



# **Preliminary Decision and Notice of Request for Comments and Public Consultation**

**Case U-0022-14**

**In the matter of reviewing water tariffs for UNELCO in Port  
Vila**

**May 2015**

# Preliminary Decision

In October 2014 the Utilities Regulatory Authority (URA) Commission instructed its Staff to commence a tariff review of the water service in Port Vila operated by UNELCO, noting that the tariffs have not been reviewed for over a decade. Staff requested UNELCO to file a formal Tariff Application outlining its costs, planned investments and revenue base.

This Preliminary Decision is the outcome of the Staff investigation and analysis.

A fair and reasonable base price is one that allows the utility to operate sustainably in the long-run and is affordable to customers. URA is mandated under the *Utilities Regulatory Authority Act No.11 of 2007* to set the maximum price of any aspect of a regulated service.

Based on the Staff's analysis, the Commission proposes 49.38 vatu per cubic metre as the new base tariff for UNELCO's Port Vila water services. This is approximately a 20% decrease from current average water tariffs.

In addition, the Commission has requested Staff to investigate possible alternative tariff structures, reduced billing cycle and adjustment formula.

Details of the calculation of the tariffs outlined above are provided in the accompanying Staff report.

The Commission is issuing a Notice of Request for Comments and Public Consultation. All interested persons including utilities, the Government, electricity customers and business groups are encouraged to submit their comments and attend any public meetings so as to enable the Commission to arrive at a fair and equitable Final Decision.

A Final Decision and Order shall be issued and entered after reviewing comments and information submitted by interested persons. Public consultation meetings on this Preliminary Decision will be held in Port Vila.

Johnson Naviti Matarulapa Marakipule, Chairman

Hasso Bhatia, PhD, CEO and Commissioner

John Obed Alilee, Executive Commissioner

## Notice of Request for Comments and Public Consultation

All stakeholders including utilities, the Government, water customers, business groups and other members of the public are invited to comment on this Preliminary Decision. Responses and information received will be considered in the development of the final Commission decision.

Written comments should be submitted to the URA no later than

**25<sup>th</sup> June 2015**

Submissions can be:

- made in person at:  
Office of the Utilities Regulatory Authority  
VNPF Investment Building, NPF Compound  
Corner Pierre Lamy & Andre Ballande Streets
- mailed to:  
Utilities Regulatory Authority  
P.M.B 9093  
Port Vila, Vanuatu
- emailed to:  
Maureen Malas  
*Case Coordinator –U-0022-14*  
Utilities Regulatory Authority  
mmalas@ura.gov.vu

Any submission should be accompanied by a signed cover letter and address, indicating case no. U-0022-14 addressed to Hasso Bhatia, PhD, CEO. Scanned material is accepted.

A public meeting will be held on this matter at 9:00am on Wednesday 10<sup>th</sup> June 2015 at the URA office in Port Vila.

Written submissions shall be posted on the URA's website in accordance with the URA submission policy. Any information you may consider confidential should be marked as such, providing a brief explanation of the nature of the confidentiality.

The URA office can be contacted by telephone at +678 23335



# **Staff report and recommendations**

**Case U-0022-14**

**In the matter of reviewing water tariffs for UNELCO in Port Vila**

**May 2015**

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# 1. Introduction

## 1.1 Case information

Table 1: Case information

Case number	U-0022-14
Applicant	Utilities Regulatory Authority
In the matter of	Reviewing the water tariffs for UNELCO in Port Vila
Commencement date	10 <sup>th</sup> October 2014

## 1.2 Purpose of this document

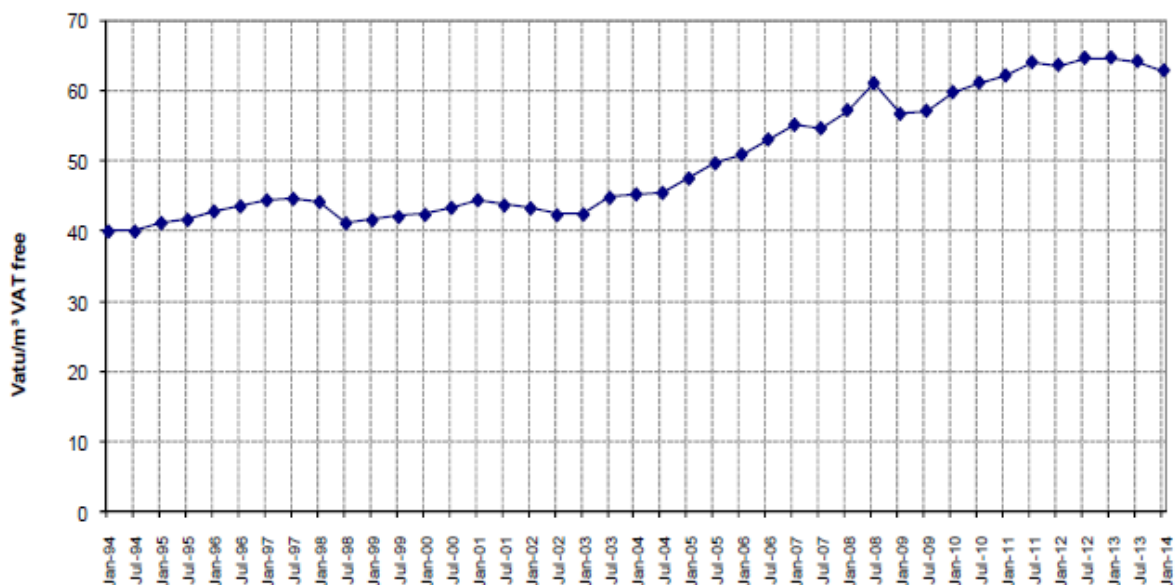
This report describes the URA's preliminary decision on reasonable maximum prices for the water service operated by UNELCO in Port Vila. It also describes the methodology used in the calculation of the base tariff with all assumptions and supporting evidence from UNELCO's Tariff Application and other sources. In addition to proposing a revised base tariff, this document describes a revised tariff adjustment formula, as well as potential options for a new tariff structure for further investigation.

All interested parties are invited to comment on this preliminary proposal. Comments will be considered in the formulation of the Utility Regulatory Authority's (URA) final decision in this matter.

## 1.3 Background

UNELCO has held a management and operations contract for the main water supply service in Port Vila since 1993. Base tariffs for water were last changed in 1998, with a 2.93% increase in the base price ( $P_0$ ). This is the first independent review of water prices for the Port Vila water network. The chart below shows the evolution of water prices paid by customers since 1993. The water price is partially indexed to the price of electricity in Port Vila, which is the most significant cost factor in the historic increases in the water price. Based on this index the water tariff is adjusted every six months.

Figure 1: Historic water price, vatu  
Evolution of the base price of water in Port Vila



## 1.4 Case chronology

Table 2: Case chronology

Date	Activity
20 <sup>th</sup> October 2014	Initiation notice sent to UNELCO
15 <sup>th</sup> December 2014	Initial Tariff Application received from UNELCO
23 <sup>rd</sup> December 2014	Follow-up data request
13 <sup>th</sup> January 2015	Second version of Tariff Application received from UNELCO
23 <sup>rd</sup> January 2015	Meeting and follow-up data request
19 <sup>th</sup> February 2015	Third version of Tariff Application received from UNELCO
24 <sup>th</sup> February 2015	UNELCO presentation of water master plan
26 <sup>th</sup> February 2015	Supplementary data received from UNELCO
25 <sup>th</sup> May 2015	Publication of Preliminary Decision

## 1.5 Tariff application

This analysis is largely based upon data received in UNELCO's Tariff Application, the last version of which was received on 19<sup>th</sup> February 2015. The suggested price in the Tariff Application is based on anticipated costs and investment, including future inflation, suggesting a significant price increase. Excluding inflation, UNELCO suggests that prices should immediately increase 12% over the 2013 level, with further increases of up to 22% by 2019.



