

GD No. 2018/0063

# MANX UTILITIES AUTHORITY

## PRICING REVIEW

A REPORT BY MANX UTILITIES

ENDORSED BY THE COUNCIL OF MINISTERS



*“Delivering Life’s Essential Services For Our Island”*

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## CONTENTS

Background .....	3
Treasury Financial Review Recommendations .....	4
Pricing Strategy Review Conclusions and Recommendations .....	5
Future Pricing Strategy .....	6
Introduction .....	6
Overall Income Target .....	6
Annual Income Adjustments .....	7
Pricing Principles .....	7
Further Work to be Investigated .....	8
Proposed Changes to Tariffs .....	9
Recommendations .....	11

## BACKGROUND

In November 2016 the Treasury Minister announced he would be commissioning an independent review of Manx Utilities' financial position. Following the completion of this review, Tynwald received a report by the Treasury including a copy of the independent consultant's report in October 2017. At the same sitting of Tynwald it was agreed that Manx Utilities' debt due to Government (through the Consolidated Loans Fund) would be reduced by £95 million and Manx Utilities would undertake a review of its pricing strategy.

### 11. MUA Financial Long Term Plan

Motion made –

That Tynwald receives the Treasury Report on the Manx Utilities Long Term Financial Plan [[GD No 2017/0045](#)] and approves in principle the following recommendations:

1. The Treasury writes off £95 million of loans to the Manx Utilities Authority from the Consolidated Loans Fund;
2. The Manx Utilities Authority freezes the water rate at [341.8p/£] for the year 2018/19;
3. The Manx Utilities Authority freezes the sewerage rate at [98p/£] for the year 2018/19; and
4. The Manx Utilities Authority brings forward to Tynwald by October 2018 plans for a new pricing strategy for electricity, sewerage and water charges to:
  - a) More accurately reflect the costs of delivering services;
  - b) Provide a pricing framework for future price increases for transparency and protection of consumers; and
  - c) Ensure the continued financial stability of Manx Utilities and meet debt repayment schedules.

Mr Cannan

Motion carried.

Items 1, 2 and 3 of The Treasury motion have been implemented and this report makes recommendations for Tynwald consideration in respect of item 4 (ie. a new pricing strategy for electricity, sewerage and water charges).

Following an open tender process Economic Consulting Associates (ECA), economic utility specialist consultants, were commissioned to undertake a review of Manx Utilities' pricing strategy which underpins its Long Term Financial Plan (LTFP). ECA were selected due to their knowledge and experience of the economics of utility providers, access to benchmarking material and their work with Regulators in relevant jurisdictions.

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# TREASURY FINANCIAL REVIEW

## RECOMMENDATIONS

### NERA REPORT CONCLUSIONS

The conclusion of NERA in their report<sup>1</sup> can be summarised as follows:

*...we have set out two options for prices over the next five years. These involve implementing the price increases as per the LTFP or alternatively a CLF write-down to realise a rating of Baa1 in line with peers, accompanied by a moderation of water and sewerage charges relative to the LTFP.*

*We consider that the current plan comprises a reasonable set of assumptions and objectives, and a reasonable course for Manx Utilities and its customers. The rationale for financial restructuring would be to enhance Manx Utilities financial resilience ahead of the timeline of the LTFP, and could be followed by a moderation of water and sewerage charges*

As such, NERA concluded that the existing financial projections (including proposed increases in charges) were reasonable and were likely to lead to the repayment of Manx Utilities' Bond debt at the maturity dates in 2030 and 2034, although NERA also noted that Manx Utilities' financial position was weak and would remain so in the coming years.

The second option that NERA considered was for Tynwald to reduce the amount of debt owed by Manx Utilities to Treasury by £95 million and use this debt reduction to strengthen the financial position of Manx Utilities, thereby enabling it to freeze water charges for a 5 year period and moderate necessary increases in sewerage charges by spreading the increases over a 10 year period (instead of the proposed 5 year period). NERA also made suggestions in respect of on-going monitoring of Manx Utilities' financial position.

### TREASURY RECOMMENDATIONS

The Treasury presented a summary report<sup>2</sup> to Tynwald in October 2017, with NERA's report appended to it. Treasury noted the recommendations made by NERA and that Manx Utilities' financial position was weak meaning that consumers would be required to address this through price increases over many years unless additional Government support was provided. As such it supported NERA's option to reduce Manx Utilities' debt by £95 million.

The Treasury also noted that NERA proposed the development of a multi-year pricing framework, enabling the periodic oversight of Manx Utilities' pricing process to provide greater transparency and certainty for its customers. The development of this framework, along with potentially rebalancing water and sewerage charges, was identified as being complex and requiring further work to be undertaken. The Treasury therefore recommended to Tynwald that the debt reduction be agreed together with a temporary (1 year) freezing of water and sewerage prices in order to allow for the necessary further work to be undertaken.

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<sup>1</sup> *Review of Manx Utilities Long-term Financial Plan*, A Report for the Isle of Man Government, NERA Economic Consulting Report, September 2017, page 98, 8.4 Conclusions.

<sup>2</sup> GD No. 2017/0045, *Manx Utilities Long Term Financial Plan*, A Report by the Treasury endorsed by the Council of Ministers, October 2017.

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## PRICING STRATEGY REVIEW CONCLUSIONS AND RECOMMENDATIONS

ECA has completed its report (attached) and made a number of recommendations. Manx Utilities is supportive of ECA's report and notes their finding that there are no 'burning problems' in relation to the existing tariff designs<sup>3</sup> that require urgent attention.

In its review ECA has relied on the same overall income projections that NERA had reviewed as part of its work and had deemed reasonable in relation to Manx Utilities' expenditure and debt commitments. As such, ECA has considered how the required income should be collected across various different tariff structures.

Manx Utilities has used ECA's report as the basis for its revised pricing strategy and the majority of its recommendations have been accepted in full or in part. Key recommendations within the ECA report which have been incorporated into the pricing strategy are:

1. Reviewing and setting of tariffs:
  - Periodic review period (5-yearly proposed), though an earlier review could happen if actual performance diverges appreciably from forecast;
  - Formulaic approach to tariffs during each 5-year period, principally following general inflation and wholesale gas cost changes;
  - Price benchmarks for Manx Utilities services are produced annually.
2. Acceptance of the proposed, modified charging principles as recommended, but including reference to Government economic policy.
3. Electricity Tariffs:
  - Electricity tariffs to increase in line with general inflation and wholesale gas cost changes;
  - The small number of customers on a legacy tariff are given the choice of the available options or are migrated to the nearest current corresponding tariff (the default option).
4. Water and Sewerage Tariffs:
  - Domestic water and sewerage charges continue to be charged on the basis of rateable value; no universal metering of domestic water supplies;
  - Water and sewerage charges not linked to household occupancy (no 'single person discount').
  - Water and sewerage charges to be rebalanced; the Water Rate will reduce and the Sewerage Rate will increase although there will be no overall impact for the majority of customers;
  - Reduce the discount to commercial premises;
  - Customers with metered water to be charged for sewerage based on water consumption.

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<sup>3</sup> Page 20, s4

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## FUTURE PRICING STRATEGY

### INTRODUCTION

The ECA report considered that reviewing tariffs every 3-5 years with annual adjustments based on a predetermined formula was most appropriate for Manx Utilities<sup>4</sup>. This pricing strategy proposed the following approach:

- 5-yearly reviews to determine the target level of income for Manx Utilities (for the following 5-year periods) that protects customers by ensuring efficiency of costs, appropriate oversight and transparency whilst also confirming Manx Utilities' debt repayment obligations can still be achieved;
- For the first 5 years overall income is based on NERA's revised income projections (reduced customer charges) following the debt reduction. Manx Utilities will make annual adjustments to the overall level of income based on annual general inflation and changes in wholesale gas prices;
- Individual tariffs to be set by reference to 7 pricing principles. The pricing principles ensure the objectives of those parties affected by tariffs are considered within the tariff setting process.

There are a number of recommendations where Manx Utilities is supportive of the recommendations but further work is required to fully understand the impact of the changes. These recommendations include the greater use of Time of Use electricity tariffs, review of electricity tariff structures for industrial customers, aligning early settlement discounts and additional non-domestic water metering.

### OVERALL INCOME TARGET

Overall, the findings of the NERA report showed that Manx Utilities' financial projections and underlying assumptions were reasonable and would enable the external Bond debt to be repaid as it falls due. However, the projections were based on on-going increases in prices to generate sufficient cash to meet the repayments. The reduction of Manx Utilities' Consolidated Loans Fund debt by £95 million agreed by Tynwald in October 2017 reduces the need to increase prices by more than inflation and therefore reduces a key risk to the financial sustainability of Manx Utilities.

Manx Utilities proposes to work within the income projections set out in NERA's report, which enables customers to directly benefit from the debt reduction, for the period through to March 2024. Thereafter Manx Utilities proposes 5-yearly reviews of these income projections and its underlying assumptions to ensure the protection of customers and the financial sustainability of Manx Utilities (significantly the repayment of the external Bonds). The scope for the review will include:

- an assessment of the efficiency of Manx Utilities' main operations;
- the continued appropriateness of the objectives of the LTFP,
- the reasonableness of updated forecasts in the LTFP (eg for demand and costs),
- an assessment of the financial sustainability of Manx Utilities under the plan, and

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<sup>4</sup> Pricing Strategy Review, Section 6.



- recommendations for changes relating to the above.

It is proposed that the next review will be undertaken during 2023 to cover the 5-year period commencing in April 2024. The review will be commissioned by Manx Utilities and its findings agreed with Government (led by the Department of Infrastructure (Manx Utilities' sponsoring Department) and the Treasury). The review will be published and form the basis for Manx Utilities' charges for the 5 years to March 2029.

## ANNUAL INCOME ADJUSTMENTS

Within the initial 5-year period to April 2024 it is proposed that Manx Utilities' overall income is allowed to change with reference to the following:

- Annual increases for general inflation, based on the Isle of Man 12-month Consumer Prices Index published in October each year;
- Adjustments to electricity tariffs for changes to wholesale gas prices, to the extent that these changes cannot be mitigated;
- Reduction of the discount of Water and Sewerage Rates for non-domestic customers, with the discount reducing from the current 50% by 5% per year to 25%.

The above proposals provide certainty to customers that significant price increases will not occur and that the majority of tariffs will not increase in real terms during this period, other than for any substantial changes in wholesale gas prices.

An annual review of tariffs will be undertaken and published; tariff changes will commence from April each year with the review being published before the end of the preceding December. A report on the annual review of tariffs for tariffs commencing in April 2020 will be published by the end of December 2019.

Manx Utilities is committed to working within these parameters however the risk remains that significant unexpected external events may occur, which may trigger the need to review this approach (for example, an exceptional change in global economic performance). In such a case, Manx Utilities will approach the Department of Infrastructure and the Treasury on behalf of the Government to set out the issue and offer alternative proposals for consideration.

## PRICING PRINCIPLES

Within the overall level of income required to protect customers and ensure the continued financial sustainability of Manx Utilities it is necessary to set individual tariffs to achieve the appropriate overall level of income. Manx Utilities has previously used pricing principles to modify tariffs and these have been reviewed and updated. The updated pricing principles are also intended to provide greater transparency and protection of customers for the next 5 years:

- *Simple and transparent* – charges, and the approach to setting charges, should be simple, transparent and easy to understand;
- *Stable* – charges, and the approach to setting charges, should be stable (with changes in charges implemented smoothly over time);
- *Non-discriminatory* – there should be no undue discrimination between customers, with customers having similar characteristics facing similar charges;

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- *Encourage efficient consumption* – charges should encourage efficient consumption decisions by consumers;
  - *Cost-reflective* – consumers' charges should reflect the costs they impose, unless justified by other charging principles;
  - *Consistent with Government's policy* – charges should be set mindful of Government's social, economic and environmental policies; and
  - *Cost recovery* – charges should be set to provide a reasonable prospect of the recovery of costs.

It is accepted that occasions will arise when individual principles will conflict with each other and judgement will be required to determine how the principles will be applied. However, the principles will provide an appropriate framework for assessing changes to individual tariffs (and the establishment of new tariffs) and ensure income is fairly distributed between tariffs.

### **FURTHER WORK TO BE INVESTIGATED**

ECA recommended that welfare support arrangements should be targeted at households in defined welfare support categories (with the cost of this subsidy being recovered by raising the tariffs to all other customers, not only other residential customers) if such support is desired and necessary legal powers are in place to do so. Manx Utilities proposes to continue to work with Government to consider changes to customer support.

ECA proposed wide changes to the charging for electricity to Manx Utilities' largest (industrial) customers. This included changes to capacity and demand charges as well as the unit charges and tariffs generally. Whilst Manx Utilities has a relatively small number of industrial electricity customers (<1% of total customers), these customers consume a large volume of electricity (>30% of total Isle of Man consumption) and also contribute significantly to the Isle of Man economy. As such, further consultation is necessary with industrial customers to fully understand the potential impact of the recommended changes. It is anticipated that this work will be undertaken during 2019.

