4% with commercial by 1%.

Figure 9: Electricity use in Vanuatu



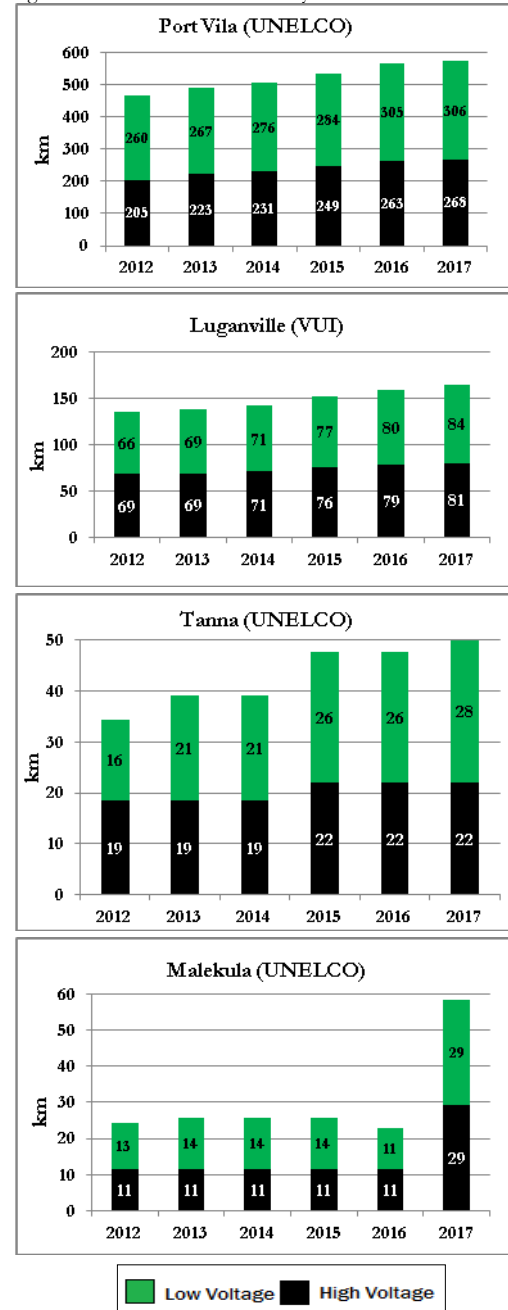
Source: UNELCO and VUI Annual Technical Reports

Losses depicted in figure 9 above are narrowed down to now represent power losses in generation plant auxiliaries, transmission and distribution losses. In the last Fact Sheet published, losses were inclusive of electricity consumed by utilities' employees, office usage, installations and water consumption for Port Vila. In this Fact Sheet, the aforesaid users were assigned into the major user classifications (table 1) and presented. This has been conducted for corresponding years for consistency and comparability.

10 Electricity network length by concession area

Figure 10 presents the length of Low Voltage (LV) and High Voltage (HV) lines in the four concession areas. The sum of the lengths of the HV and LV lines should not be considered as the total distance covered by the electricity network on ground as there are some portions of the network where the LV and HV lines run in parallel on the same poles. The network length presented covers the overhead and underground lines.

Figure 10: HV and LV line in km by Concession Area



Source: UNELCO and VUI Technical Reports

The HV lines are for transmission of HV power from the generating sources to the distribution transformers. LV lines run from the transformers to the customers' respective meters. (HV Lines are set at 5.5KV, 20KV and 33kV while LV lines distribute power rated at 230 V single phase and 380 V, three phase).

All concession areas record increase in network length for 2017. Major network extension undertaken by the two utilities for the years are as follows:

- ✓ In Malekula, both the HV and LV network length increased by 157% and 156% respectively, the most major increase observed in network length as compared to the other concession areas.