The URA has used the data provided in the Tariff Application, supplementary data requests, UNELCO's Financial Reports, and international benchmarks to arrive at this Preliminary Decision. Also, the URA's methodology is not based on assumptions of future price inflation or future investment; rather, this Staff analysis is based on the current network parameters, operational efficiency and capital utilization. This report describes the methodology in detail.

## 1.6 Legal context

The legal framework of the water sector in Vanuatu is based on the following legislation and contracts:

- Utilities Regulatory Authority Act (No.11 of 2007) and amendments
- Contract for the management and operation of the water supply service in Port Vila, dated 1993
- Water Supply Act [CAP 65] and amendments
- Water Resource Management Act

## 2. Tariff calculation methodology

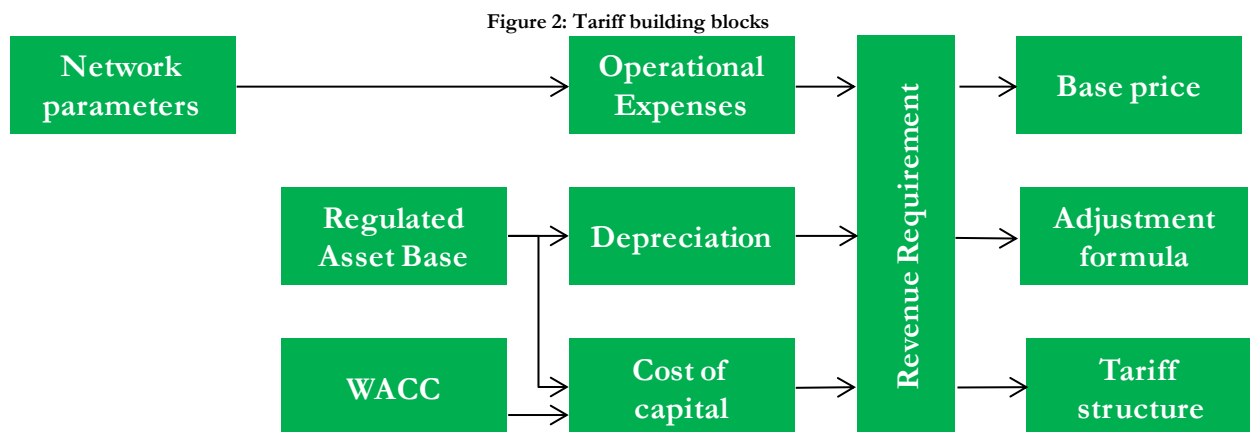
### 2.1 Fair price

In a competitive market, competitive pressure forces companies to reduce prices in order to maintain their market share. The result of competition is that prices are set at a level that allows efficient companies to recover costs of operations, including the cost of financing capital investment. In a regulated monopoly market such as the water network in Port Vila, the role of the URA is to substitute itself for market forces in setting efficient prices. In order to judge what costs are reasonable, the URA takes into account historic costs and comparisons with similar services in other areas. The URA also takes into account the quality and reliability of service and cost implications of any required improvements in the quality of the service.

While there may be annual variations in system growth consumption, and required investment, the price should reflect the average cost over the tariff period. It is the responsibility of the utility to organise its finances in such a way as to manage any short-run variation in revenues and costs. The tariff review process allows this average price to be adjusted to reflect changes in network parameters, input costs and efficiency levels.

### 2.2 Tariff calculation method

The diagram below shows the components of the tariff calculation:



- Network parameters include assumptions on the number of customers, volume of water sold, network length, and electricity consumption
- Operational expenses are based on the network parameters and include cost assumptions for electricity, staff costs, new equipment, and other expense categories
- Regulated Asset Base is the net value of utility-funded tangible fixed assets used to provide water services, on the utility books
- Depreciation is based on the regulated asset base and assumptions on the useful life of different types of asset
- Weighted Average Cost of Capital (WACC) is the average financial cost of raising capital (debt and equity) by the operator for investment in the water system

- Revenue Requirement is the sum of the operational expenses, depreciation and cost of capital (including working capital)
- Base price is the average price per unit of weighted demand (P)
- Adjustment formula is used to adjust the price annually or quarterly to account for changes in costs that are outside of the control of the utility, in particular the cost of electricity, inflation and productivity improvement
- Tariff structure is the price schedule for each category of customer (i.e. domestic, commercial) based on various types of use or levels of consumption

## 2.3 Base scenario

In order to estimate a fair price, a Base Scenario is estimated, predicated on operations in 2014. The purpose of the Base Scenario is to estimate what an efficient level of costs is for the current scale of network, with any short-run annual variations removed. This level of costs is used to determine the Base Price. A tariff adjustment formula is included to allow prices to change to account for certain external factors that impact the cost of the water service, (e.g. electricity prices, inflation). The periodic tariff review process allows for significant longer-term changes (e.g. system growth, customer consumption patterns, new investments, economies of scale) to be taken into account over time.

## 3. Network parameters

The Base Scenario is derived from a set of assumptions around the current characteristics of the water network. The table below provides a summary of the assumptions used for the main network parameters in the Base Scenario.

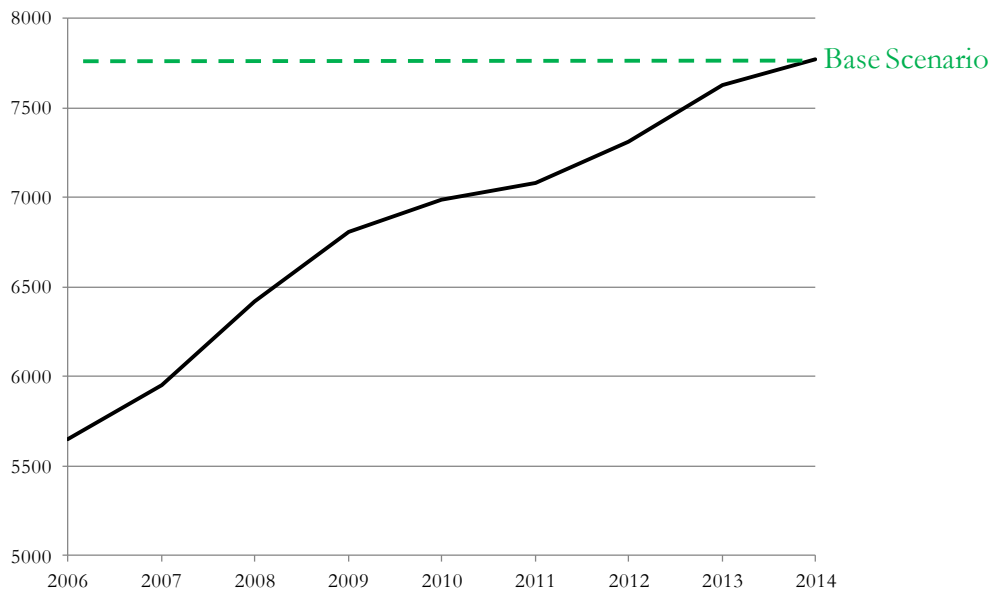
Table 3: Network parameters for Base Scenario

Metric	Base Scenario
Number of customers	7,774
Length of network, m	221,900
Water sold, m <sup>3</sup> per year	3,807,073
Electricity kWh used per year	2,479,492

### 3.1 Number of customers

For the purposes of this tariff review, a customer is defined as a user through a single water meter: A single household or business with a metered water account is counted as one customer, regardless of size. Figure 3 shows the historic number of customers from 2006 to 2014. There is a clear and consistent pattern of growth over the period. For the purposes of the Base Scenario, the latest available figure has been used. Approximately 76% of consumption is for domestic use, 17% commercial, 7% government.