The ECA report also proposes that greater use of 'Time of Use' (TOU) electricity tariffs to better reflect the different cost of wholesale electricity at different times of the day (notably the higher cost of electricity during the early evening when demand increases significantly). Three different time periods were proposed by ECA and ECA also recommended TOU tariffs should be:

- Mandatory for larger customers (industrial);
- Optional for other customers (domestic and commercial);
- Eligibility criteria for existing TOU tariffs (such as Comfy Heat and Economy 8) to be removed.

Manx Utilities supports the concept of greater availability of TOU tariffs as recommended by ECA. However, additional time is required in order to make TOU more widely available in a fair and cost effective manner. Changes in respect of TOU tariffs are not expected to be introduced prior to April 2021.

The alignment of early settlement discounts (likely to reduce the current water and sewerage discounts from 5% to 1%, with a corresponding reduction in the Water and Sewerage Rates so that overall income levels are unchanged) is considered appropriate. However, a number of practical issues need to be addressed and legislative changes may be required to facilitate these changes. As such, the alignment of discounts is not expected prior to 2021.



The charging for sewerage based on metered water consumption, where a water meter is installed, will increase cost reflectivity for large volume users. Manx Utilities is currently introducing a licensing regime for sewage entering the sewerage network to improve network and treatment plant capacity projections. Consideration will be given to the impact of replacing existing Rate-borne sewerage charges with metered charges alongside this work.

Whilst universal water metering is not proposed, Manx Utilities will consider adopting universal metering for all non-domestic customers. Universal water metering would have a significant cost and could have a disproportionate adverse impact on low-income customers. Additional metering of non-domestic water customers would deliver many benefits at a significantly reduced cost. Progress on additional non-domestic metering is anticipated by 2022.

## PROPOSED CHANGES TO TARIFFS

The key changes to tariffs proposed as part of this pricing strategy are as follows:

- Annual increases for general inflation, based on the Isle of Man 12-month Consumer Prices Index published in October;
- Adjustments to electricity tariffs for changes to wholesale gas prices, to the extent that these changes cannot be mitigated;
- Reduction of the discount of Water and Sewerage Rates for non-domestic customers, with the discount reducing from the current 50% by 5% per year to 25%.
- Water and Sewerage Rates are re-balanced and thereafter increased by the October 12-month rate of inflation, as measured by the Manx Consumer Prices Index, as follows:

	<b>Current (2018-19)</b>	<b>Rebalanced (2018-19 equivalent)</b>	<i><b>2019-20, if uplifted for inflation at 2.3%<sup>5</sup></b></i>
Water Rate	341.8 p/£	230.0 p/£	235.3 p/£
Sewerage Rate	98.0 p/£	210.0 p/£	214.8 p/£
<b>Total (combined)</b>	<b>439.8 p/£</b>	<b>440.0 p/£</b>	<b>450.1 p/£</b>

- The metered water rate would be reduced from £2.13 per cubic meter to £1.45 per cubic metre<sup>6</sup>, to reflect the lower water rate.

The financial projections provided to NERA (from the LTFP) for its work made the following broad assumptions in respect of tariff increases:

- Electricity tariffs to increase based on general price inflation and gas price inflation;
- Water tariffs to increase based on general price inflation;
- Sewerage charges to increase in accordance with the original rate of increase following the decision to reduce, and then remove, the sewerage grant funding (so as to reach £11.8 million total income by 2023-24).

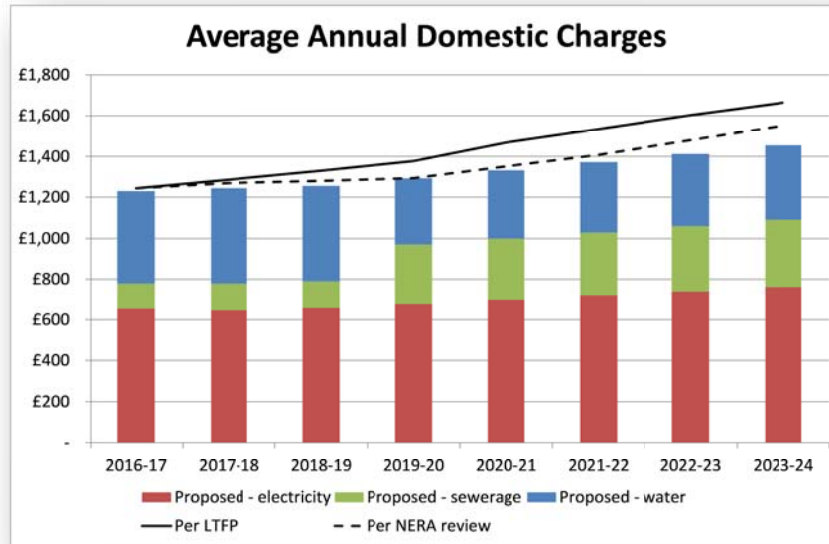
NERA considered that a debt reduction could be used to:

<sup>5</sup> 12 month CPI for August 2018, included for illustrative purposes. Actual Rates will be based on October 2018 CPI.

<sup>6</sup> 2018-19 equivalent; £1.48 per cubic metre for 2019-20 if uplifted for inflation at 2.3%.

1. Freeze water charges for 5 years to provide a degree of rebalancing between water and sewerage charges; and
2. Introduce the sewerage charges over a longer period of time (10 years) to reduce the impact on customers.

The pricing strategy projections average annual domestic electricity, sewerage and water charges<sup>7</sup> to increase with inflation<sup>8</sup> as follows:



The above chart shows that Manx Utilities has maintained domestic charges within the levels proposed in the LTFP and also within the revised projections set out by NERA. Average domestic charges remain within the level proposed by NERA as part of the £95 million debt reduction. NERA projected average annual domestic charges for 2021-22 (5 years after its review) would be £127 lower than those proposed in the LTFP; the pricing strategy proposes average charges for 2021-22 that are a further £27 lower than NERA's projections (£154 lower than LTFP projections).

<sup>7</sup> Based on an average rateable value of £136 and average annual electricity consumption of 3,400 kWh.

<sup>8</sup> Assumed for the purposes of the projection to be 3% per year.

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## RECOMMENDATIONS

Manx Utilities is grateful for the support it has received from Government and Tynwald, most recently with the agreement to reduce its debt by £95 million. Manx Utilities has been working to deliver the improvements to its financial position set out in the Long Term Financial Plan that supported the creation of Manx Utilities. The debt reduction provides Manx Utilities with greater flexibility in respect of tariffs to reduce the impact that its tariffs would otherwise have on its customers. It plans to work within the income projections (and therefore customer charges) set out by NERA within its report.

The pricing strategy can be summarised as follows:

- 5-yearly reviews to determine the target level of income for Manx Utilities (for the following 5-year periods) that protects customers by ensuring efficiency of costs, appropriate oversight and transparency whilst also confirming Manx Utilities' debt repayment obligations can still be achieved;
- For the first 5 years overall income is based on NERA's revised income projections (reduced customer charges) following the debt reduction. Manx Utilities will seek to keep annual adjustments to the overall level of income by reference to annual general inflation and changes in wholesale gas prices;
- Individual tariffs to be set by reference to 7 pricing principles. The pricing principles ensure the objectives of those parties affected by tariffs are considered within the tariff setting process;

In order to support the pricing strategy, Tynwald is requested to receive this Pricing Strategy and:

1. Approve Manx Utilities' proposed pricing strategy for the next 5 years, including the report prepared by ECA, to achieve an appropriate balance between the financial sustainability of Manx Utilities and the impact utility charges have on customers;
2. Note that water and sewerage rates will be rebalanced, with water rates being reduced;
3. Approve a sewerage rate for the financial year commencing on 1 April 2019 of 210 pence in the pound plus the prevailing rate of inflation over the preceding 12 months as measured by the Manx Consumer Price Index to September 2018;
4. Approve further sewerage rate increases for 1 April 2020, 1 April 2021, 1 April 2022 and 1 April 2023 at the prevailing rate of inflation over the preceding 12 months as measured by the Manx Consumer Price Index to the September of the preceding year.







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ECONOMIC  
CONSULTING  
ASSOCIATES

## **Pricing Strategy Review**

### **Final Report**

**September 2018**

**Submitted to Manx Utilities**

**Authority by:**

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# Contents

<b>Abbreviations and acronyms</b>	<b>iv</b>
<b>Glossary</b>	<b>v</b>
<b>Executive Summary</b>	<b>1</b>
<b>1 Introduction</b>	<b>8</b>
<b>2 Background</b>	<b>9</b>
2.1 Manx Utilities Authority	9
2.2 Legislation	11
2.3 The requirement for a pricing strategy	13
2.4 The long-term financial plan	15
2.5 Context to future charging arrangements	20
<b>3 Review of charging principles</b>	<b>23</b>
3.1 Manx Utilities' current charging principles	23
3.2 Potential additional principles	24
3.3 Recommendation	25
<b>4 Tariff design</b>	<b>26</b>
4.1 Approach	27
4.2 Electricity	27
4.3 Water	41
4.4 Sewerage	48
4.5 Proposed tariffs	52
<b>5 Tariff impact analysis</b>	<b>55</b>
<b>6 Framework for updating charges</b>	<b>56</b>
6.1 Models of economic regulation of utilities	56
6.2 Options for updating tariffs	59
6.3 Implementation	63
<b>A1 Tariff Benchmarks</b>	<b>68</b>
A1.1 Electricity – domestic	68
A1.2 Electricity – small industrial	69

A1.3	Electricity – high load factor	70
A1.4	Water	71
A1.5	Sewerage	72
A1.6	Water and sewerage	73
<b>A2</b>	<b>The Mogden formula</b>	<b>74</b>

## Tables and figures

### Tables

Table 1	Operating surplus by segment, 2015/16 and 2016/17	10
Table 2	Examples of ratios to peak/off-peak prices in other jurisdictions	38
Table 3	Revised electricity tariffs to achieve the forecast revenues for 2018/19	53
Table 4	Average electricity prices by main tariff category 2018/19	54
Table 5	Revised water and sewerage tariffs to achieve the forecast revenues for 2018/19	54
Table 6	Comparison of options	62
Table 7	UK regulators price control durations (energy and water)	65

### Figures

Figure 1	Impact of making charges more cost reflective on larger customer groups	6
Figure 2	Segmental breakdown of Manx Utilities' revenue and costs – 2016/17	10
Figure 3	Projected income under current and previous LTFP	15
Figure 4	Debt, sinking fund, cash reserves and net debt	17
Figure 5	Income, costs and net profit	18
Figure 6	Net profit by segment	19
Figure 7	Breakdown of 2016/17 budgeted costs from LTFP	20
Figure 8	Costs by segment	20
Figure 9	Existing Manx Utilities tariffs and charges (2018/19)	26
Figure 10	Weekday average load (2017/18)	33
Figure 11	Daily load and generation schedule	34
Figure 12	Mainland GB market prices – monthly averages by time-of-day	35
Figure 13	Mainland GB market prices – monthly averages by time-of-day in four months	35

Figure 14 Seasonal pattern of load and trend over time	37
Figure 15 Impact of making charges more cost reflective on larger customer groups	55
Figure 16 Electricity prices for domestic customers	68
Figure 17 Electricity prices for small industrial customers	69
Figure 18 Electricity prices for high load factor customers	70
Figure 19 Annual domestic water bills	71
Figure 20 Annual domestic sewerage bills	72
Figure 21 Annual domestic water and sewerage bills	73
Figure 22 Anglian Water – Non-household trade effluent charges	75
Figure 23 Anglian Water – Standard parameters for certain processes	75

## Abbreviations and acronyms

AMI	Advanced Metering Infrastructure
AMR	Automated Meter Reading
BAU	Business As Usual
CBA	Cost Benefit Analysis
CCGT	Combined Cycle Gas Turbine
CLF	Consolidated Loan Fund
ECA	Economic Consulting Associates
EV	Electric Vehicle
E&W	England & Wales
GB	Great Britain
HV	High Voltage (above 33 kV, see Glossary)
kVa	Kilo-volt ampere
kW	Instantaneous power (1,000 watts)
kWh	standard unit of energy (1 kW for one hour)
LRAIC	Long-run average incremental cost
MW	Megawatt (1,000 kW)
MWh	1,000 kWh
LTFP	Long-Term Financial Plan
LV	Low Voltage (less than 11 kV, see Glossary)
MD	Maximum Demand
MV	Medium Voltage (11 kV and 33 kV, see Glossary)
NPV	Net Present Value
PV	Present Value
RPI	Retail price index
TOU	Time-of-use
UR	Utility Regulator (Northern Ireland)

## Glossary

**Load factor:** A load factor is the ratio of the average kWh consumption per hour to the maximum consumption in any one hour (kW). A high load factor implies a relatively constant level of consumption throughout a given time period (e.g., month or year). Conversely, a low load factor implies a consumption that varies significantly over a time period. Because a utility must size its assets to satisfy the maximum demand, a customer with a low load factor is more costly to supply per kWh than a customer with a high load factor.

**Mogden Formula:** This is a formula used for charging for trade effluent based on the suspended solids and chemical oxygen demand of the effluent from premises. The suspended solids and chemical oxygen demands are estimated based on samples taken from actual discharges or agreed between the utility and the customer.

**Power Factor:** A load with a low power factor draws more current (amps) than a load with a high power factor for the same amount of useful power (watts or kW) transferred. The higher currents increase the energy lost in the distribution or transmission system, and require larger wires and other equipment. The useful power (kW) is calculated as the voltage x amps x power factor.