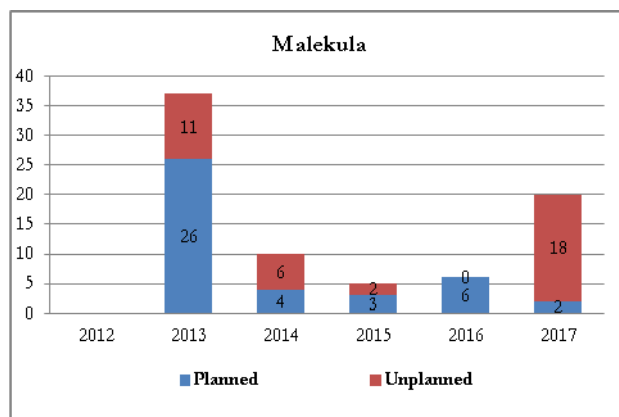
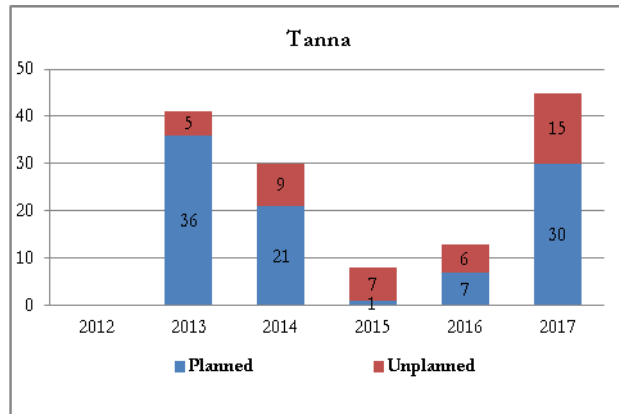
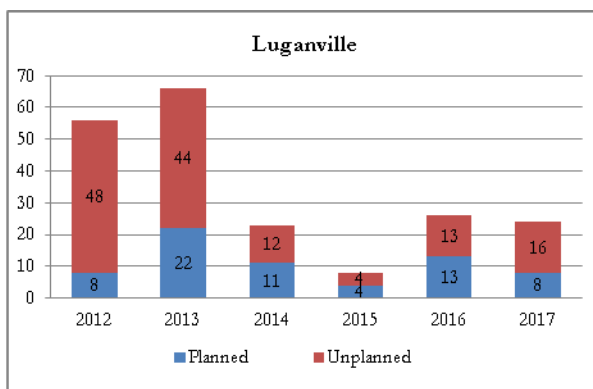
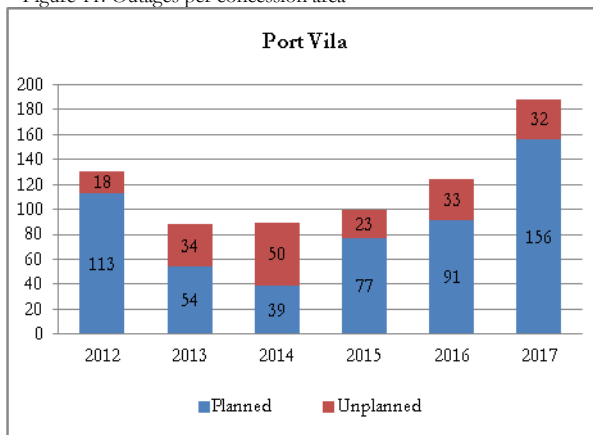
The resulting increasing stems from the EDF funding financing the North East Malekula electricity extension.

- ✓ In Efate, additional length seen in 2017 is 1 km of LV while 5 km of HV.
- ✓ In Luganville Santo, VUI continues to remain active in providing electricity access to the unserved population within the Luganville suburbs, through the funds allocated in the tariff and the Santo fund collected through the tariffs collected from Luganville customers. In 2017, there have been additions to the LV network line by 4 km and 2 km in the HV network length. The Santo Fund extension projects are conducted effectively by VUI over the years enabling network access to underlying areas occupied by low income earners permitting them to benefit from electricity services. Detail of extension projects covered under the Santo fund can be found in the Santo fund reports issued by the URA in August 2017⁵.
- ✓ The least development in Network length is notable for Tanna with additions only to the LV network of 2 km with no additions in the HV network line for three (3) consecutive years from 2015 – 2017.