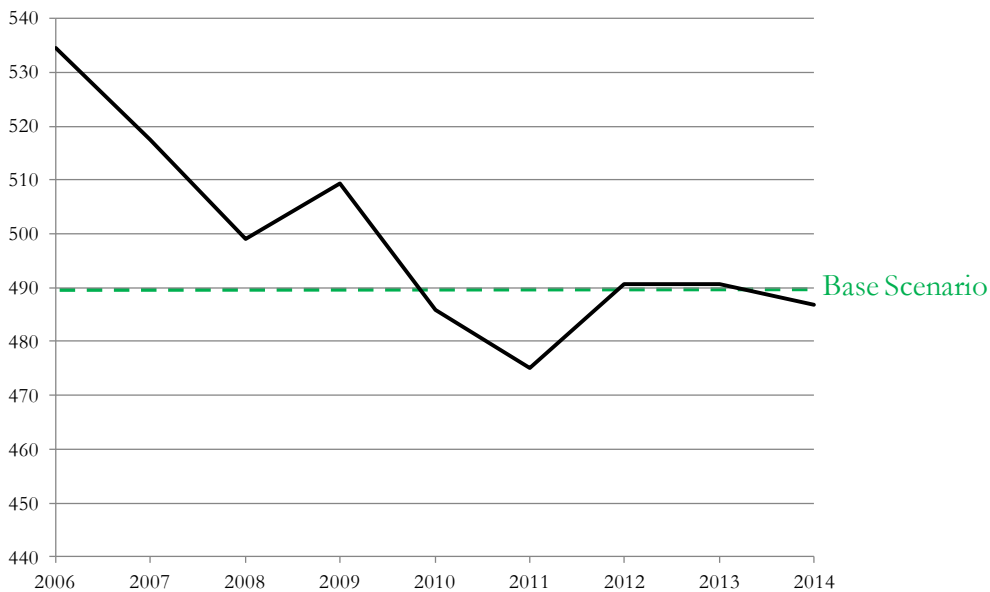
Figure 3: Number of customers



### 3.2 Water sold

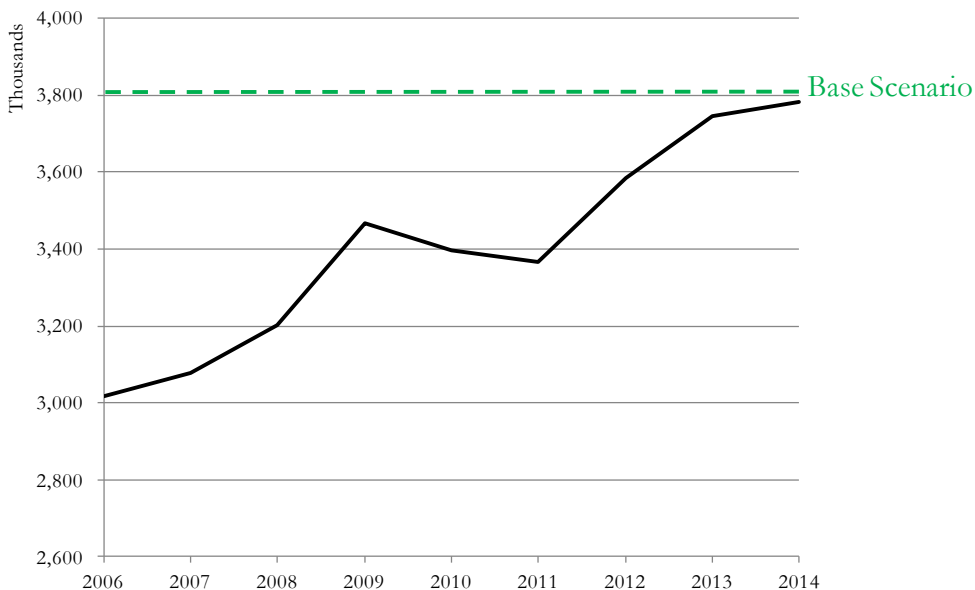
The amount of water sold is related to the number of customers. The URA has reviewed the level of water sold per customer from 2006, shown in Figure 4.

Figure 4: Water sold per customer per annum



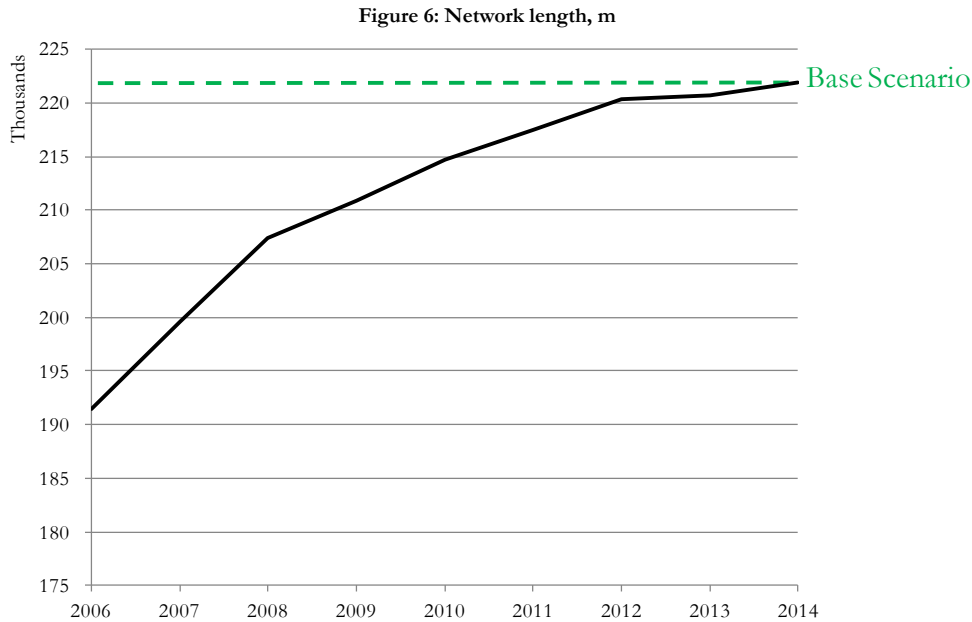
The level of water sold per customer (including both domestic and commercial users) has varied through the period examined, reducing from a high level from 2006 to 2011, then increasing to a fairly consistent level from 2012 onwards. The average of the period 2009-2014 been taken for the purposes of the Base Scenario. The average amount of water sold per customer is multiplied by the number of customers to determine the amount of water sold in the Base Scenario. This is in line with the current trend in total water sold, as shown in Figure 5.

Figure 5: Water sold, m<sup>3</sup>



### 3.3 Network length

The network length is the total length of pipes installed in the water distribution and supply network. Figure 6 shows the historic network length from 2006 to 2014. There is a clear and consistent pattern of growth over the period. For the purposes of the Base Scenario, the latest available figure has been used.