**Voltages:** High Voltage (HV), Medium Voltage (MV) and Low Voltage (LV) describe the voltage of a network supplying a customer. There is no universal classification of HV, MV and LV and it varies from country to country or even within a power system depending on the context. Manx Utilities uses HV and LV classifications for customers' kVA load, with HV being customers having loads above 1 kVA and LV customers with loads below 1 kVA.

In this Report we use HV, MV and LV to refer to the customer supply voltage and this is mentioned in relation to Manx Utilities and other utilities in the Channel Islands and elsewhere. The classification of HV as being above 33 kV, MV as 33 kV and 11 kV and LV as being below 11 kV will be fairly typical for most of the utilities under discussion.



## Executive Summary

The Treasury, the Cabinet Office and the two former Authorities developed a long-term financial plan (LTFP) for Manx Utilities at the time of its formation in 2014, which targeted financial sustainability for the new Statutory Board. In October 2017, a full review of the LTFP, conducted by NERA<sup>1</sup>, was published. Informed by the review, Treasury put forward four recommendations<sup>2</sup> to Tynwald, which Tynwald approved. The four recommendations were:

- ❑ The write-off of £95m of loans to Manx Utilities from the Consolidated Loan Fund (CLF)
- ❑ Manx Utilities freezes the water rate for 2018/19
- ❑ Manx Utilities freezes the sewerage rate for 2018/19, and
- ❑ Manx Utilities provides to Tynwald, by October 2018, a new pricing strategy for electricity, sewerage and water charges

The last of these – the new pricing strategy – is the subject of this report.

The write-off of £95m of debt (identified as an option in the review) would improve Manx Utilities' financial standing whilst moderating the bill increases assumed in the LTFP. The freezing of the water and sewerage rates was intended to provide time for Manx Utilities to develop its pricing strategy.

Treasury's report noted that a pricing framework "*would provide greater transparency and certainty over Manx Utilities' pricing process ... It is envisaged that such a framework would be linked to relevant costs and the ability of Manx Utilities to meet the objectives of the LTFP and would also include a 3 to 5 year review.*" It also noted that "*The pricing strategy will be required to generate the overall levels of income set out in NERA's report, which indicate that price rises will be required*".

Manx Utilities commissioned Economic Consulting Associates Ltd (ECA) to develop a new pricing strategy for electricity, sewerage and water charges. Manx Utilities is required to provide their strategy to Tynwald by October 2018. In accordance with the Treasury recommendation approved by Tynwald, this new pricing strategy will need to:

- ❑ More accurately reflect the costs of delivering services
- ❑ Provide a pricing framework for future price increases for transparency and protection of consumers, and

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<sup>1</sup> A consulting firm.

<sup>2</sup> Manx Utilities Long Term Financial Plan, A Report by the Treasury endorsed by the Council of Ministers, October 2017. Link as above.

- ❑ Ensure the continued financial stability of Manx Utilities and meet debt repayment schedules.<sup>3</sup>

This report describes the development of the pricing strategy for electricity, sewerage and water charges guided by the above. Given the previous work commissioned by Treasury in reviewing the LTFP, it does not revisit the level of income required to ensure Manx Utilities' financial stability but, instead, focuses on the structure of tariffs to recover this level of income, and how tariffs (and the level of income) may be adjusted over time.

## Charging principles

The report begins by reviewing Manx Utilities internal charging principles and proposed some minor changes resulting in the following recommended set of principles:

- ❑ *Simple and transparent* - charges, and the approach to setting charges, should be simple, transparent and easy to understand
- ❑ *Stable* - charges, and the approach to setting charges, should be stable (with changes in charges implemented smoothly over time)
- ❑ *Non-discriminatory* - there should be no undue discrimination between customers, with customers having similar characteristics facing similar charges
- ❑ *Encourage efficient consumption* - charges should encourage efficient consumption decisions by consumers
- ❑ *Cost-reflective* - consumers' charges should reflect the costs they impose, unless justified by other charging principles
- ❑ *Consistent with government's policy* - charges should be set mindful of government's social and environmental policies
- ❑ *Cost recovery* - charges should be set to provide a reasonable prospect of the recovery of costs.

## Tariff designs for electricity

Our main conclusions regarding tariff designs for electricity are as follows:

- ❑ **Tariff categories:** We propose that Manx Utilities drop the high load factor category<sup>4</sup> for larger industrial customers but keeps the high volume category. The industrial tariff already captures the benefits of having a high load factor and it is not therefore necessary to distinguish a separate category. We also propose that there be a single high volume 3-rate time-of-use (TOU) tariff

<sup>3</sup> Manx Utilities Long Term Financial Plan, A Report by the Treasury endorsed by the Council of Ministers, October 2017. <http://www.tynwald.org.im/business/opqp/sittings/Tynwald%2020162018/2017-GD-0045.pdf>

<sup>4</sup> A high load factor customer has a relatively flat consumption profile over the day and year. This results in lower average cost to supply than a customer with a variable consumption profile.

category, with all customers consuming more than 1,000 MWh per year included in this category.

We also propose that there be a single standard industrial (or Demand) category with three TOU rates to provide greater cost reflectivity.

- ❑ **Social tariff:** We propose no change to the current arrangements. Prepayment meter customers are currently charged the same price as post-paid customers – and this effectively gives such customers a discounted tariff. Manx Utilities might consider the option of special targeted tariff for customers in receipt of certain welfare benefits but we note that this would require cross-subsidisation from other customers.
- ❑ **Green tariffs:** Analysis suggests that the current green tariffs do not reflect the costs of electricity supply (in the case of electric vehicles) or Manx Utilities' avoided costs (in the case of purchasing surplus renewable generation). A decision to maintain prices that deviate from cost reflectivity seems consistent with Government policy but should ideally be confirmed by Government.
- ❑ **Tariff components:**
  - ❑ **Demand charges:** These charges are based on customers' maximum demand (kW rather than kWh) and are designed to reflect the cost of providing peak capacity. The economic cost of meeting peak demand on the Isle of Man is currently very low because demand is falling and new investment is not required. Despite the low economic costs, revenues must still be collected to cover Manx Utilities' historical capacity costs and, although such costs could be collected as a mark-up on all kWh sold, we recommend that these revenues are collected primarily from electricity used during the peak hours – either through demand/capacity charges or through peak TOU charges.

We recommend that capacity charges be used to recover network costs and to charge this on the basis of contracted demand (rather than maximum demand). Additionally we recommend that energy charges are used to reflect the costs of electricity generation and imports on a 3-rate TOU basis.

  - ❑ **Standing charges.** A large part of Manx Utilities costs are fixed and its marginal costs are low. This suggests that tariffs should be rebalanced toward more fixed charges (standing charges and/or capacity charges). The report proposes that this rebalancing is done through capacity charges. For smaller customers capacity charges do not apply and there could be an argument for increasing standing charges (per connection per day) to reflect some of the fixed costs that Manx Utilities faces. However, the existing levels of standing charges are not unreasonable and we would therefore suggest that these are only increased over time with inflation.
  - ❑ **Discounts:** We suggest that the prompt payment discount be kept at 1% for electricity as it is consistent with the cost savings to Manx Utilities.

The information available on the marginal cost of supply by **time-of-use** suggests the following regime for the Isle of Man:

- ❑ Retain the current optional TOU tariffs for small customers (domestic and commercial).
- ❑ Make TOU tariffs mandatory for larger customers.
- ❑ Remove the eligibility criteria for TOU tariffs (this needs to be combined with changes to the other tariff design changes proposed).
- ❑ Introduce three TOU periods within the day (peak, shoulder and off-peak).

There are a number of legacy tariffs for a small number of customers. These tariffs are not available to new customers but have been retained for existing customers. We would recommend that customers are either migrated to the corresponding current tariff or, where there is a choice of more than one current tariff customers are given the choice of the available options or are migrated to the default option.

### **Tariff designs for water**

The report supports the findings of an earlier study conducted by consultants<sup>5</sup> to Manx Utilities in 2015 in-so-far as their findings impact on water charges:

- ❑ The report recommended against metering of domestic water as cost-benefit analysis suggested it was not economically justified. It also recommended that domestic customers continue to be charged on the basis of rateable value until such time as the rating system is reformed to capital values, and then switch to a capital value charging system.
- ❑ It recommended against the introduction of water charges linked to household occupancy (or a single person discount).

Our other recommendations are, in summary, as follows:

- ❑ No change to tariff categories.
- ❑ Harmonise the discount for prompt payment with that of electricity at 1% (and reduce water charges correspondingly). A discount of 1% more accurately reflects the benefits to Manx Utilities and the existing 5% is effectively a cross-subsidy to those who pay promptly.
- ❑ Rebalance water (-) and sewerage charges (+). This does not matter for the majority of customers but it would reflect costs more accurately.
- ❑ Introduce standing charges for both metered and non-metered customers. This better reflects the fixed costs of billing and customer management.
- ❑ Mandatory metering for customers above a certain size.
- ❑ Continue with discounted tariffs for charitable and religious premises.

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<sup>5</sup> Cornwall Energy, Review of Sewerage Charging Regimes, June 2015.

- ❑ Eliminate the discount to commercial premises (unless this is a specific Government policy). We estimate that elimination of the discount would allow average water charges to other customers (domestic and non-domestic metered customers) to drop by approximately 16%.

### **Tariff designs for sewerage**

As for water, we recommend:

- ❑ Continue to charge domestic sewerage customers on the basis of rateable value until such time as the rating system is reformed to capital values, and then switch to a capital value charging system.
- ❑ No introduction of sewerage charges linked to household occupancy (or single person discount).
- ❑ Harmonise the discount for prompt payment with that of electricity at 1% (and reduce sewerage charges correspondingly).
- ❑ Rebalance water (-) and sewerage charges (+).
- ❑ Continue with discounted tariffs for charitable and religious premises.
- ❑ Eliminate the discount to commercial premises (unless this is a specific Government policy). We estimate that elimination of the discount would allow average sewerage charges to other customers (primarily domestic) to drop by approximately 13%.

We additionally recommend:

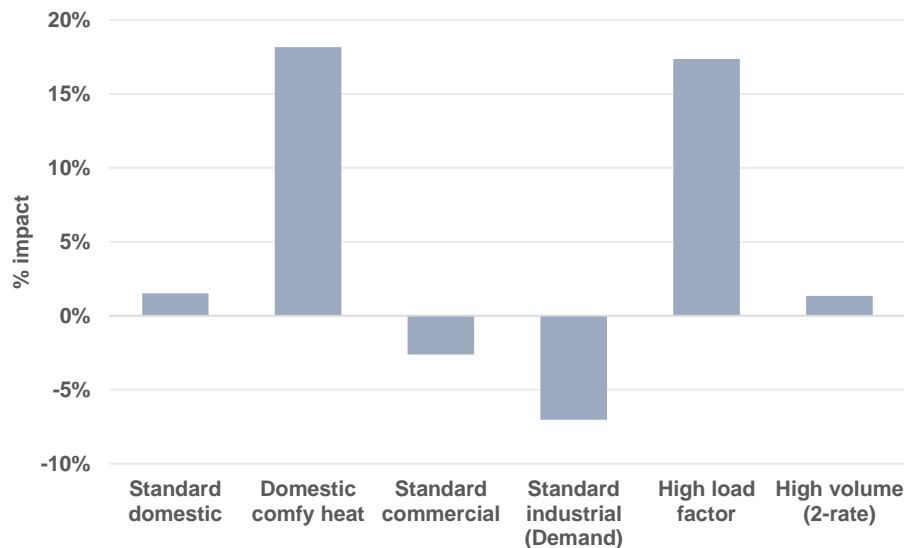
- ❑ Customers with metered water should be charged for sewerage based on water consumption – assuming that 90% of water becomes wastewater.
- ❑ The introduction of standing charges for all customer categories.
- ❑ Once the current licensing system for trade effluent customers is introduced, review the possibility of introducing the Mogden formula for charging for trade effluent.

### **Impact analysis**

Unsurprisingly, a tariff impact analysis indicates that there will be winners and losers due to a rebalancing of the charges between customer groups. Standard domestic customers would be relatively unaffected by these changes as indicated below. The impact on other domestic (Comfy heat) and on the average or typical non-domestic customers is shown in the diagram below. The tariff design changes are intended to be revenue neutral so that the winners (shown to be standard commercial and standard industrial customers) are compensated by the losers (shown to be the industrial High Load Factor customers and the Comfy Heat domestic customers). The High Load Factor customers would be moved to the High Volume (3-part) tariff and although they would not benefit from the attractive rates previously provided, they would have the opportunity to optimise their energy and power

consumption in order to lower their electricity costs. The High Volume 2-rate customer group is largely unaffected (a 1.2% increase in average charges). The percentage changes in the diagram are not volume-weighted so that the increases do not appear to match the decreases - but we note that the largest customer groups (by kWh sales) are standard domestic, standard commercial and standard industrial (Demand).

**Figure 1 Impact of making charges more cost reflective on larger customer groups**



### Framework for updating charges in the future

An objective for the pricing strategy is to secure the financial sustainability of Manx Utilities and meet debt repayment schedules. As per the LTFP, this will be achieved with sufficient revenues from charges to cover costs and build-up the sinking fund and cash reserves for the repayment of debt.