11 Reliability and outages of electric system by concession

11.1 Number of Outages (Planned and Unplanned) per concession area

Figure 11: Outages per concession area



Source: UNELCO and VUI Technical Reports
Data prior 2013 for Tanna and Malekula is not available.

Figure 11 is showing the merely number of outages per concessions in 2017. Planned outages are outages planned by utility, purposely to allow utility in carrying out maintenance works, network upgrades and to connect extensions to the electricity network. The period of time electricity service is unavailable to customers is usually communicated beforehand to customers via various communication means (e.g. radio, newspaper etc) for customers' awareness and preparation towards such time.

Unplanned outages are interruptions of electricity supply to customers that are caused by technical faults, vandalism by citizens and force majeure acts to the electricity network. It is observable that unplanned outages in 2017 are more prominent for Port Vila followed by Malekula, Luganville then Tanna.

11.2 Reliability of system by concession area

The below abbreviations are useful in interpreting table 2 below (page 8) regarding the number of times and duration of planned and unplanned outages throughout the various concessions.

N/A – Not Available

SAIFI – (System Average Interruption Frequency Index) is a measure of the number of times the average utility customer experiences an outage

SAIDI – (System Average Interruption Duration Index) is the average outage duration for each customer served reported in minutes

⁵ http://www.ura.gov.vu/index.php?option=com_content&view=article&id=105&Itemid=290&lang=en

Table 2: SAIFI and SAIDI by Concession

Years	Planned/ Unplanned/All	Port Vila		Luganville		Tanna		Malekula	
		SAIFI	SAIDI	SAIFI	SAIDI	SAIFI	SAIDI	SAIFI	SAIDI
2012	Planned	3.0	329.0	1.3	352.9	N/A	N/A	N/A	N/A
	Unplanned	6.5	216.4	16.9	178.6	N/A	N/A	N/A	N/A
	All	9.5	545.4	18.2	531.5	N/A	N/A	N/A	N/A
2013	Planned	1.0	109.0	1.2	326.8	6.5	243.2	3.1	275.7
	Unplanned	5.6	127.4	11.4	154.1	2.6	610.3	10.0	529.0
	All	6.6	236.4	12.6	480.9	9.1	853.3	13.1	804.7
2014	Planned	0.3	35.8	1.4	325.1	3.1	422.9	0.7	45.0
	Unplanned	10.8	241.5	12.0	40.0	7.2	115.0	6.0	309.0
	All	11.1	277.3	13.4	365.1	10.2	537.9	7.0	354.0
2015	Planned	1.2	130.1	0.5	135.6	0.1	4.4	1.0	170.0
	Unplanned	6.0	94.0	6.8	241.4	4.0	49.9	2.0	45.0
	All	7.1	224.1	7.3	377.0	4.1	54.3	3.0	215.0
2016	Planned	1.9	232.2	0.8	219.1	1.0	66.8	0.5	118.0
	Unplanned	4.7	129.5	12.1	495.8	4.2	28.4	-	-
	All	6.6	361.7	12.8	714.9	5.2	95.2	0.5	118.0
2017	Planned	3.4	414.1	0.5	218.1	4.8	1,870.6	2.0	180.0
	Unplanned	4.8	391.8	13.3	466.4	10.3	275.8	16.0	316.0
	All	8.2	805.9	13.8	684.5	15.1	2,146.4	18.0	496.0

Source: UNELCO and VUI Annual Technical Reports

11.3 Customer complaint by concession

Table 3: Customer complaint count

	2012	2013	2014	2015	2016	2017
Port Vila	127	104	214	183	190	215
Tanna	0	0	0	5	5	5
Malekula	0	3	0	0	0	1
Luganville	2	0	0	0	1	0

Source: UNELCO and VUI Regulatory Reports

The data in table 3 above is annually updated by the utility and provided to the URA. It represents customer complaints directly received by the utility from its customers. However, it does not include customer complaints received directly by the Authority.