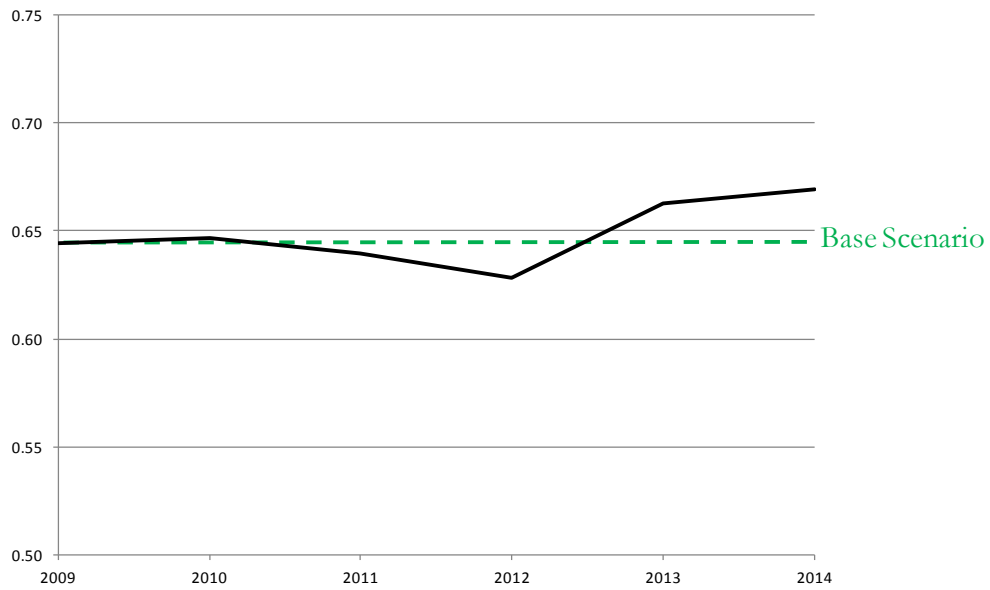


### 3.4 Electricity consumption

Electricity constitutes a significant proportion (around 33%) of the total operating costs of the water service. To calculate the total consumption of electricity Staff reviewed the amount of electricity consumed at the main pumping station as well as for booster pumps.

The main pumping station represents 99.6% of the electricity used by the water service. The chart below shows the historic trend in electrical efficiency of the main pumping station. This is measured as number of kWh used per m<sup>3</sup> of water sold. This includes the impact of any change in the amount of water lost through leakage.

Figure 7: Electricity yield at main pumping station, kWh/m<sup>3</sup>



For the purposes of the Base Scenario, Staff used the average electricity yield for the period 2009-2014 for the main pumping station (0.649 kWh per m<sup>3</sup> sold) and the booster pumps (0.0028 kWh per m<sup>3</sup> sold).

Table 4: Base Scenario electricity consumption

Year	kVA	kWh per year
Main pumping station	380	2,469,002
Booster pumps (total)	66	10,490

## 4. Operating expenses

The operating expenses are the annual costs incurred in the operation of the water network. Using the operational assumptions in the Base Scenario, the URA estimated the reasonable costs of operating the network, taking into account historic performance and international benchmarks.

The operational expenses are grouped into the following categories:

- Electricity costs
- Personnel costs
- Third party expenses
- Stocked purchases
- Non-stocked purchases
- Taxes and related fees

Each cost category is described in more detail in the subsequent subsections, and summarised in the table below.

Table 5: Operating expenses, '000 vatu

Cost category	Base scenario
Electricity costs	88,691
Personnel costs	56,874
Third party expenses	58,720
Stocked purchases	18,236
Non-stocked purchases	3,200
Tax and related fees	3,100
<b>Total</b>	<b>228,821</b>

### 4.1 Electricity costs

Electricity costs are based on the electricity price, which varies each month according to several factors, including the cost of diesel. For the purposes of the Base Scenario, the latest (May 2015) electricity base price of 47.71 has been used. The electricity bills for the water service are based on the main pumping station being charged the High Voltage tariff, and the booster pumps charged at the Other Low Voltage tariff.



Table 6: Electricity costs, '000 vatu

Cost category	Base scenario
Main pumping station, HV tariff Monthly fixed charge: 1,193 per kVA Energy charge: 33.4 vatu per kWh	87,896
Booster pumps, Other Low Voltage tariff Monthly fixed charge: 239 per kVA Energy charge: 57.7 vatu per kWh	797
<b>Total electricity costs</b>	<b>88,693</b>

The water service pays the same price for electricity as all other electricity customers. Given that UNELCO provide both electricity and water services in Port Vila, the actual cost to UNELCO of supplying electricity for the water service is less than for other customers (i.e. meter reading, billing, customer service, working capital). The URA may consider adjusting the electricity costs to reflect the marginal cost to UNELCO of providing electricity for the water service.

## 4.2 Personnel costs

Personnel costs include salaries and staff benefits, severance provisions and training. Over the period 2009-2013, there is no clear trend. In UNELCO's tariff application, there is mention of efforts to outsource some staff activities to third parties. Also, UNELCO has not provided a breakdown of management vs. staff costs. For the purposes of the Base Scenario, the average of 2009-2013 has been taken.