However, over the duration of the plan, and in the absence of revenue adjustments, revenue and costs will inevitably diverge. If costs were greater than expected, then this could jeopardise Manx Utilities' financial position and service to customers. Conversely, if costs were to be lower than expected, then consumers could be paying more than is necessary. The same issues arise if revenues are different from those expected - eg as a result of outturn demand being different from forecast demand.

Given the above, there is a need for the pricing strategy to address the adjustment of charges to take account of divergences between revenues and costs. This was explicitly recognised in Treasury's report which envisaged a pricing framework with links to relevant costs and the objectives of the LTFP. The Treasury's report also anticipated that, at the same time, the pricing strategy will *"provide transparency and provide greater certainty for residents and businesses."*

The report considers four options and tests them against the following (competing) factors:

- ❑ short-term financial certainty to Manx Utilities – this is the extent to which Manx Utilities' costs may diverge from revenues in the short to medium term.



- ❑ short-term stability in charges – this reflects both how much charges may change from one year to the next and how predictable the change is.
- ❑ certainty over the timing of changes in tariffs – ie do customers know when tariffs will change.
- ❑ stability in charges at review – this reflects the relative risk that customers are exposed to large changes in levels of tariffs when they are reviewed
- ❑ efficiency incentives – do the options introduce efficiency incentives or additional discipline on Manx Utilities.

Of these, we consider two factors, relating to the stability of tariffs to customers and Manx Utilities' recovery of costs, to be key. There are trade-offs between these.

Under our recommended option, whilst tariffs themselves are not fixed for a 3-5 year period, the basis on which tariffs may change is. This option is a half-way house between other options. It provides customers (and Manx Utilities) with a degree of predictability over their tariffs. By allowing tariffs to change within this 3-5 year period for pre-defined factors, such as inflation and gas costs, the risk to consumers of large changes in tariffs when they are reset is reduced (as is the financial risk to Manx Utilities). This option also introduces an additional discipline on Manx Utilities (by only allowing for tariffs to changes within the period for factors beyond their control). These changes could be implemented annually and would be to reflect changes in factors that drive Manx Utilities' costs and over which it has no (or limited) control.

Overall, we consider that this provides an appropriate balance between certainty to consumers and Manx Utilities. The report goes into further detail regarding the implementation of this option.

# 1 Introduction

The Manx Utilities Authority (Manx Utilities) commissioned Economic Consulting Associates Ltd (ECA) to develop a new pricing strategy for electricity, sewerage and water charges. Manx Utilities is required to provide this strategy to Tynwald by October 2018. In accordance with a Treasury recommendation approved by Tynwald, this new pricing strategy will need to:

- ❑ More accurately reflect the costs of delivering services
- ❑ Provide a pricing framework for future price increases for transparency and protection of consumers, and
- ❑ Ensure the continued financial stability of Manx Utilities and meet debt repayment schedules.<sup>6</sup>

In this report, we describe the development of the pricing strategy for electricity, sewerage and water charges guided by the above requirements.

The report is structured as follows:

- ❑ Section 2 provides background to the pricing strategy, including relevant context, the requirements for a pricing strategy, and an overview of relevant legislation
- ❑ Section 3 reviews Manx Utilities' charging principles and proposes amendments
- ❑ Section 4 summarises existing tariffs, considers options for changes to tariff designs, and makes recommendations for electricity, water and sewerage
- ❑ Section 5 considers the impacts of the proposed changes on tariff and customer groups
- ❑ Chapter 6 considers options for updating tariffs over time (and the role of tariff benchmarks)

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<sup>6</sup> *Manx Utilities Long Term Financial Plan, A Report by the Treasury endorsed by the Council of Ministers*, October 2017. <http://www.tynwald.org.im/business/opqp/sittings/Tynwald%2020162018/2017-GD-0045.pdf>

## 2 Background

### 2.1 Manx Utilities Authority

Manx Utilities is a Statutory Board of the Isle of Man Government, sponsored by the Department for Infrastructure. Established in April 2014, from the merger of the former Manx Electricity Authority and Water and Sewerage Authority, Manx Utilities' activities comprise:<sup>7</sup>

- ❑ **Electricity supply** – Manx Utilities is a vertically integrated electricity supplier, serving 42,000 homes and 5,500 businesses on the Island. It operates four power stations (with the largest being the Combined Cycle Gas Turbine (CCGT) Pulrose Power Station) and has an interconnector with the UK. Its network includes 560km of overhead lines and 1,300km of underground cable.
- ❑ **Gas supply** – Manx Utilities supplies natural gas to the local distributor (Manx Gas) and to Pulrose Power Station, across a high and intermediate pressure network comprising 66km of pipelines.
- ❑ **Water supply** – Manx Utilities supplies water to 40,000 customers through a network comprising 1,700km of mains.
- ❑ **Sewerage services** – Manx Utilities network comprises 600km of sewers and 17 treatment works.
- ❑ **Telecoms services** – delivery of wholesale communication services, via a subsidiary (e-lan communications), through a subsea interconnector with UK and a metropolitan fibre network.

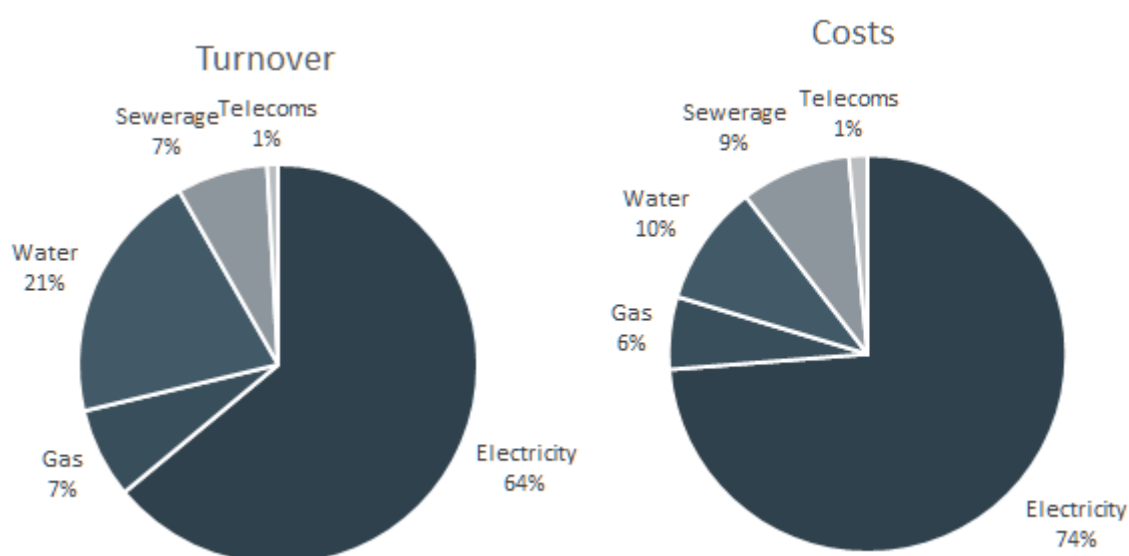
In 2016/17 Manx Utilities' total revenue was just over £105 million<sup>8</sup> and its costs just under £92 million.<sup>9</sup> Figure 2 provides a segmental breakdown of turnover and costs. Electricity is the largest segment in terms of both revenue and costs, followed by water and then sewerage.

<sup>7</sup> Manx Utilities Annual Report 2016/17. Link: <https://www.manxutilities.im/media/1490/manx-utilities-annual-report-2017.pdf>

<sup>8</sup> Including £2.4m of inter-segmental sales. Revenue from third parties was £102.6m.

<sup>9</sup> These costs include the 'fair value' of forward gas contracts. Manx Utilities uses these contracts to protect consumers against gas price volatility. These fair values are not cash costs (they can be volatile and do not necessarily reflect what their realised value will be). Removing these increases costs in 2016/17 to just over £98m.

Figure 2 Segmental breakdown of Manx Utilities' revenue and costs – 2016/17



Source: Manx Utilities 2016/17 Annual Report and Manx Utilities. Costs are the sum of the cost of sales (inclusive of realised gains/losses on forward gas contracts), distribution costs, administrative expenses and operating gains/losses, but do not include finance costs.

In Table 1, we show the operating surplus of each segment for 2015/16 and 2016/17. These show that in each of the past two years, the water segment has generated the largest operating surplus, whilst the sewerage segment has had an operating deficit.

Table 1 Operating surplus by segment, 2015/16 and 2016/17

	2015/16	2016/17
Electricity	6,492	142
Gas	2,293	2,430
Water	15,337	12,149
Sewerage	-1,533	-186
Telecoms	25	-411
<b>Total operating surplus / deficit</b>	<b>20,474</b>	<b>14,124</b>
Net finance costs	-16,684	-15,058
<b>Net surplus / deficit</b>	<b>3,790</b>	<b>-934</b>

Source: Operating surplus is calculated as turnover minus costs, with values sourced from Manx Utilities 2016/17 Annual Report and costs as defined for Figure 2. Net finance costs are also taken from Manx Utilities 2016/17 Annual Report but exclude unrealised gains/losses on forward gas contracts (data provided by Manx Utilities).

## 2.2 Legislation

Manx Utilities has functions and duties, as well as specific requirements regarding tariffs, set out in the Electricity, Water and Sewerage Acts. Below we consider aspects of these Acts that may inform the pricing strategy.

### 2.2.1 Electricity Act, 1996 (EA96)

Manx Utilities' functions with respect to electricity supply include:

- ❑ To develop and maintain an efficient and economical system of electricity supply for the Island (EA96, s.2(1))
- ❑ To promote, so far as practicable, the use of all economical methods of generating, transmitting and distributing electricity (EA96, s.2(2a))
- ❑ To secure, so far as possible, the provision in rural areas of supplies of electricity (EA96, s.2(2b))
- ❑ To take reasonable steps to promote the economical use of electricity by consumers (EA96, s.2(6)), and
- ❑ To have regard, in exercising its functions, to the need to (EA96, s.2(7)):
  - ❑ Maintain the security of supply
  - ❑ To preserve natural beauty and amenity, and
  - ❑ To use, so far as practicable, renewable source of energy.

With respect to the recovery of costs and tariffs:

- ❑ Unless Treasury authorises or directs otherwise, Manx Utilities shall secure sufficient revenues for each of its undertakings<sup>10</sup> to meet its costs ("*chargeable to the revenue account*") and to make allocations to reserves it considers are appropriate (EA96, s.3(1)).<sup>11</sup> No such allocation shall be made to reserves unless costs are covered (EA96, s.3(2A)).
- ❑ Manx Utilities may fix tariffs from time to time. Tariffs may include (EA96, Schedule 4, s.1(3)):
  - ❑ a standing charge, in addition to the charge for the actual electricity supplied

<sup>10</sup> Manx Utilities undertakings defined in the Electricity Act (s.3A(1)) are: the generation, distribution and supply of electricity; the conveyance and supply of gas; the provision of telecommunication services; and the provision of consultancy and other advisory services.

<sup>11</sup> Treasury may direct Manx Utilities as to the establishment or management of reserves, allocations to those reserves and the application of those reserves. This same provision applies in the Water Act, but not the Sewerage Act.

- ❑ a charge in respect of the availability of the supply of electricity
- ❑ a rent or other charge in respect of any meter.
- ❑ Manx Utilities shall adequately publicise these tariffs and shall show the method by which, and the principles on which, the charges are to be made (EA96, Schedule 4, s.1(2))
- ❑ In fixing tariffs, Manx Utilities shall not show undue preferences to any person or class of persons and shall not exercise any undue discrimination (EA96, Schedule 4, s.1(4))
- ❑ Every communication with customers of charges due shall show how charges relate to tariffs (EA96, Schedule 4, s.1(6)).

Manx Utilities also faces some restrictions on capital expenditure through the Electricity Act. Specifically, it shall, with Treasury approval, settle a programme of works which involve significant capital expenditure and shall consult with the Treasury before carrying out such work (EA96, s.4).

### 2.2.2 Water Act, 1991 (WA91)

Manx Utilities is required to supply water in the Island in accordance with the Water Act 1991 (WA91, s.2(1a)). Other Manx Utilities' duties under the Water Act are to exercise functions with respect to flood risk management and to provide a sewerage system for the Island (in accordance with the Sewerage Act – see next section) (WA91, s.2(1b) and (1c)).

Similar to the Electricity Act, unless Treasury authorises or directs otherwise, Manx Utilities shall secure sufficient revenues to meet costs and to make allocations to reserves that it considers adequate (WA91, s.33(1)).

Manx Utilities may charge an annual water rate for domestic properties based on their rateable values (WA91, s.25(1) and (2a)). It may agree alternative water rates for supply at domestic properties, including based on a meter (WA91, s.29(1)). For other premises, the water rates shall apply to such proportion of the rateable values as the Department of Infrastructure may determine (WA91, s.25(2b)). The water rate shall be due and payable to Manx Utilities, in advance, on 1<sup>st</sup> April each year (WA91, s.27(1)).

Manx Utilities may determine additional charges for domestic water supply under certain circumstances (eg where domestic supplies are used to water a garden, to supply ornamental fountains, or at premises where horses and vehicles are kept) (WA91, Schedule 6, s.2) or require that supply is metered. Manx Utilities may also require certain non-domestic customers to take a metered water supply, with charges that are no less than those based on the rateable value of the property (WA91, Schedule 6, s.3).