Customer complaints are more pronounced for Port Vila reflecting its large customer base and further its customers' in-depth knowledge of electricity usage compare to the other three concessions. The Authority in 2015 issued an order⁶ to strengthen Customer Complaints and Dispute Resolution process which provide an out of court alternative complaint and dispute resolution. Furthermore in the beginning of 2018, the Authority inaugurated its North Branch Office as an outlet available to Luganville customers for complaints and other regulated services matters with respect to the customer base in Luganville.

12 Closing remarks

We hope this electricity Fact Sheet is of some value to those interested readers, specifically in the electricity services in Vanuatu within the four (4) concession areas.

We welcome any suggestions from readers to enhance this electricity fact sheet to further provide better understanding and benefit to the users/readers of this Electricity Fact Sheet.

Thank you!



About the Utilities Regulatory Authority

The URA is the independent economic regulator for water and electricity services in Vanuatu, established by the URA Act no. 11 of 2007 with amendments.

As part of its functions, the Commission is monitoring the provision of electricity and water by utility companies and public services, promoting access and the long term interest of the customers and communicating to consumers matters relating to the utilities.

Please call us if you have any question on (678) 23335 or visit our office at the Office of the Utilities Regulatory Authority, VNPF Compound, Corner Pierre Lamy & Andre Ballande Street, Port Vila, Vanuatu.

Website: <http://www.ura.gov.vu>

⁶ http://www.ura.gov.vu/index.php?option=com_content&view=article&id=1&Itemid=67&lang=en

13 Appendixes

13.1 Appendix: Generation Capacity by Concession Area

Port Vila	Unit	2012	2013	2014	2015	2016	2017
Thermal Capacity	kW	23,372	23,372	21,830	21,830	21,830	21,830
Wind Capacity	kW	3,025	3,025	3,575	3,575	3,575	3,300
Solar Capacity	kW	87	87	87	81	591	591
IPP Solar Capacity	kW	-	-	-	-	767	767
Total	kW	26,484	26,484	25,492	25,486	26,763	26,488
Luganville							
Thermal Capacity	kW	2,850	2,850	2,850	2,850	2,890	2,930
Hydro Capacity	kW	1,200	1,200	1,200	1,200	1,200	1,200
Solar Capacity	kW	-	-	40	40	40	40
Total	kW	4,050	4,050	4,090	4,090	4,130	4,170
Tanna							
Thermal Capacity	kW	419	419	394	394	394	394
Wind Capacity	kW	-	-	-	-	-	-
Solar Capacity	kW	20	20	20	32	32	32
Total	kW	439	439	414	426	426	426
Malekula							
Thermal Capacity	kW	429	429	389	389	609	668
Wind Capacity	kW	-	-	-	-	-	-
Solar Capacity	kW	20	20	20	20	20	20
Total	kW	449	449	409	409	629	688
Overall Total	kW	31,422	31,422	30,405	30,411	31,948	31,772

Port Olry Installed Capacity is added with Luganville commencing 2016.

13.2 Appendix: Peak demand by Concession Area

Peak Demand	Unit	2012	2013	2014	2015	2016	2017
Port Vila	kW	11,170	11,160	11,420	11,731	11,850	11,854
Luganville	kW	1,713	1,637	1,611	1,850	1,932	1,842
Tanna	kW	117	173	160	184	200	211
Malekula	kW	130	125	170	185	223	247
Total	kW	13,130	13,095	13,361	13,950	14,205	14,154

Peak demand for Luganville is not inclusive of the Port Olry Peak Demand

13.3 Appendix: Total Gross Energy Generation by Concession Area

	Unit	2012	2013	2014	2015	2016	2017
Port Vila	kWh	58,856,779	59,529,952	59,672,161	55,407,674	62,614,586	64,907,525
Luganville	kWh	8,833,600	9,055,515	8,993,594	9,492,217	10,121,700	10,482,240
Tanna	kWh	599,104	720,696	793,351	695,810	910,448	1,029,981
Malekula	kWh	675,042	725,180	734,752	717,564	743,086	819,127
Total	kWh	68,964,525	70,031,343	70,193,858	66,313,265	74,389,820	77,238,873

Luganville data is inclusive of Port Olry commencing 2016.