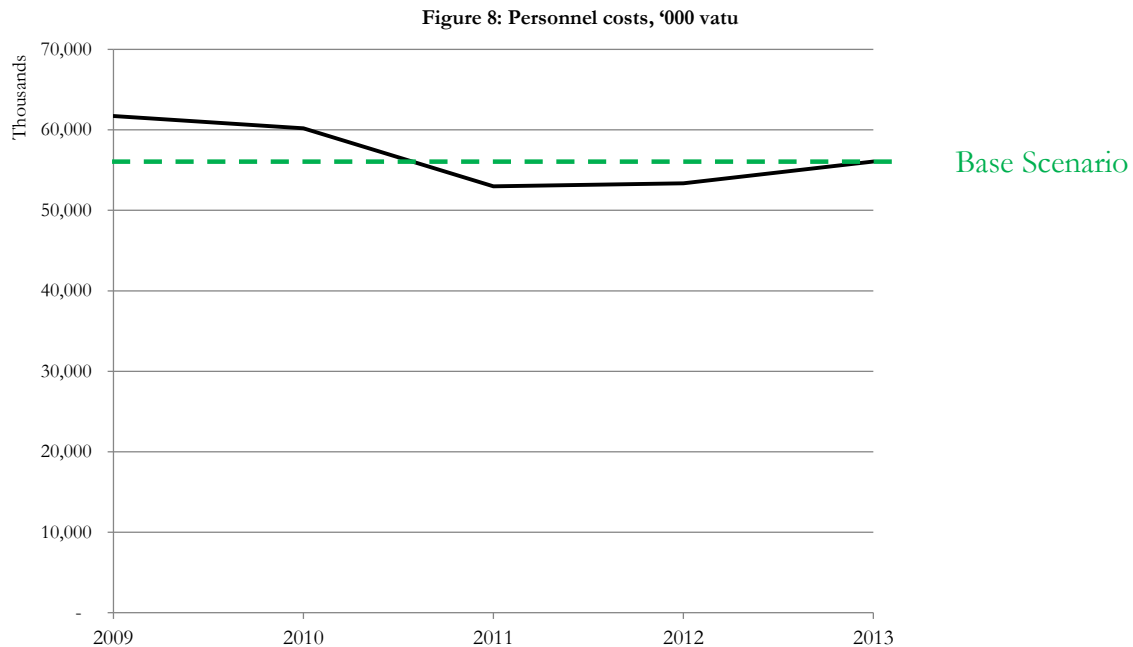


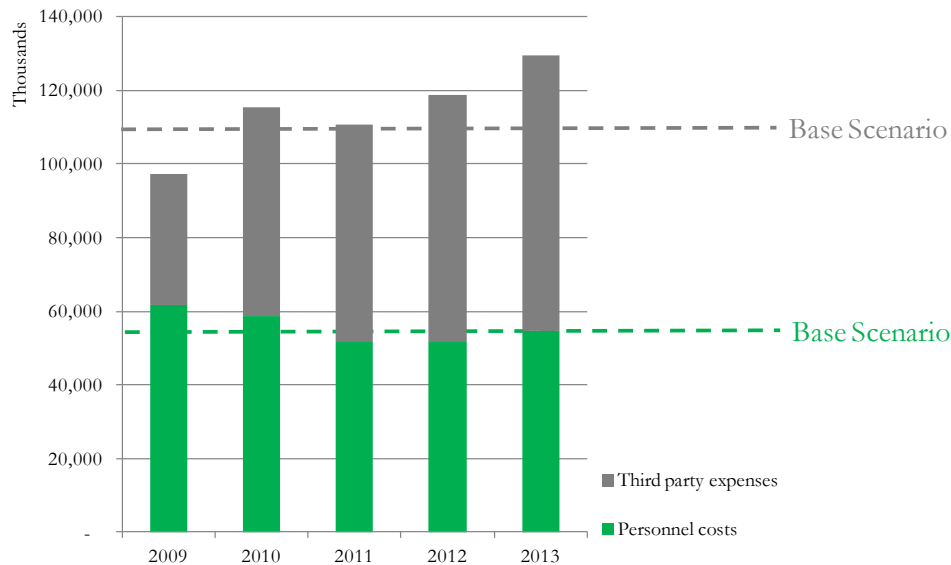
Table 7: Personnel costs, '000 vatu

Cost category	Base scenario
Staff remuneration and benefits	51,140
Severance provision	4,261
Training	2,600
<b>Total personnel costs</b>	<b>56,874</b>

### 4.3 Third party expenses

Third party expenses are the costs of services outsourced to third parties. Third party costs increased over the period 2009-2013. In the Tariff Application, UNELCO state that the increase in third party expenses is as a result of increased outsourcing of certain functions. The URA expects there to be a trade-off between in-house staff costs and third party costs: as third party costs increase, staff costs should fall by at least the same amount or more, as outsourcing should create efficiencies.

Figure 9: Personnel costs and third party expenses, '000 vatu



In the absence of further explanation by UNELCO, for the purpose of the base tariff, the average cost over the period 2009-2013 has been taken for third party expenses.

Figure 10: Third party expenses, '000 vatu

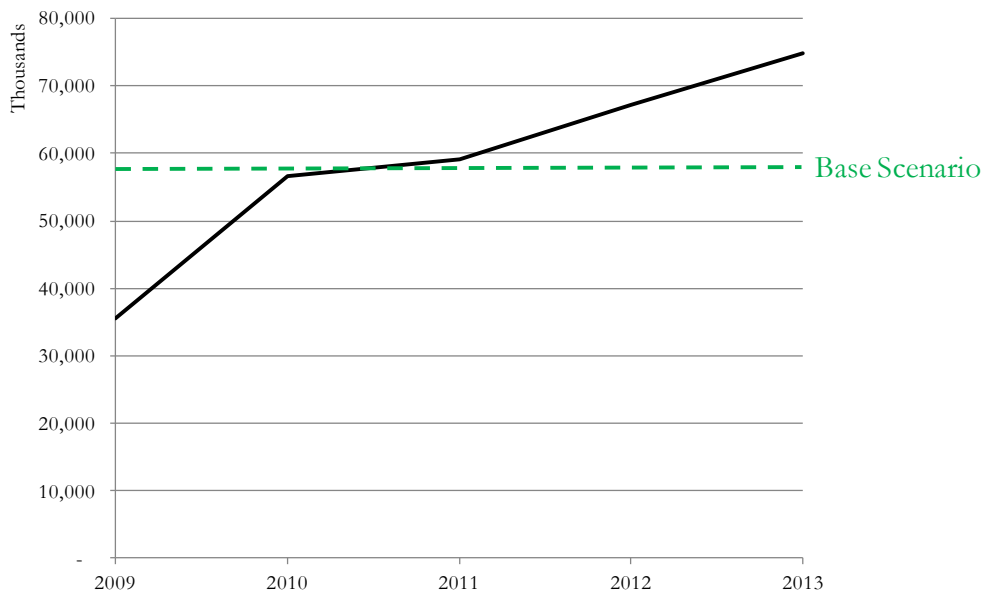


Table 8: Third party expenses, '000 vatu

Cost category	Base scenario
Third party expenses	58,720

#### 4.4 Stocked purchases

Stocked purchases are defined as parts inventory, equipment and some non-labour items to complete work. The level of cost is relatively consistent. It is unclear if the figures in UNELCO’s Tariff Application represent amounts purchased or actually used; the latter being the appropriate method this data should be provided by the company. In order to estimate the expenses, for the purpose of the Base Scenario, the average of 2009-2013 has been taken.

Figure 11: Stocked purchases, '000 vatu

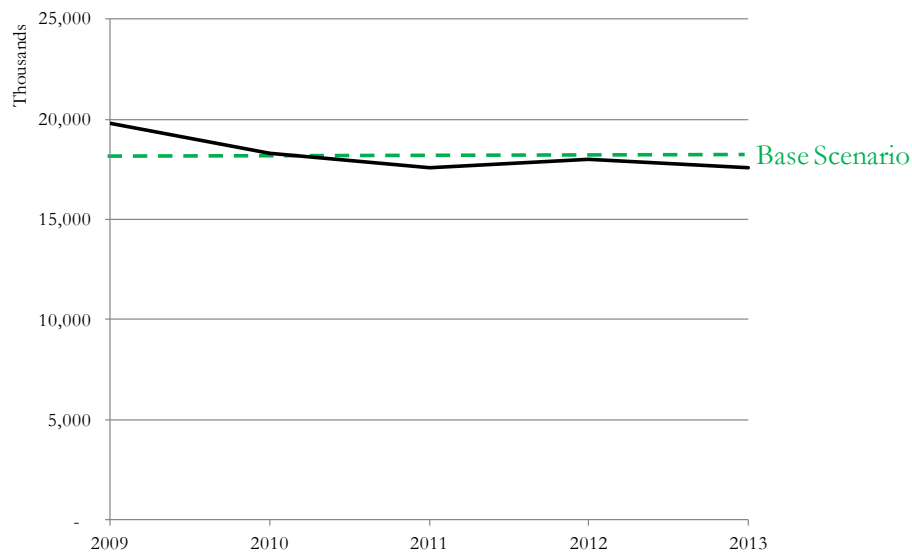


Table 9: Stocked purchases, '000 vatu

Cost category	Base scenario
Stocked purchases	18,236

## 4.5 Non-stocked purchases

Non-stocked purchases include chemicals for chlorination, water treatment and other consumables. For the purposes of the Base Scenario, the figure has been taken from UNELCO's tariff application.

Table 10: Non-stocked purchases, '000 vatu

Cost category	Base scenario
Non-stocked purchases	3,200

## 4.6 Tax and related fees

These include various taxes and fees imposed by the Government. The amounts described as "Professional Taxes" and "Other taxes" are taken from UNELCO's tariff application, for the purposes of the Base Scenario, totalling 3.1m vatu.

Table 11: Taxes and related fees, '000 vatu

Cost category	Base scenario
Taxes and related fees	3,100

## 5. Capital costs

Water supply is a capital-intensive activity, meaning that a significant part of the cost of the service is the funding of infrastructure assets. In the Port Vila water network, some assets are funded by parties other than the utility (e.g. private developers, donor partners, Government). A fair water tariff should include recovery of investment (depreciation) and appropriate compensation for costs of investment in the network by the utility.