Manx Utilities may allow discounts for prompt payment of up to 5%. Such discounts should be endorsed on every demand for water rates and charges. (WA91, Schedule 6, s.9.)

Again, as with electricity services, Manx Utilities shall develop, with Treasury approval, a programme of work involving substantial capital expenditure and will not carry out such work until Treasury has been consulted (WA91, s.34).

### 2.2.3 Sewerage Act, 1999 (SA99)

Manx Utilities has a duty to provide, maintain, improve and extend the sewerage system to ensure that the Isle of Man is and continues to be effectively drained, and to empty those sewers and effectively deal with their contents (SA99, s.1(1)).

Manx Utilities may charge a sewerage rate on all hereditaments liable for rates according to their rateable value. Manx Utilities may prescribe different rates for different classes of premises. A sewerage rate may comprise a fixed amount and an amount calculated at a rate poundage. The sewerage rate requires the approval of Tynwald, and rates continue to apply unless Tynwald approves a further rate. (SA99, s.10A.) The sewerage rate is due and payable in advance on 1 April each year. (SA99, s.10C(1).)

Instead of charging a sewerage rate, Manx Utilities may agree to provide services on such basis (including metering) as it may determine (SA99, s.10D).

As with water, Manx Utilities may allow discounts for prompt payment of up to 5%. Such discounts should be endorsed on every demand for sewerage rates and charges (SA99, Schedule 1A, s.2).

In imposing the charges, Manx Utilities must consider the amount it will need to perform the function to which the charge relates (SA99, s.11(1))-this a different emphasis than in the Electricity and Water Acts.

### 2.2.4 Future

Whilst any discussion of legislative change and regulation is outside the scope of this report we understand that the Isle of Man Government is carrying out a parallel body of work regarding an overall framework for regulation of services and utility providers.

## 2.3 The requirement for a pricing strategy

The Treasury, the Cabinet Office and the two former Authorities developed a long-term financial plan (LTFP) for Manx Utilities at the time of its formation in 2014, which targeted financial sustainability for the new Statutory Board.

In October 2017, a full review of Manx Utilities' LTFP, conducted by NERA<sup>12</sup>, was published.<sup>13</sup> Amongst the findings from the report were that the plan's cost, demand and revenue assumptions (although uncertain) were reasonable and that the plan's objectives (to build up a bond repayment fund a further cash reserve) were also reasonable. However, the review also found that Manx Utilities' financial metrics were weak relative to UK comparators, and, despite planned increases to accommodate the reduction of central funding, sewerage rates are low (compared to costs and comparator companies) and that sewerage will continue to be loss making in the period.

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<sup>12</sup> A consulting firm.

<sup>13</sup> NERA, Review of Manx Utilities Long-term Financial Plan, September 2017. Link: <http://www.tynwald.org.im/business/opqp/sittings/Tynwald%2020162018/2017-GD-0045.pdf>



Informed by the review, Treasury put forward four recommendations<sup>14</sup> to Tynwald, which Tynwald approved. The four recommendations were:

- ❑ The write-off of £95m of loans to Manx Utilities from the Consolidated Loan Fund (CLF)
- ❑ Manx Utilities freezes the water rate for 2018/19
- ❑ Manx Utilities freezes the sewerage rate for 2018/19, and
- ❑ Manx Utilities provides to Tynwald, by October 2018, a new pricing strategy for electricity, sewerage and water charges to:
  - ❑ More accurately reflect the costs of delivering services
  - ❑ Provide a pricing framework for future price increases for transparency and protection of consumers, and
  - ❑ Ensure the continued financial stability of Manx Utilities and meet debt repayment schedules.

The write-off of £95m of debt (identified as an option in the review) would improve Manx Utilities' financial standing whilst moderating the bill increases assumed in the plan. The freezing of the water and sewerage rates is intended to provide time for Manx Utilities to develop its pricing strategy.

Treasury's report noted that a pricing framework *"would provide greater transparency and certainty over Manx Utilities' pricing process ... It is envisaged that such a framework would be linked to relevant costs and the ability of Manx Utilities to meet the objectives of the LTFP and would also include a 3 to 5 year review."* (para 4.8). It also noted that *"The pricing strategy will be required to generate the overall levels of income set out in NERA's report, which indicate that price rises will be required"* (para 4.13).

In this report, we describe the development of the pricing strategy for electricity, sewerage and water charges guided by the above. Given the previous work commissioned by Treasury in reviewing the LTFP, we do not revisit the level of income required to ensure Manx Utilities' financial stability but, instead, focus on the structure of tariffs to recover this level of income, and how tariffs (and the level of income) may be adjusted over time.

The version of the LTFP we have examined has been updated since the previous review commissioned by Treasury. These updates are for:

- ❑ The £95m recommended reduction in debt
- ❑ The recommended price freezes
- ❑ A rebalancing of charges between water and sewerage
- ❑ More recent financial results and budgets.

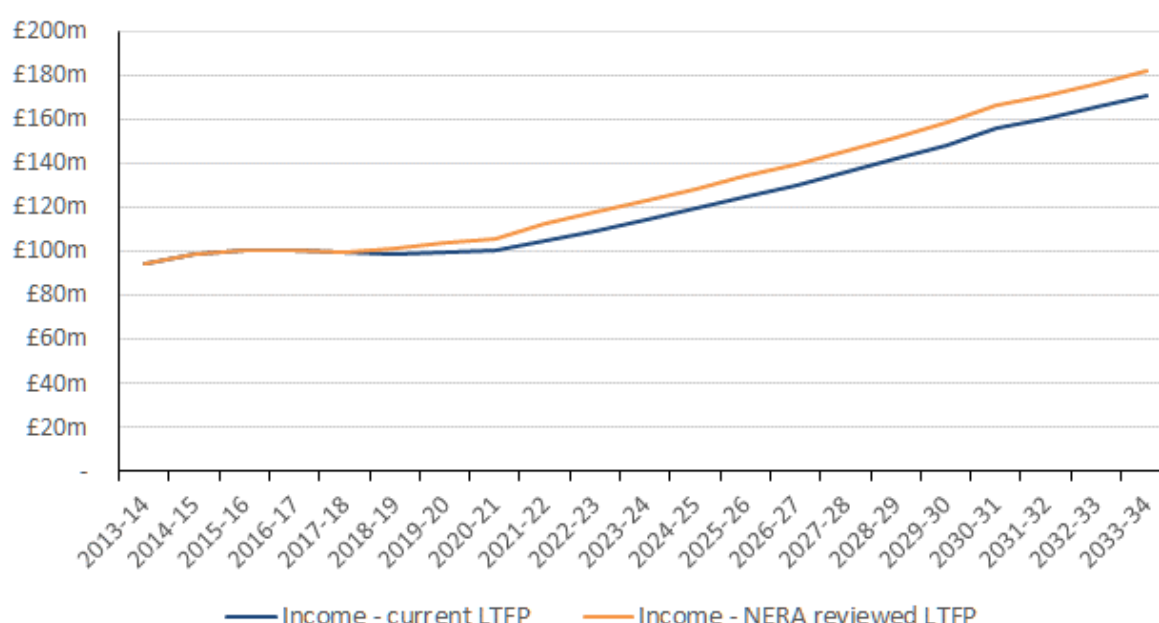
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<sup>14</sup> Manx Utilities Long Term Financial Plan, A Report by the Treasury endorsed by the Council of Ministers, October 2017. Link as above.



To illustrate the impact of the above changes to the LTFP, Figure 3 shows the difference in income levels between the previous version reviewed by NERA (orange line) and the current version (blue line) of the LTFP. The impact of the debt write off and price freeze is apparent, with income under the current version of the model below that of the previous version. Under the previous version, income was forecast to be on an upward trend from around 2017/18, and with a greater rate of increase from around 2020/21. In comparison, the current version, shows a largely unchanged level of income to around 2020/21, and thereafter increases. From 2020/21, the current version of the LTFP forecasts income to be 6% to 7% lower than the previous version, with absolute differences in the range £8m to £10m per annum.

**Figure 3 Projected income under current and previous LTFP**



Source: Manx Utilities LTFP (current version and version as of March 2017 reviewed by NERA)

In developing our tariff proposals, we use the level of income from the latest version of the LTFP, which we further describe below.

## 2.4 The long-term financial plan

In this section, we examine aspects of the LTFP that may inform the pricing strategy. In particular:

- ❑ The objective of the plan, which the pricing strategy needs to fulfil
- ❑ The level of revenues (charges), which the pricing strategy needs to generate to ensure the plan's objectives are met. This includes how charges change over time
- ❑ An analysis of revenues and costs, to show whether charges are cost-reflective - both across segments (ie electricity, water and sewerage) and within segments (ie across different customers types: domestic, commercial, industrial, etc.)

- ❑ The composition of costs, which will inform how revenue may need to change over time.

### 2.4.1 Objective

The objective underlying the LTFP is to secure the financial sustainability of Manx Utilities by targeting zero net debt by the early 2030s, when further significant investment is expected to be required.<sup>15</sup>

An overview of forecasts from the long-term financial plan are shown Figure 4. Net debt (represented by the black line) shows a marked drop in 2017/18 as a result of the write-off of £95m, before declining, at an increasing rate, to zero in 2033/34.

Manx Utilities has two main sources of debt:

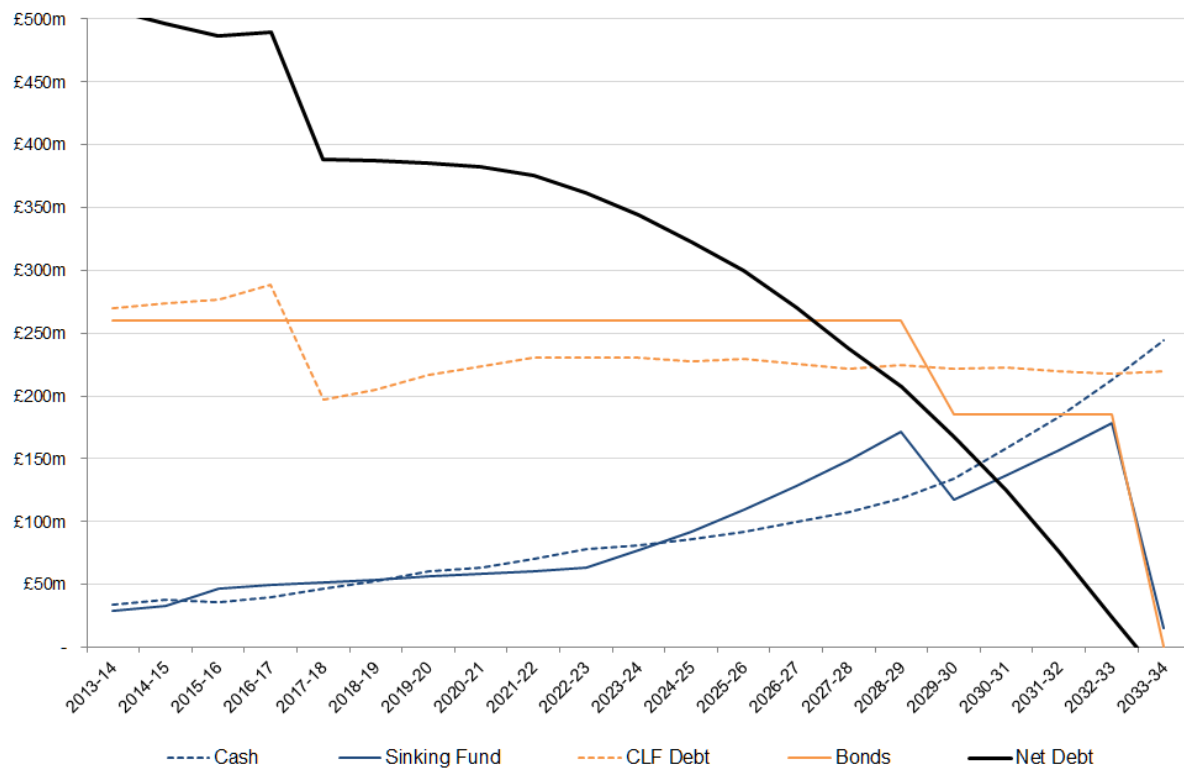
- ❑ A Consolidated Loan Fund – with current borrowing around £200m (dashed orange line), and
- ❑ Two bonds of £260m in aggregate (solid orange line).

As shown below, the LTFP forecasts the build-up of a sinking fund (solid blue line) which is used to pay off the bonds. The plan also forecasts the build-up of cash reserves (dashed blue line) that by the end of the forecast period exceeds the CLF debt.

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<sup>15</sup> This expected investment is in order to replace the generating capacity of the Pulrose power station as reaches the end of its operational life.