13.4 Appendix: Generation Mix by Concession Area

Port Vila	Unit	2012	2013	2014	2015	2016	2017
Diesel Power	kWh	50,765,454	43,467,732	49,727,151	43,607,631	52,827,972	58,231,029
Copra Oil Power	kWh	2,799,924	10,399,690	3,042,939	3,417,525	2,366,265	-
Wind Power	kWh	5,177,418	5,549,198	6,788,264	8,268,207	5,416,201	4,769,848
Solar Power	kWh	113,983	113,332	113,807	114,311	873,750	851,610
IPP Solar Power	kWh	-	-	-	-	1,130,398	1,055,038
Total	kWh	58,856,779	59,529,952	59,672,161	55,407,674	62,614,586	64,907,525
Luganville							
Diesel Power	kWh	1,448,530	1,831,150	1,571,730	2,366,756	5,007,610	3,298,817
Hydro Power	kWh	7,385,070	7,207,400	7,378,780	7,069,830	5,053,900	7,134,970
Solar Power	kWh	-	16,965	43,084	55,631	60,190	48,453
Total	kWh	8,833,600	9,055,515	8,993,594	9,492,217	10,121,700	10,482,240
Tanna							
Diesel Power	kWh	580,186	691,274	762,493	659,842	870,464	993,427
Solar Power	kWh	18,918	29,422	30,858	35,968	39,984	36,554
Total	kWh	599,104	720,696	793,351	695,810	910,448	1,029,981
Malekula							
Diesel Power	kWh	458,877	434,684	521,746	426,201	674,639	790,692
Copra Oil Power	kWh	212,250	259,316	181,413	260,284	38,109	-
Solar Power	kWh	3,915	31,180	31,593	31,079	30,338	28,435
Total	kWh	675,042	725,180	734,752	717,564	743,086	819,127
Overall Total	kWh	68,964,525	70,031,343	70,193,858	66,313,265	74,389,820	77,238,873

Luganville inclusive of Port Olry generation mix commencing 2016. Tanna and Malekula energy mix are updated accordingly.

13.5 Appendix: Total Litres of Diesel consumed in generation by Concession Area

Diesel Oil used in gen. In litres	Unit	2012	2013	2014	2015	2016	2017
Port Vila	L	12,779,503	10,880,350	12,585,632	11,010,356	13,298,662	14,841,676
Tanna	L	173,382	201,482	232,842	200,600	264,450	290,740
Malekula	L	151,200	165,229	186,878	159,800	234,905	232,591
UNELCO	L	13,104,085	11,247,061	13,005,352	11,370,756	13,798,017	15,365,007
VUI	L	418,980	527,007	464,235	688,857	1,426,685*	976,259
Overall Total	L	13,523,065	11,774,068	13,469,587	12,059,613	15,224,703	16,341,266

* - El Nino effect resulting more reliance of diesel. Port Olry inclusive commencing 2016.

13.6 Appendix: Total Litres of Copra oil consumed in generation by Concession Area

Copra Oil used in gen. In Litres	Unit	2012	2013	2014	2015	2016	2017
Port Vila	L	831,991	2,992,328	883,380	968,036	726,111	-
Malekula	L	85,396	85,728	79,840	109,847	16,992	-
TOTAL	L	917,387	3,078,056	963,220	1,077,883	743,103	-

13.7 Appendix: User number by User Classification by Concession Area

Port Vila	Unit	2012	2013	2014	2015	2016	2017
Non-Commercial	No.	9,102	9,836	10,619	11,250	12,030	12,736
Commercial	No.	1,097	1,102	1,192	1,167	1,211	1,215
Industrial*	No.	69	71	73	72	76	77
Others*	No.	179	181	180	176	173	187
Total	No.	10,447	11,190	12,064	12,665	13,490	14,215
Luganville							
Non-Commercial	No.	1,991	2,028	2,061	2,340	2,604	2,946
Commercial	No.	316	324	337	364	372	382
Industrial	No.	15	15	16	18	20	19
Others*	No.	70	67	75	78	88	89
Total	No.	2,392	2,434	2,489	2,800	3,084	3,436
Tanna							
Non-Commercial	No.	655	847	934	1,161	1,235	1,352
Commercial	No.	22	23	23	21	21	24
Industrial	No.	-	-	-	-	-	-
Others*	No.	9	9	9	9	9	9
Total	No.	686	879	966	1,191	1,265	1,385
Malekula							
Non-Commercial	No.	494	525	539	557	585	940
Commercial	No.	26	27	26	23	24	25
Industrial	No.	-	-	-	-	-	-
Others*	No.	10	10	9	16	16	14
Total	No.	530	562	574	596	625	979
Overall Total	No.	14,055	15,065	16,093	17,252	18,464	20,015