The contract held by UNELCO specifies that UNELCO should account for investments in tangible fixed network assets by depreciating investment over the remaining years of the contract. The impact of this accounting method is that the annual depreciation expenses can only increase as the remaining contract life shrinks, regardless of the physical life of assets.

The base price of water appears to have been set at the start of the contract to reflect a long-run average cost of investment (and has only been adjusted a small amount over the previous 20 years of the contract). Setting the price at this level may have allowed UNELCO to make high returns in the early part of the contract, which in turn should enable continued investment into the future without increasing the tariff. Staff have determined that the long-run average cost of assets, depreciated over their useful life, should be used for tariff-setting purposes, leaving to the utility the management of any impact of the contractual accounting mechanism. In any case, the contract allows UNELCO the recovery of undepreciated assets at its expiration. Setting the tariff according to the long-run average cost ensures that the utility covers its reasonable costs over the long-run, while also maintaining stable tariffs for customers.

It is the URA's view that although UNELCO may have a specific way of accounting for investment, this should not have an impact on the tariff charged to consumers, and the tariff should allow recovery of the actual costs over the long term.

### 5.1 Regulated Asset Base

For the purpose of the Base Scenario, the Regulated Asset Base (RAB) is calculated as the net book value of utility-funded tangible fixed assets, depreciated according to the expected useful life of the asset. For the purpose of the Base Scenario, the asset lives as defined in Article 3 of the contract, and as provided in UNELCO's asset register, have been used. Table 12 below compares the NBV for both useful life and contractual methods (both exclude intangible assets). As of 2014, the figures are similar, reflecting the fact that the remaining age of the contract is now close to the average life of installed assets.

Table 12: Comparison of RAB calculation, '000 vatu

	2009	2010	2011	2012	2013	2014
NBV based on useful life depreciation (URA method)	232,590	259,876	271,236	321,756	355,988	351,004
NBV based on concession depreciation (UNELCO method)	248,027	276,564	288,387	338,713	371,207	364,575

For the purposes of the Base Scenario, the NBV as of 2014 calculated according to the useful life of assets has been taken as the Regulated Asset Base.

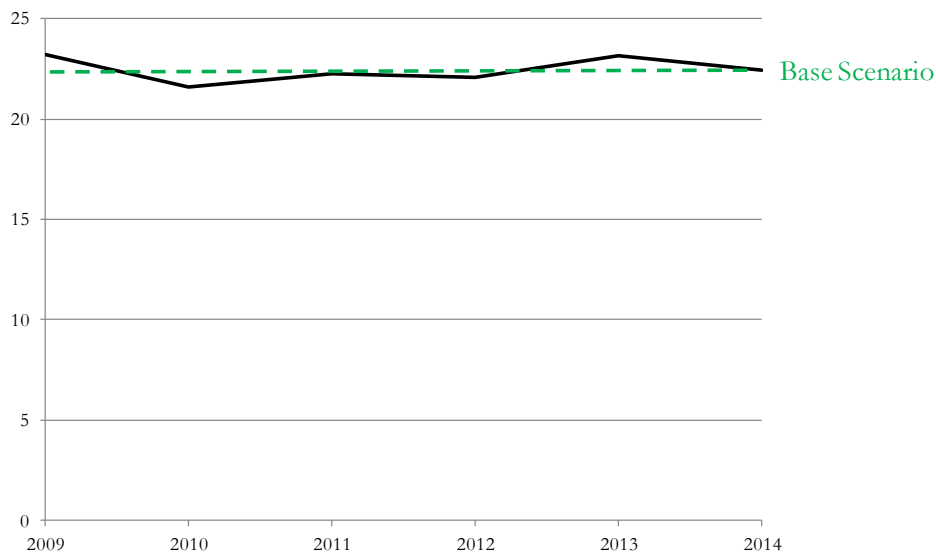
Table 13: Regulated asset base, '000 vatu

Cost category	Base scenario
Regulated asset base	351,004

## 5.2 Depreciation

Depreciation is the recovery of investment spread equally over the useful life of an asset. The total annual depreciation charge is the sum of the depreciation charges for each category of used and useful asset. The weighted average asset life in any given year may vary due to fluctuations in asset type and the age of assets in use at any one time.

Figure 12: Weighted average asset life, years



For the purposes of the Base Scenario, the weighted average life of assets is taken to be the average of the period 2009-2014, which is also very close to the 2014 level. This has been calculated from the asset register data provided by UNELCO.

Table 14: Depreciation calculation

Cost category	Base scenario
A. GBV of used and useful tangible assets, utility-funded, '000 vatu	522,169
B. Weighted average life of assets, years	22.45
<b>C. Annual depreciation charge (A/B), '000 vatu</b>	<b>23,262</b>
Depreciation charge in Tariff Application (2014, for comparison), '000 vatu	21,167

## 5.3 Working capital

Working capital is funding required to meet the short-term financing needs of operating the water service. Working capital, for a utility is usually measured as the average number of days elapsed between incurring operating expenses and revenue recovery from customers. For water utilities, it is generally accepted that

because of the lag in receiving payments of bills, there will be a need for working capital equal to 30 days plus slack of 15 days during a monthly billing cycle. The water service in Port Vila currently has a 3-month billing cycle, and so 105 (90 days plus slack of 15) days of operating costs would be the equivalent working capital requirement.

UNELCO holds security deposits from customers, paid at the start of their water subscription. These funds provide additional cash flow at the start of a new customer connection. Staff has estimated the total security deposits currently held by UNELCO to be 37,710,000 vatu. This amount is deducted from the estimated working capital requirement.

One additional factor that should be taken into account is the fact that the largest single operating expense, electricity, is supplied by UNELCO to itself. This means UNELCO controls the timing of billing and payment for electricity services and thus the working capital needs. For the purposes of the Base Scenario however, there has been no adjustment made for this at this time.

During discussions with UNELCO, the possibility of changing the billing cycle was discussed. As well as reducing the requirement for working capital, there may be operational efficiencies associated with combining the meter reading and billing cycle for electricity and water customers. The tariff impact of a change in the billing cycle to two-monthly or monthly will be considered if and when any change comes into effect. URA has also suggested that UNELCO consider common billing for water and electric consumers as most customers receive both services from same utility. Staff looks forward to continued discussions with UNELCO on this issue.

Table 15: Working capital allowance

Cost category	Base scenario
Total operating costs, '000 vatu (A)	228,821
Working capital period, days (B)	105
Security deposits held, '000 vatu (C)	37,710
<b>Working capital requirement allowable, '000 vatu (A * (B/365)) - C</b>	<b>28,115</b>
Working capital allowance from Tariff Application (2014, for comparison), '000 vatu	119,600

## 5.4 Cost of capital

The cost of capital represents the cost of raising funds to run the business, consisting of debt and equity. In a previous tariff review in 2011 regarding UNELCO's electricity service, the real weighted average cost of capital (WACC) was determined to be 7.76%. The real WACC components assumed are: Debt 5.86%; Equity 9.65% (equivalent to 12.94% nominal), with a gearing ratio of 50%. While global capital costs have reduced significantly since 2011, for this case URA will use same numbers for this case.

In addition, it is important to note that working capital is not an investment rather it is cost of managing cash flow. This cost should reflect the actual cost of short-term borrowing to cover any cash shortfalls, assuming the entity is running efficiently with a well-managed cash-flow. UNELCO has not provided the current cost

of short term borrowing to the URA despite a request to do so. Staff notes that the real cost of debt component in this WACC calculation is 5.86% and is used for computing the cost of working capital.