Figure 4 Debt, sinking fund, cash reserves and net debt

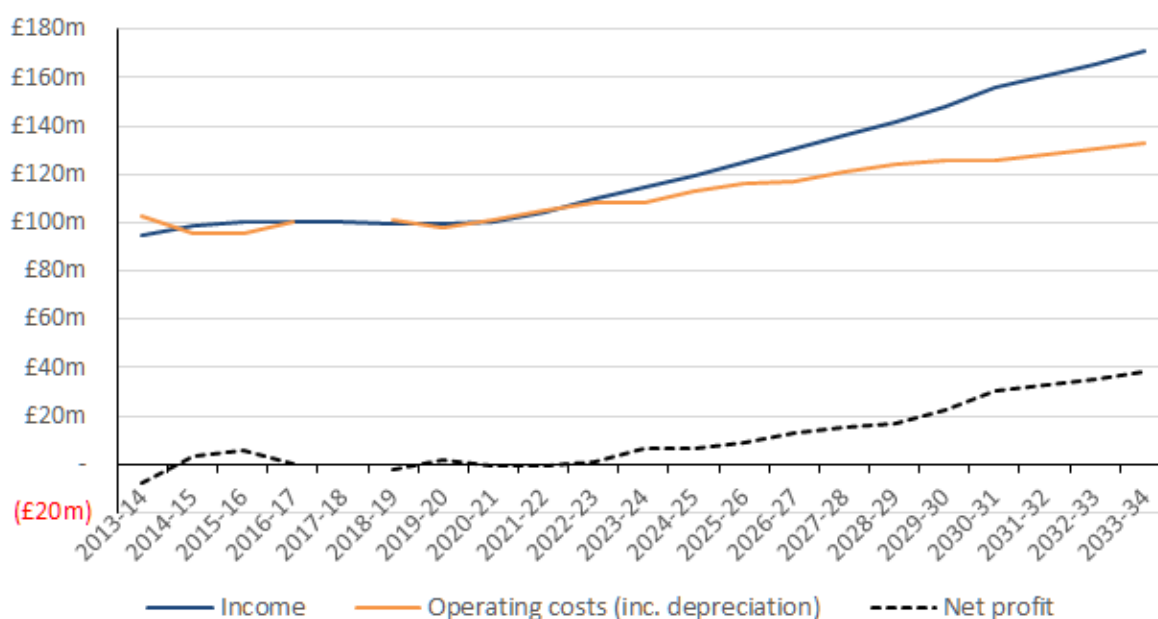


Source: Manx Utilities LTFP

## 2.4.2 Income and net profit

The pricing strategy needs to raise the level of income forecast in the LTFP – shown in Figure 5 (by the blue line). Income is forecast to be relatively stable, at around £100m, until 2020/21, after which it shows a steady upward trend. Initially, this is in line with a forecast increase in costs (the orange line). Subsequently, income is forecast to exceed costs, resulting in net profits (the dashed line) that contribute to the increase in the sinking fund and cash reserves noted above.

Figure 5 Income, costs and net profit



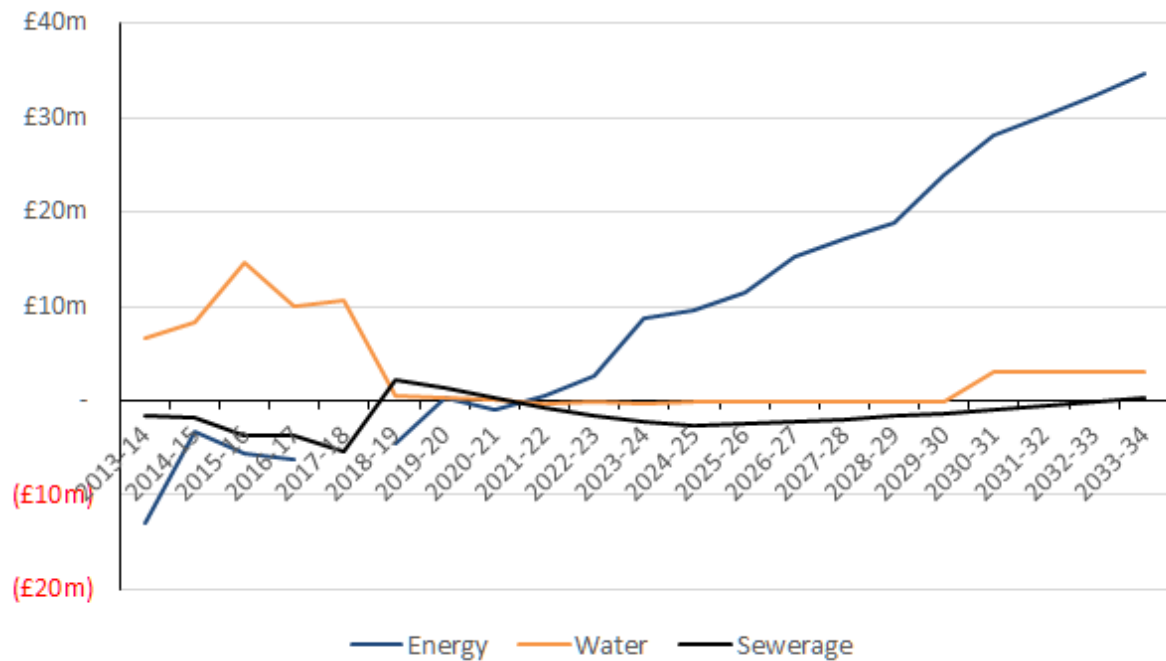
Source: Manx Utilities LTFP. Cost and net profits are excluded for 2017/18 as trends for these are distorted by the £95m debt write-off.<sup>16</sup>

According to the recommendations approved by Tynwald, the pricing strategy also needs to more accurately reflect the costs of service. In Table 1, we showed that water had generated the largest operating surpluses in 2015/16 and 2016/17 and sewerage operating deficits. In Figure 6 we show the net profit for each of energy, water and sewerage, that is the difference between income for each segment and cost for each segment,<sup>17</sup> forecast over the duration of the LTFP. This shows that, historically, water has made net profits and sewerage net losses. The current version of the LTFP assumes a rebalancing between water and sewerage charges in 2018/19. From this time onwards, the plan forecasts both water and sewerage services to (broadly) break even, ie covering interest costs, but not repayments of debt. The rising net profits of Manx Utilities over the forecast period are driven by the rising net profits from the electricity segment. It is, therefore, profits from the electricity segment that (under the LTFP) enable the repayment of debt.

<sup>16</sup> The write-off is included as a negative overhead in 2017/18 and attributed to the energy segment.

<sup>17</sup> Net profit = income - cost of goods sold - overheads - finance costs - depreciation

Figure 6 Net profit by segment



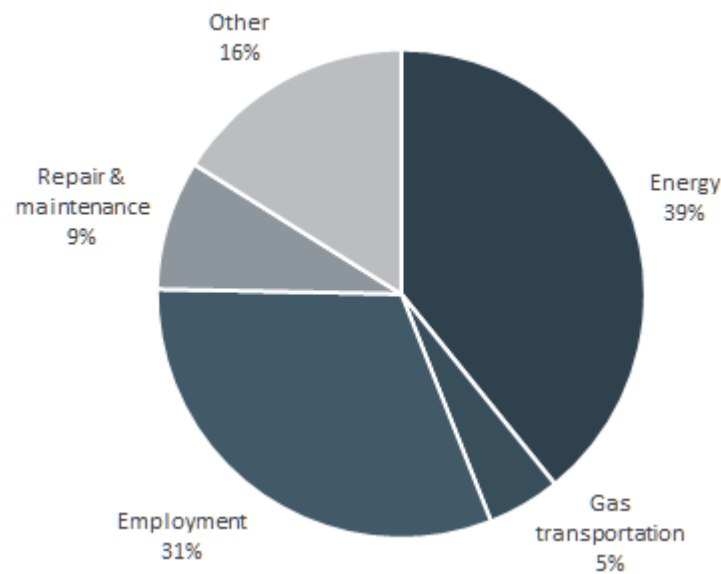
Source: Manx Utilities LTFP

### 2.4.3 Costs

Figure 7 shows a breakdown of (budgeted) costs for 2016/17 and Figure 8 shows costs by segment over the duration of the LTFP.<sup>18</sup> Figure 8 shows a general upwards trend in forecast costs. This is driven by (broadly) inflationary increases in most costs, and with increases in gas prices (in the electricity segment) at above inflation.

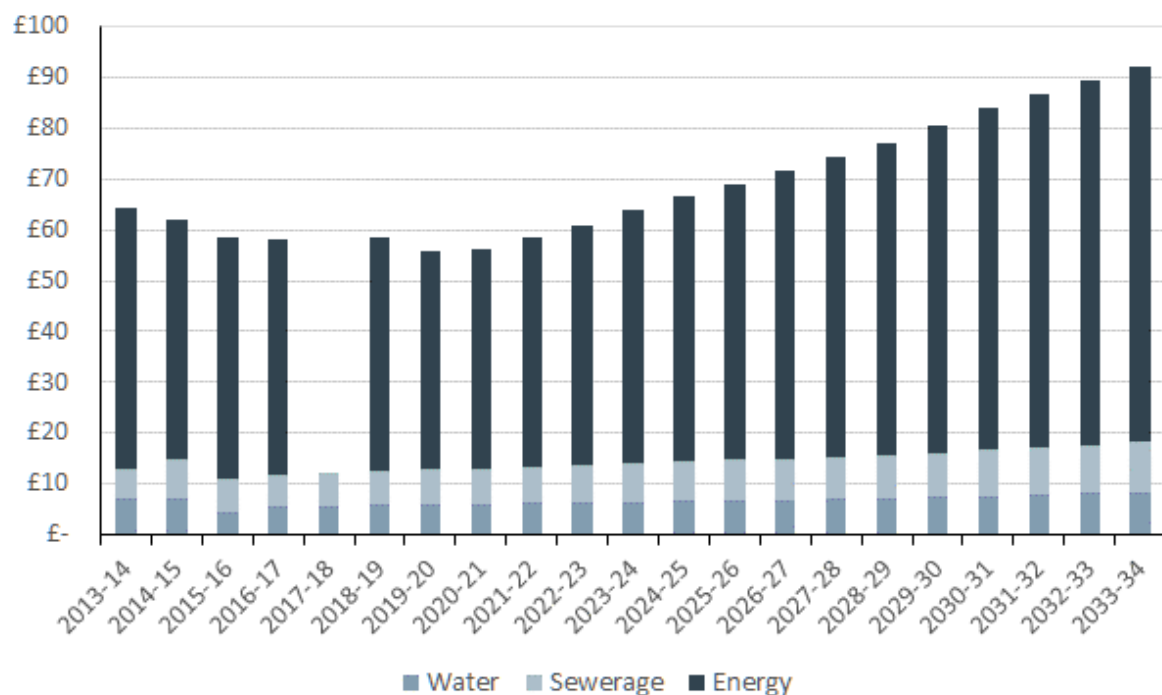
<sup>18</sup> Note: the costs included in Figure 7 and Figure 8 differ from those in Figure 3, as they exclude depreciation and finance costs.

Figure 7 Breakdown of 2016/17 budgeted costs from LTFP



Source: Manx Utilities LTFP

Figure 8 Costs by segment



Source: Manx Utilities LTFP. 2017/18 data for energy segment are excluded to avoid presenting a distorting trend of costs as a result of the debt write-off.

## 2.5 Context to future charging arrangements

In this section, we describe a couple of factors that could affect the future pricing strategy. These are potential changes to the rating system, on which water and sewerage charges are

currently based, and development on Advanced Metering Infrastructure (AMI), which could enable new tariff structures.

### 2.5.1 Rating Review

The Isle of Man has been seeking to reform its methodology for determining ratings. Currently, dating back to the Rating and Valuation Act 1953, ratings are based on the rental value of properties in 1969, even for new properties. The rateable value is then multiplied by the local rates. These rates are uniform across the Island for sewerage and water, but local authority and churchyard rates can vary. The valuations from 1969 are now dated and do not necessarily reflect the relative current values of different properties.

Tynwald agreed to undertake a domestic rating reform in January 2015, introducing a property tax based on domestic properties' open market price. The reform would be underpinned by a national property revaluation by February 2016. A key provision was that the new property tax would leave the total amount of money collected unchanged. For simplicity, domestic properties would be placed within valuation bands rather than at an individual value. Manx Utilities would be responsible for setting the level of property tax for water and sewerage services (with the latter approved by Tynwald).

Responses to the consultation in May 2015 generally affirmed public support for changing domestic property taxes, while some specific matters were disputed, such as whether to implement an all-Island rate or continue to have local authorities levy their own rates. Notably, there was strong public support for commercial and agricultural property rates being reformed as well, while the consultation only envisioned domestic rates being reformed for now.

Recent debates in the House of Keys have discussed the current state of progress on rates reform. On 30 January 2018, it was noted that a Bill is scheduled for 2018-19 to modernise legislation on rating valuation and collection. Back in January 2015, £2 million had been set aside for a domestic rating revaluation project, but this was not subsequently included in budgets despite the successful 2015 consultation. The debate on rates reform mentioned that the ratings issue is intertwined with the review of utilities financing given water and sewerage rates are currently frozen and a Treasury/Cabinet Office working group is working on it. On 19 June 2018 the Minister for Policy and Reform made a statement to Tynwald which pointed out that the issue of Rates was no longer just a local authority issue and stressed the involvement of Manx Utilities in the reform process. He also announced the progress in drafting instructions for a Rating and Valuation Bill which would include consultation with Manx Utilities and local authorities.