* - 'Industrial' in Port Vila is inclusive of Water Pump meters while 'Others' for all concessions now captures utility's employee numbers and is updated accordingly for respective years.

13.8 Appendix: User Energy Consumption by User Classification by Concession Area

Port Vila	Unit	2012	2013	2014	2015	2016	2017
Non-Commercial	kWh	17,811,605	18,096,274	17,334,452	16,951,013	19,789,413	20,544,132
Commercial	kWh	13,126,506	13,428,639	13,328,396	12,871,718	14,378,151	14,608,099
Industrial*	kWh	23,374,154	23,873,837	23,827,424	21,196,190	23,381,978	25,175,393
Others	kWh	747,671	729,469	780,208	760,019	772,486	803,215
Total Consumption	kWh	55,059,936	56,128,219	55,270,480	51,778,940	58,322,028	61,130,839
Losses	kWh	3,796,843	3,401,733	4,401,681	3,628,734	4,292,558	3,776,686
Total Gross Energy	kWh	58,856,779	59,529,952	59,672,161	55,407,674	62,614,586	64,907,525
Luganville							
Non-Commercial	kWh	2,162,809	2,137,959	2,248,770	2,248,424	2,644,190	2,951,357
Commercial	kWh	3,142,915	3,130,235	3,075,682	3,365,141	3,563,545	3,447,678
Industrial	kWh	2,367,033	2,465,057	2,357,913	2,458,535	2,769,188	2,590,911
Others	kWh	154,917	198,097	244,069	245,051	312,026	322,033
Total	kWh	7,827,674	7,931,348	7,926,434	8,317,151	9,288,949	9,311,979
Losses	kWh	1,005,926	1,124,167	1,067,160	1,175,066	832,751	1,170,261
Total Gross Energy	kWh	8,833,600	9,055,515	8,993,594	9,492,217	10,121,700	10,482,240

Table 1 (page 5) provides details of users grouped into major user classification as identified in the above table.

* Energy Consumed by Water Pumps for Port Vila are now aggregated under the 'Industrial' user classification.

Tanna	Unit	2011	2012	2013	2014	2015	2016	2017
Non-Commercial	kWh	341,804	353,934	400,134	427,517	387,680	530,740	592,545
Commercial	kWh	116,263	152,593	233,652	252,656	206,367	249,196	284,666
Industrial	kWh	-	-	-	-	-	-	-
Others	kWh	2,113	16,872	20,361	19,746	17,790	20,215	20,912
Total	kWh	460,180	523,399	654,147	699,919	611,837	800,151	898,123
Losses	kWh	61,359	75,705	66,549	93,432	83,973	110,297	131,858
Total Gross Energy	kWh	521,539	599,104	720,696	793,351	695,810	910,448	1,029,981
Malekula								
Non-Commercial	kWh	332,350	348,162	382,208	426,706	421,337	443,142	455,259
Commercial	kWh	248,460	264,481	241,241	211,798	193,685	193,394	224,629
Industrial	kWh	-	-	-	-	-	-	-
Others	kWh	7,168	15,545	16,471	14,773	16,232	16,791	17,083
Total	kWh	587,978	628,188	639,920	653,277	631,254	653,327	696,971
Losses	kWh	61,728	46,854	85,260	81,475	86,310	89,759	122,156
Total Gross Energy	kWh	649,706	675,042	725,180	734,752	717,564	743,086	819,127

Table 1 (page 5) provides details of users grouped under user classifications as identified in the above table.