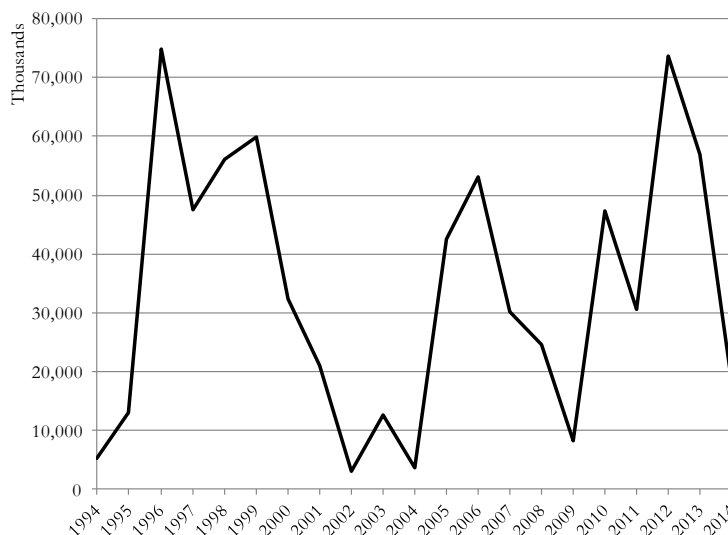
Table 16: Cost of capital

Cost category	Base scenario
Regulated Asset Base, '000 vatu	351,004
WACC, %	7.76%
Cost of capital (RAB), '000 vatu	27,238
Working capital allowance, '000 vatu	28,115
Cost of debt, %	5.86%
Cost of capital (working capital), '000 vatu	2,182
<b>Total cost of capital, '000 vatu</b>	<b>29,420</b>

## 5.5 Impact of future investment

UNELCO's tariff application forecasts a significant increase in investment over the period 2015-2019, with an associated increase in capital costs. The methodology used by the URA to calculate the fair tariff is based on the actual level of current assets and not based on planned or future investments. Moreover, as shown in Figure 13 below, the level of investment varies significantly year-on-year, and it would be unreasonable for the customer tariff to vary as a result. The URA has calculated the tariff based on the long-run average costs of the water service.

Figure 13: Historic investment (real, 2014 values)



In the normal course of business, the utility will make investments as required in order to meet the needs of network demand and service standards. With a growing network in a developing economy, it would be expected that increased investment will be accompanied by growth in consumption. In the next tariff review, the net impact of additional investment and demand growth will be reflected in the new tariff. If there is a situation where the utility faces financial difficulty as a result of investment necessary to maintain service standards, then a limited application for an interim tariff adjustment can be made to the URA.



## 6. Required revenue

The required revenue is defined as the revenue needed to cover the costs of providing the water service. In addition to the operational and capital costs described above, the following factors must be taken into account when calculating the required revenue:

- Financial provisions
- Billing losses (i.e. unrecovered bad debt)
- Article 29 fund
- Revenue from other goods and services

### 6.1 Provisions

Provisions are funds set aside for use in certain circumstances. In the case of the Port Vila water service, UNELCO currently defines four provisions: for severance pay, inventory obsolescence, bad debt, and as self-insurance for equipment damages. For the purposes of the base scenario, the provision for severance pay is included in personnel costs. The URA does not consider that the tariff should include a provision for inventory obsolescence (moreover it is unclear whether purchased stock is expensed or when it is placed in service, as pointed out in section 4.4 above), as this should not be a significant cost for a well-run utility. Bad debt is covered as described in section 6.4 below.

The self-insurance provision is an amount set aside each year to cover for normal property damage or for catastrophic events (i.e. earthquake, cyclone, fire, etc.) rather than paying a premium to a third-party insurance company. In UNELCO's tariff application, the figure of 42m vatu per year is proposed as the appropriate level of this provision.

Table 17: Historic total provision fund, '000 vatu

	2009	2010	2011	2012	2013
Cumulative total provision fund	334,200	357,400	379,500	412,200	455,600

Table 17 above shows that a very large amount of funds appears to be currently available in UNELCO's total provision fund. It is noted that the total damage to the water network after tropical cyclone Pam in March 2015, a once in 30 year occurrence, has been estimated by UNELCO at 56m vatu. As a result, for the purposes for the Base Scenario the URA has assumed that no additional payments into the self-insurance provision are required. UNELCO does not need any additional provision at present, as they have such a large amount already set aside, amassing more customer money would be inefficient. In addition, although requested, UNELCO has provided no current information regarding the total amount in the self-insurance provision fund, nor explained where this money is held or how it is used. If UNELCO provides this information with an explanation of why additional provisions are necessary, the URA will assess the information and may adjust its assumption.

Table 18: Provision for self-insurance, '000 vatu

Cost category	Base scenario
Self-insurance provision	0

## 6.2 Article 29 fund

Article 29 of UNELCO’s Port Vila Water Concession Contract is a special fund for the construction of new water connections and maintenance of the water source. The sum of 1 vatu per cubic meter sold is allocated annually into this fund.

Table 19: Article 29 fund, ‘000 vatu

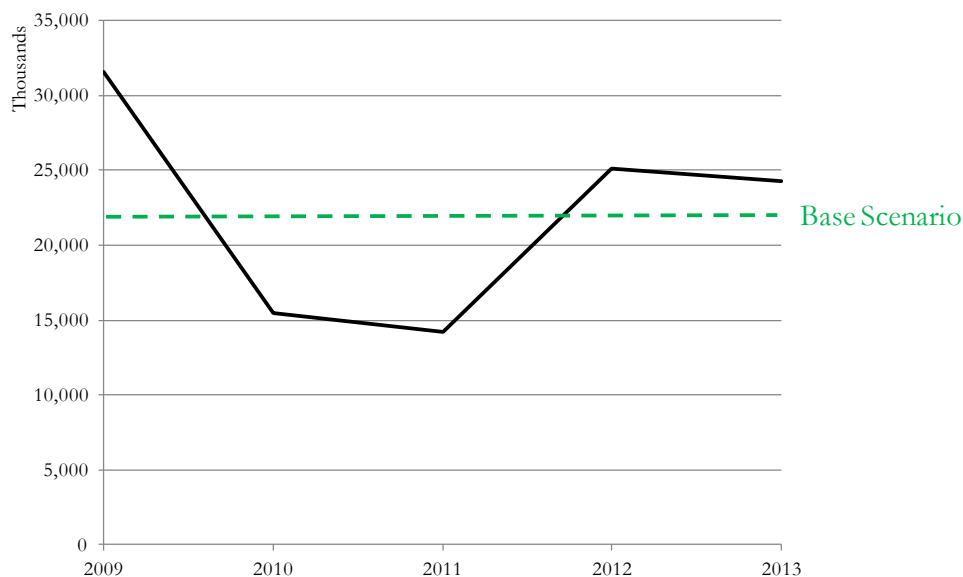
Cost category	Base scenario
Article 29 fund	3,807

The Vanuatu Government through the Minister of Lands, has the control over the use of this fund. The URA is obliged to carry out an annual investigation and report on the use of the fund. Since this is funded by the customer contribution and is a regulated expense the URA must justify and account for its use. The URA recommends that a new governance structure for the Article 29 fund is established, through a committee comprising the Department of Water, Port Vila Municipal Council, Shefa Provincial Council, UNELCO and the URA. This is similar to the administration committee for the Santo fund from electricity revenues in Luganville, established by the URA in March 2014 and operating successfully since. This will be elaborated in the Final Order in this matter.