### 2.5.2 Advanced Metering Infrastructure

The Isle of Man has been considering an Island-wide rollout of AMI for electricity. There are growing practical difficulties for the current pre-payment system and existing 'dumb' meters. Manufacturers have recently ceased producing the old-style 'dumb' meters, which may force a gradual switch to smart meters. There have been calls for an upgrade to the current pre-pay system, ITRON, due to frequent Island-wide vending system failures. Jersey, which uses the same pre-pay system, is planning on switching to smart metering, which has increased the risk of ITRON ceasing to offer their product.

Widespread installation of AMI would allow for time-of-use pricing (and potential ‘smart grid’ developments in the long-term), allowing for better network optimisation and reducing the impact of additional load. The extent of such benefits that may emerge from AMI is subject to plenty of debate. Given the potential for AMI to reduce overall consumption, Manx Utilities is well-aware that this could have a net detrimental impact on Manx Utilities’ revenue.

The benefits of a smart meter rollout for water metering in the Isle of Man have previously been considered. A June 2015 review of sewerage charging regimes by Cornwall Energy concluded that the costs outweighed the benefits (ie there was a negative Net Present Value, NPV) to either a universal rollout of standard meters, a universal rollout of Automated Meter Reading (AMR) meters, or optant standard meters, even under a ‘best case’ scenario. Consistent with findings by Ofwat in England and Wales, this is due to annual financial savings from meters only roughly equating to the additional annual costs, leaving the initial one-off costs unrecovered. However, their report has universal standard meters and AMR meters as having the exact same Present Value (PV) benefits, partly due to not including the potential benefits of faster and more accurate readings under AMR. Furthermore, they appear to overlook the potential long-run benefits of water infrastructure optimisation, even if the low current marginal cost of water consumption makes the benefits of short-run efficiency improvements minimal. Alternatively, Manx Utilities suggests £20,000 in potential annual savings on manual water readings and that smart meters could allow them to evolve from a passive network operator role to a dynamic system operator role.<sup>19</sup>

Manx Utilities Cost Benefit Analysis (CBA), presented in a Board paper, compares an Island-wide electricity AMI rollout to a Business-As-Usual (BAU) case where Manx Utilities implements a new advanced pre-payment system and gradually replaces the existing meter fleet with smart meters that lack advanced functionality. They find a positive annualised NPV for an Island-wide AMI rollout of £212,500. The positive NPV result holds under a number of sensitivities.

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<sup>19</sup> Smart metering project, MU1815, Manx Utilities Board paper, March 2018.



### 3 Review of charging principles

Manx Utilities has developed a set of charging principles for internal purposes. Charging principles are important to the pricing strategy because:

- ❑ They can be used in assessing options for tariff design and structures, and
- ❑ They provide guidance on what to do when (unforeseen) changes occur. Acting within a stable set of principles (particularly if they are publicised) can improve the predictability of charges and reduce uncertainty.

In practice, as we further note below, charging principles may be compromised when they meet the real world and there may even be trade-offs between them. Charging principles, therefore, provide guidance, but judgement will still be needed in setting, and updating, charges.

In this chapter we present and comment on Manx Utilities' current charging principles and set out some potential additions to inform our recommendation on the principles.

#### 3.1 Manx Utilities' current charging principles

Manx Utilities has developed five charging principles, which are listed below, along with our comments on each:

1. Charges should be simple and easy to understand
  - ❑ *Comment:* Simple charges that are easy to understand makes it more likely that customers respond appropriately to them. Simpler charges are also easier to implement.
2. Charges should change incrementally (smoothed from year to year)
  - ❑ *Comment:* Stability of charges is desirable as it reduces uncertainty. However, it can also mean comprising cost-reflectivity (see below), at least in the short to medium term. More broadly, stability in the method for setting charges is also desirable, as it increases predictability of charges thereby reducing uncertainty.
3. Charges should be cost reflective – users should predominantly be paying for the services they receive and not those they don't benefit from
  - ❑ *Comment:* Cost-reflectivity is required for (allocative) efficiency. In practice, however, limitations (technical and cost) of metering the use of electricity, water and sewerage is one of the constraints to the full implementation of cost-reflective charges. Also, even if charges could fully reflect cost structures, it may be better to have a simpler charging structure that is easier for customers to understand and respond to. We note that, in practice, for Manx Utilities, sewerage charges and water charges have not been cost reflective -see section 2.4.

4. Charges should take into consideration both the cost of providing the utility service connection (access) and the quantity of service consumed (volume)
  - ❑ *Comment:* we understand this principle is intended to promote cost-reflectivity by recognising that some costs are fixed, whilst some depend on consumption. This principle is, therefore, at least partially covered by the principle of cost-reflectivity. More generally, tariff design and structures is a key element of this report and we consider the options in chapter 4.
5. Tariffs should be self-regulating – where options exist (eg. dual rate electricity tariffs) the tariffs themselves should encourage customers to adopt the appropriate tariff.
  - ❑ *Comment:* This is captured in large part by the principles of cost-reflectivity and simplicity. Where tariffs are cost-reflective there should be no need to place constraints on customers' choices. Cost reflective tariffs also avoid the need for multiple tariff options.

## 3.2 Potential additional principles

We provide some options below for additional charging principles. These are informed both by principles adopted in other jurisdictions, but also requirements of Manx Utilities as set out in legislation:

- ❑ **Transparency.** Transparency (along with simplicity) facilitates consumers understanding of charges and their ability to respond to them. The method and principles of charges, as well as the charges themselves, should be transparent, with bills clearly showing the components of charges. As noted in section 2.2, Manx Utilities is required to publicise aspects of its charges, most particularly for electricity.
- ❑ **Non-discrimination.** This means there should be no undue discrimination between customers, with customers having similar characteristics facing similar charges. Most typically, undue discrimination would be assessed against the costs to serve customers. To the extent that charges are fully cost reflective, then charges will be non-discriminatory. However, there can be practical limitations on cost-reflectivity (eg from limitations in metering and maintaining simple tariff structures) and a separate principle of non-discrimination may be beneficial.
- ❑ **Social, economic, industrial and environmental considerations.** Whilst it is economically efficient to have cost reflective charges, it may be socially desirable to set charges for some customer categories below cost; for example, customers on lower incomes or in remote areas or for economic reasons to attract industries that support the local economy. It is for Government to determine policy, but Manx Utilities should be mindful of published policy when setting charges. Similar consideration may arise for environmental factors and, again, Manx Utilities should be mindful of Government's published environmental policy when setting charges.

- ❑ **Encourage efficient use of electricity and water.** Cost-reflectivity helps to ensure the efficient use by customers of services. However, to the extent charges may not be fully cost reflective (for reasons already mentioned) then efficient use of water and electricity may be undermined. A separate principle for promoting efficient use of services may, therefore, be beneficial. We noted in section 2.2 that Manx Utilities has a function under the Electricity Act to promote the economical use of electricity, but there is no equivalent function or duty in the Water Act or Sewerage Act.
- ❑ **Cost recovery / revenue adequacy.** Charges should be set at a level, and be structured, so as to provide a reasonable prospect of the recovery of efficiently incurred costs. This principle is, in effect, present through the Electricity Act and Water Act both requiring revenues to cover costs and appropriate allocations to reserves. As already noted (see section 2.2), the Sewerage Act has a different emphasis, with Manx Utilities considering the costs of functions to which charges relate.

### 3.3 Recommendation

We recommend that Manx Utilities charging principles are amended to be as follows:

- ❑ *Simple and transparent* - charges, and the approach to setting charges, should be simple, transparent and easy to understand
- ❑ *Stable* - charges, and the approach to setting charges, should be stable (with changes in charges implemented smoothly over time)
- ❑ *Non-discriminatory* - there should be no undue discrimination between customers, with customers having similar characteristics facing similar charges
- ❑ *Encourage efficient consumption* - charges should encourage efficient consumption decisions by consumers
- ❑ *Cost-reflective* - consumers' charges should reflect the costs they impose, unless justified by other charging principles
- ❑ *Consistent with government's policy* - charges should be set mindful of government's social and environmental policies
- ❑ *Cost recovery* - charges should be set to provide a reasonable prospect of the recovery of costs.

## 4 Tariff design

The existing tariffs and charges for electricity, water and sewerage services supplied by Manx Utilities are reproduced in Figure 9 below.

**Figure 9 Existing Manx Utilities tariffs and charges (2018/19)**

<b>Electricity</b>			<b>Water</b>	
	Unit Charge per unit	Standing Charge per day		Charge
Domestic & Prepayment	16.3p	19.5p	Domestic Water per Rateable Value of the property	£3.418
Domestic Comfy Heat	16.3p			
	7.1p		Standard Metered Supply per Cubic Metre	£2.13
Electric Vehicle	16.3p			
	8.9p			
Sustainable Generation	-8.9p*			
Commercial	16.3p			
Commercial Plus	16.3p			
	7.1p			
Economy 8 Commercial	16.3p			
	8.1p			
Demand	14.2p	34p	Sewerage per Rateable Value of the property	£0.98
Economy 8 Demand	14.2p			
	8.1p		Septic Tank Emptying per tank empty up to 9,000 litres	£150.00
High Load Factor	9.1p			
High Volume	13.2p			
High Volume 2 rate	13.2p			
	8.1p			
Public lighting	15.6p	0p		

\* payment for electricity units generated and sold to Manx Utilities

<b>Industrial Fixed Charges</b>		
<b>Monthly Demand</b> per kVA	<b>Agreed Service Capacity</b> per kVA	<b>Reserve Demand<sup>^</sup></b> per kVA of Generation
£2.20	£1.20	£3.40

<sup>^</sup> Industrial Private & Sustainable Generation Customers only

Source: Manx Utilities, Statutory Notice, valid from 1 April 2018

There are a number of legacy tariffs for a small number of customers. These tariffs are not available to new customers but have been retained for existing customers. We would recommend that customers are either migrated to the corresponding current tariff or, where there is a choice of more than one current tariff customers are given the choice of the available options or are migrated to the default option.

## 4.1 Approach

The following sections discuss proposed changes to the designs of existing tariffs. In considering tariff designs we are guided by the tariff principles in section 3, particularly in relation to cost reflectivity, simplicity, ease of implementation, and social considerations. However, in relation to changes to the existing tariffs, we also adopt the principle of consistency and to avoid change unless change is warranted.

### 4.1.1 Cost-reflectivity, economic tariffs and financial tariffs

We assess cost reflectivity based on marginal economic cost of supplying a customer with a kWh of energy at a given time of the day or a kW of peak network or electricity generation capacity, a m<sup>3</sup> of water, etc. But economic costs are forward looking and do not reflect Manx Utilities' historical costs. The economic-based tariff designs are then adjusted or scaled such that they achieve the revenues required for financial sustainability using a revenue simulation model.

### 4.1.2 Organisation of the discussion of tariff designs

The discussion of tariff designs considers:

- ❑ The choice of customer categories
- ❑ Special social tariffs
- ❑ Green tariffs (for electricity)
- ❑ The basis for charging customers – standing charges, unit charges (kWh, m<sup>3</sup>, maximum kW), contracted capacity
- ❑ Time-of-use charges (seasonal, day of the week, hour of the day) – this applies to electricity
- ❑ Discounts

The discussion also takes account of Government policy considerations relating to the environment and the promotion of local economic activity.

The discussion is divided into electricity (section 4.2), water (section 4.3), and sewerage (section 4.4). An analysis of the impact on customers is described in section 5.

## 4.2 Electricity

The existing electricity tariff comprises the categories and designs shown below.

### 4.2.1 Tariff categories

There are four main customer groups shown above including:

- ❑ domestic,
- ❑ commercial,
- ❑ industrial: demand, high load factor, high volume, and
- ❑ public lighting.

The demand, high load factor, high volume grouping is not formally categorised based on the type of business. Customers qualify to be assigned to these more favourable categories based on their usage or consumption patterns:

- ❑ TOU (Economy 8, 2-rate) – at least 30% of consumption occurs at night
- ❑ High Load Factor – those with a (monthly or annual) load factor exceeding 70%
- ❑ High Volume – those with a consumption exceeding 1,000 MWh per year<sup>20</sup>

There is, additionally, a sustainable generation tariff for those with solar photovoltaics (or other renewable energy) that export electricity to the grid, and there is a special tariff for customers with Electric Vehicle (EV) charging.

We note there is no categorisation based on **voltage of supply**. Voltage is a common way to differentiate cost of supply. Those supplied at higher voltages tend to impose lower network costs on the utility. This is because electricity supply is normally stepped down from high voltage networks to medium voltage and then low voltage networks and a customer who taps off the system at medium or high voltage avoids costs relating to the lower voltage network. Guernsey, Jersey and Cyprus all differentiate based on voltage of supply, though Alderney and Malta do not. Voltage is not, however, a perfect indicator of the cost of supply because a customer may connect to the medium voltage network when it is located some distance from the main grid and the network costs may be higher than those of a customer who is closer to the main grid but connected at low voltage. Manx Utilities does differentiate customers based on their consumption level and this is an alternative indicator of network costs. **We would not propose that Manx Utilities change the volume categorisation and differentiate by voltage.** This implies that Manx Utilities should retain the criterion that a customer should consume more than 1,000 MWh per year to be placed in the High Volume category.