## 6.3 Revenue from other goods and services

UNELCO earns revenue from providing some other services to customers, such as building new connections. As the costs associated with providing these services are not separated from water services, the revenue amount is subtracted from the required revenue to be generated from water tariffs. The level of revenue from other goods and services has varied over the period 2009-2013.

Figure 14: Revenue from other goods and services



For the purposes of the Base Scenario, the average of the period 2009-2013 has been taken.

Table 20: Revenue from other goods and services, '000 vatu

Cost category	Base scenario
Revenue from other goods and services	22,140

## 6.4 Bad debt

Bad debt is defined as lost revenue from bills not paid by customers. The bad debt losses rate assumed for the purposes of the Base Scenario is 1.60% of billing, as suggested in UNELCO's tariff application.

## 6.5 Security deposits

The value of security deposits currently held has an impact on the required working capital, discussed in section 5.3 above.

## 6.6 Base price

The base price is calculated by dividing the total amount to be charged to customers by the level of demand. The current tariff includes fixed charges as well as a tiered consumption charge. UNELCO has provided the current ratio of weighted units of consumption per m<sup>3</sup> of water sold as 1.42.

Table 21: Base price calculation

Cost category	Base scenario
Operating costs, '000 vatu	228,821
Depreciation, '000 vatu	23,262
Cost of capital, '000 vatu	29,420
Provisions, '000 vatu	0
Article 29 fund, '000 vatu	3,807
Revenue from other goods and services, '000 vatu	-22,140
Bad debt loss, '000 vatu	4,257
Total required revenue, '000 vatu	267,449
Water sold, '000 m <sup>3</sup>	3,807
Weighted demand, '000 P	5,416
<b>Base price</b>	<b>49.38</b>
Current price (adjusted for current electricity price)	59.58
Difference	-17.12%

This tariff is 20.04% lower than the current base price for water (61.75 vatu for the first semester 2015). Adjusted for current electricity prices, the preliminary analysis by the URA indicates a reduction in water prices by 17.12%.

## 6.7 Tariff adjustment formula

Currently, an adjustment formula is used to vary the water tariff every six months depending on certain external factors. The current formula used to calculate water prices is unnecessarily complex. The URA proposes simplifying the formula by reducing the number of input factors to those that cause the most significant cost fluctuations for UNELCO. The cost factors in the current formula, as well as some alternatives, are reviewed in Table 22 below with a conclusion on whether or not the tariff should be indexed to each.

**Table 22: Adjustment formula cost factors**

Cost Factors	Comment	Conclusion
Electricity price	Electricity is single largest cost of operating the water service. Price can vary significantly between tariff reviews. Utility has limited ability to manage level of cost	Index tariff to electricity price
Wage inflation	Staff costs are significant cost to utility. Current index does not show significant variation. Staff costs can be controlled through effective management.	Remove from tariff formula
Cost of metal products and electronic equipment	Potentially variable. Costs can be controlled through management of procurement	Remove from tariff formula
Exchange rate variation	Potentially variable. Only small cost component subject to currency variation. Can be controlled through management of international procurement and exchange rate hedging.	Remove from tariff formula
General inflation	Not currently included in adjustment formula. Likely to reflect variation in local staff costs and purchases.	Include in tariff formula

In addition to the input cost factors, the URA propose to include an adjustment for overall productivity improvements in the formula. As in the normal course of business, UNELCO is expected to apply technological and management improvements resulting in a gradual increase in productivity. For the purposes of the base scenario, the URA has assumed that operating costs will reduce by 1% per year (X-factor).

Each cost category is assigned to a cost factor, as shown in Table 23 below.

Table 23: Formula factor cost assignment

Cost category	% of revenue requirement	Formula factor
Electricity costs	34%	Electricity price
Personnel costs	22%	CPI and X
Third party expenses	22%	X
Stocked purchases	7%	CPI and X
Non-stocked purchases	1%	CPI and X
Tax and related fees	1%	None
Depreciation	9%	None
Cost of Capital	11%	None
Provisions	0%	None
Article 29 Fund	1%	None
Goods and services sales	-8%	None

The proposed tariff adjustment formula is shown below, to be calculated each quarter:

**Equation 1: Proposed tariff adjustment formula**

$$P = P_0 \times \left[ 0.14 + 0.34 \cdot \frac{E}{E_0} + (1 - X)^n \cdot \left( 0.22 + 0.30 \cdot \frac{CPI}{CPI_0} \right) \right]$$

Where:

- $P_0$  is the Base Price calculated by the Base Scenario, i.e. 49.38
- $E$  is the average electricity base price for the preceding three months, weighted by the total kWh consumed per month by the water service (updated quarterly)
- $E_0$  is 47.71, the current base price for electricity
- $X$  is 1% productivity improvements per year
- $n$  is the whole number of years that have passed since the tariff review (updated annually)
- $CPI$  is the latest inflation index published by the Vanuatu Statistics Office (updated annually)
- $CPI_0$  is the inflation index published by the Vanuatu Statistics Office at the time of the Final Tariff Order

## 7. Tariff structure

The current tariff structure comprises of a fixed charge and a tiered volumetric charge. The fixed charge varies according to the size of the connection, and the volumetric charge increases with higher levels of consumption.

Table 24: Current fixed charge structure, vatu

Size of meter	Quarterly subscription charge
15 mm or 3 m <sup>3</sup>	510
20 mm or 5 m <sup>3</sup>	820
25 mm or 7 m <sup>3</sup>	2,050
30 mm or 10 m <sup>3</sup>	5,140
40 mm or 20 m <sup>3</sup>	7,200
Over and above	10,290
Subscribers whose quarterly consumption is less than 25m <sup>3</sup> for a quarter shall benefit from a subscription fee of 255 vatu per quarter.	

Table 25: Current volumetric charges, vatu per m<sup>3</sup>

Range of consumption	Tariff coefficient	Price (Base scenario)
0 to 50 m <sup>3</sup>	1	49.38 vatu per m <sup>3</sup>
51 to 100 m <sup>3</sup>	1.3	64.12 vatu per m <sup>3</sup>
101 to 200 m <sup>3</sup>	1.4	69.12 vatu per m <sup>3</sup>
Above 200 m <sup>3</sup>	1.5	74.07 vatu per m <sup>3</sup>

The URA will conduct an investigation into possible alternative tariff structures during this tariff review. There are several different options for potential water tariffs which could be implemented in Port Vila. Different types of tariff are discussed in Table 26 below.

Table 26: Types of tariff

Tariff type	Description
Fixed tariff	Customer pays the same amount each period, regardless of amount of water used
Uniform volumetric tariff	Customer bill calculated based on a flat-rate per unit of water used in that period
Increasing block tariff	Customer bill calculated with varying rate per unit of water consumed in that period, with the rate increasing for higher levels of consumption
Two-part tariffs	Customer bill calculated as the sum of a fixed amount, plus a volumetric amount according to the amount of water consumed in the period. The volumetric amount could be flat-rate or varying according to consumption level
Category tariffs	Customer tariff depends on the customer type, e.g. residential, commercial, agricultural, wharf, etc.
Pre-payment	Customers pre-pay for water, similar to pre-paid electricity meters or mobile phone credit

The URA will investigate the viability and fairness of different tariff options, and intends to publish a separate paper describing the outcome of the investigation.

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**Utilities Regulatory Authority**

**Vanuatu**

You can access the U-0022-14 Preliminary Decision, May 2015 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 U-0022-14, Utilities Regulatory Authority, PMB 9093, Port Vila, Vanuatu.