We would, however, propose to **remove the High Load Factor category**. If the demand/capacity charges and unit charges are cost reflective, a customer with a high load factor is automatically rewarded with lower electricity costs than one with a low load factor. Provided the tariff components are cost reflective (discussed below), it is unnecessary to have a special category based on load factor.

We discuss TOU tariffs below and also discuss the qualifying criteria for placing customers in the TOU categories.

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<sup>20</sup> Approximately 160 kW maximum demand.



### 4.2.2 Special social tariffs

It is relatively unusual for electricity utilities to have special social tariffs, though sometimes the domestic tariff can be designed in such a way that it cross-subsidises customers who may be more likely to have lower incomes. Increasing block tariffs (for example, with a low price for the first 100 kWh per month and a higher price for the next 400 kWh, etc) are sometimes thought to benefit low income households to the extent that low consumption is correlated with low income. Similarly, a fixed monthly standing charge is reflective of the structure of electricity supply costs, but can seem expensive for customers with low electricity consumption. It is sometimes argued that the fixed charge should be abandoned in the interests of supporting those with low income. However, the level of consumption is an imperfect indicator of income and increasing block tariffs and zero standing charges would benefit those with second homes and penalise large families living in poor quality housing with high heating costs. In addition, abandoning standing charges would not be cost reflective.

Increasing block tariffs are not used in Alderney, Guernsey or Jersey. They are used in Malta and were used in Cyprus until recently but have now been dropped except for households in the vulnerable category (based on state welfare support payments and disablement categories).

In EU countries, subsidies or subsidised rates are only permitted as ‘public service obligations’ that are specifically notified to the EU and approved by the EU. In Cyprus, for example, households may be classified as having large families and there is a special low electricity tariff for such families. In England and Wales (E&W), special tariffs are also available for families who qualify for certain state benefits.

Manx Utilities does not have a special social tariff though it does charge the same price to those with pre-payment meters as it does to those with conventional meters and it additionally provides, free-of-charge, the services of a Home Energy Officer to advise customers how to reduce their electricity consumption. **We would recommend against the use of increasing block tariffs and against abandoning the standing charge** as these are generally not well targeted. If welfare support arrangements on the Isle of Man need to be enhanced through special electricity (and water) tariffs, we would **suggest that Manx Utilities discuss the possibility of social tariffs targeted at households in defined welfare support categories**. The cost of this subsidy could then be covered by raising the tariffs to all other customers (not only other domestic customers) as a form of tax (if it is legal to do so). Alternatively changes to the existing benefits system could be made to achieve similar purposes.

### 4.2.3 Green tariffs

There are two tariff categories for electricity that have an environmental dimension - the Electric Vehicle and Sustainable Generation categories.

The Electric Vehicle tariff has a 2-rate structure with the peak price charged at the standard domestic tariff and the off-peak rate at a lower price. Cost reflectivity suggests that these tariffs should be increased – and these cost-reflective prices are the ones shown in section 4.5 – but environmental policy would suggest that lower prices could be adopted to encourage the use of Electric Vehicles on the Isle of Man if this is consistent with Government policy.

Similarly, the Sustainable Generation tariff offered to customers with own generation who sell the surplus to the network (net metering) is higher than the costs that are avoided by Manx Utilities. Since Manx Utilities' network and generation capacity costs are largely fixed, the benefit to Manx Utilities of the electricity purchased from customers with sustainable generation is that it allows Manx Utilities to sell more electricity into the market in GB. The wholesale price obtained, net of losses, is relatively low. Cost reflectivity would suggest that these prices are lowered (as shown in section 4.5) but Government policy considerations may favour a continuation of this subsidy to customers with renewable energy self-supply.

#### 4.2.4 Tariff components

Our main comments on the components of the existing electricity tariffs relate to TOU charges, and these are discussed in the next sub-section.

**Standing charges** are charges that recur monthly (or bimonthly, quarterly or annually) and do not vary with quantities supplied. As a minimum they should cover costs that do not vary with units of electricity sold, or maximum demand, or the maximum capacity of the network provided. Such costs include billing, revenue collection, meter reading, and the customer services (customer applications, call centres, complaint handling) that will increase or decrease with customer numbers but do not change with kWh sold. Standing charges may also be introduced to reflect in part the fixed nature of the costs of electricity supply. In particular, in the Isle of Man, much of the cost of electricity supply, particularly the network costs, do not vary significantly with the volume of electricity supplied. However, standing charges for domestic customers in the Isle of Man are 19.5p per day which is reasonable when compared with Jersey at 15.3p pence per day (+general sales tax), Guernsey at 19.7p per day and Flow Energy, which has one of E&W's higher standing charges, at 21.3p per day. We would suggest that this is not increased other than with inflation. For larger customers the fixed charge could potentially be increased as larger customers tend to require greater care and higher quality responses, but the fixed charges are likely to be very small relative to their overall bills and there could be an argument for removing these charges altogether. However, we have assumed these are retained.

**Maximum demand charges** apply to the highest instantaneous<sup>21</sup> electrical power consumed by a customer over a month. Manx Utilities has a number of larger 'demand' customers whose charges include a demand charge of £2.2 per kVA per month. This is relatively low by comparison with other utilities similar to Manx Utilities. Jersey Electricity, for example, charges £8/kVA in winter and £6/kVA in summer for MV customers and the charges are higher for LV customers (£8.50 and £6.50 per kVA in winter and summer respectively). Guernsey Electricity charges its demand customers £13.75 per kW<sup>22</sup> of maximum in winter (and nothing in summer).

Maximum demand charges serve a similar purpose to TOU charges; both encourage customers to reduce their demand at time of system peak, particularly if the demand charge varies depending on the time that the peak demand occurs (as, for example, in Jersey and to a greater extent in Guernsey where the demand charge varies seasonally). Demand charges and TOU tariffs have different incentives, with TOU tariffs giving better incentives in

<sup>21</sup> In practice measured as the average over a half-hour or an hour.

<sup>22</sup> One kW is described as 'real' power while kVA is 'apparent' power. A kW can be thought of as approximately 90% of apparent power (dependent on the power factor) and a charge of £13.75 per kW is equivalent to a charge of around £12.4 per kVA.



relation to electricity generation/import costs and demand charges more effective in relation to network costs. ECA tends to favour TOU tariffs over demand charges but this can be debated. With electronic meters, it is possible to use complex combinations and both demand charges and TOU charges can be used. Manx Utilities currently uses both, as does Jersey and Guernsey Electricity. As discussed below, Manx Utilities' demand charges are relatively low but this is balanced by relatively high peak TOU tariffs.

**Capacity charges** are based on a contracted capacity. Customers estimate the maximum capacity that they need and the utility takes this into account when planning the network capacity and planning the generation to supply its load. For a utility, the information on maximum demand provided through contracted capacity contracts is more reliable than general forecasts provided by customers without incentives to be accurate. Nevertheless, the customer is able to exceed the contracted capacity if it needs to and if it is willing to pay the associated penalty rate. Charges for contracted capacity also help provide greater revenue certainty to the utility. Capacity charges are currently imposed for all demand customers. We strongly support the use of capacity charges. The level of the charges is somewhat arbitrary because a large part of Manx Utilities costs are fixed, but the current level of capacity charges appears low at only £1.2 per kVA, equivalent to approximately 0.25p per kWh.

#### 4.2.5 TOU tariff availability – optional or mandatory?

TOU rates are currently available for three of the four tariff groups (the exception is public lighting) in the Isle of Man.

Unusually, for customers in the TOU sub-categories, the peak rate for Manx Utilities is identical to the standard rate in the non-TOU tariff. Typically, for cost reflectivity and revenue neutrality reasons, the peak rate for a TOU customer would be **higher** than the standard rate and the off-peak rate would be **lower**. However, this is not universal practice. Jersey Electricity, for example, also offers an on-peak TOU price (e.g., Economy 20 Plus, rate 3) that is the same as the standard non-TOU rate (General domestic). In Guernsey, the peak TOU tariff is, as expected, more expensive than the standard tariff though not significantly more expensive. The Electricity Authority of Cyprus and Enemalta (the Maltese electricity company) also offer peak TOU charges that are higher than the standard non-TOU tariff. Alderney does not offer TOU tariffs.

TOU tariffs with peak prices that are the same as the standard tariff give stronger incentives to every customer to move to the TOU tariffs. The only downside to the customer of adopting TOU tariffs would relate to the standing and meter charges if these are more expensive for TOU customers.

Cost reflectivity implies that TOU tariffs should be mandatory for larger customers. This is because customers who wish to avoid the TOU are typically those who have 'unsympathetic'<sup>23</sup> load profiles that are more expensive to supply (i.e., their peak demands coincide with the periods when supply costs are highest). (See Figure 11 below for Manx Utilities aggregate load profile). However, few utilities make TOU tariffs mandatory except sometimes for relatively large customers.

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<sup>23</sup> Profiles that mirror or exaggerate Manx Utilities' aggregate load/cost profile. A customer with a sympathetic load profile is one that has a relatively flat load 24/7 or, less likely, one who has relatively low consumption during the day and early evening.

Because the TOU tariffs in the Isle of Man currently have no disadvantages to customers in terms of higher peak charges, Manx Utilities rations TOU tariffs to those who consume 30% or more of their electricity during the night/off-peak period. In the case of domestic customers the Comfy Heat tariff is only available to customers with a minimum of 6 kW heating load. This is, effectively, seen as a volume discount which is not justified for cost reflectivity reasons or the volume discount may be seen as a discount for poor households that are more likely to be reliant on electrical heating.

**We suggest that the TOU tariffs for domestic customers are optional but revised such that the peak tariff is more expensive than the non-TOU tariff. There would then be no need to apply a rule that customers should use more than 30% of their energy at night to qualify or should have a minimum of heating load.**

**For domestic customers, we suggest that customers should only be allowed to switch to the TOU tariff when the AMI programme is approved** so that the customers will be able to take advantage of new smart meters.

#### **4.2.6 TOU periods and costs by TOU period**

The choice of TOU period – whether there should be one, two, three or more periods and the length of those periods – should depend on the time pattern of costs. These costs comprise:

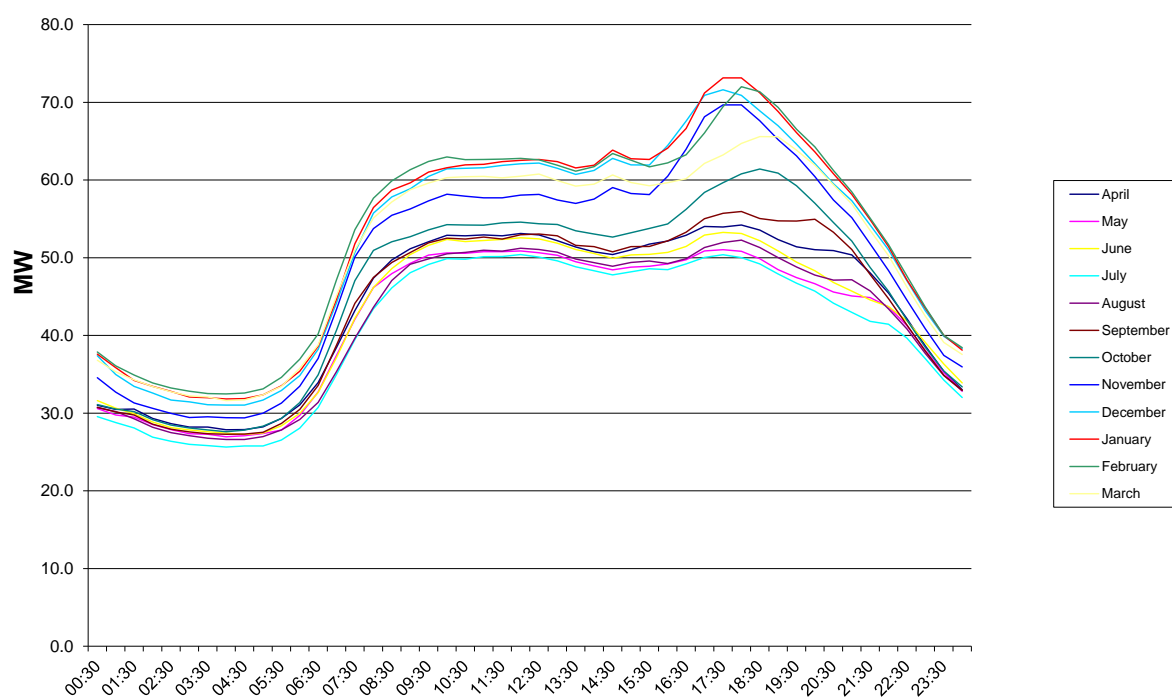
- ☐ the short-term costs (that vary per kWh supplied), and
- ☐ long-term costs (the network and generation capacity costs)

These in turn depend on the pattern of demand on the network.

#### **4.2.7 TOU periods and costs by TOU period – short-run costs**

In the Isle of Man, during a typical working day, the load peaks in the early evening at around 18:00 in the winter, as shown in Figure 10 below. The load builds up in the morning to reach a shoulder at around 08:00 where it stays until around 22:00 in the evening. The low load period is between 23:00 and 07:00. During the late spring and the summer months (April through to September), there is a similar pattern though without the evening peak or with a much less pronounced evening peak.

Figure 10 Weekday average load (2017/18)



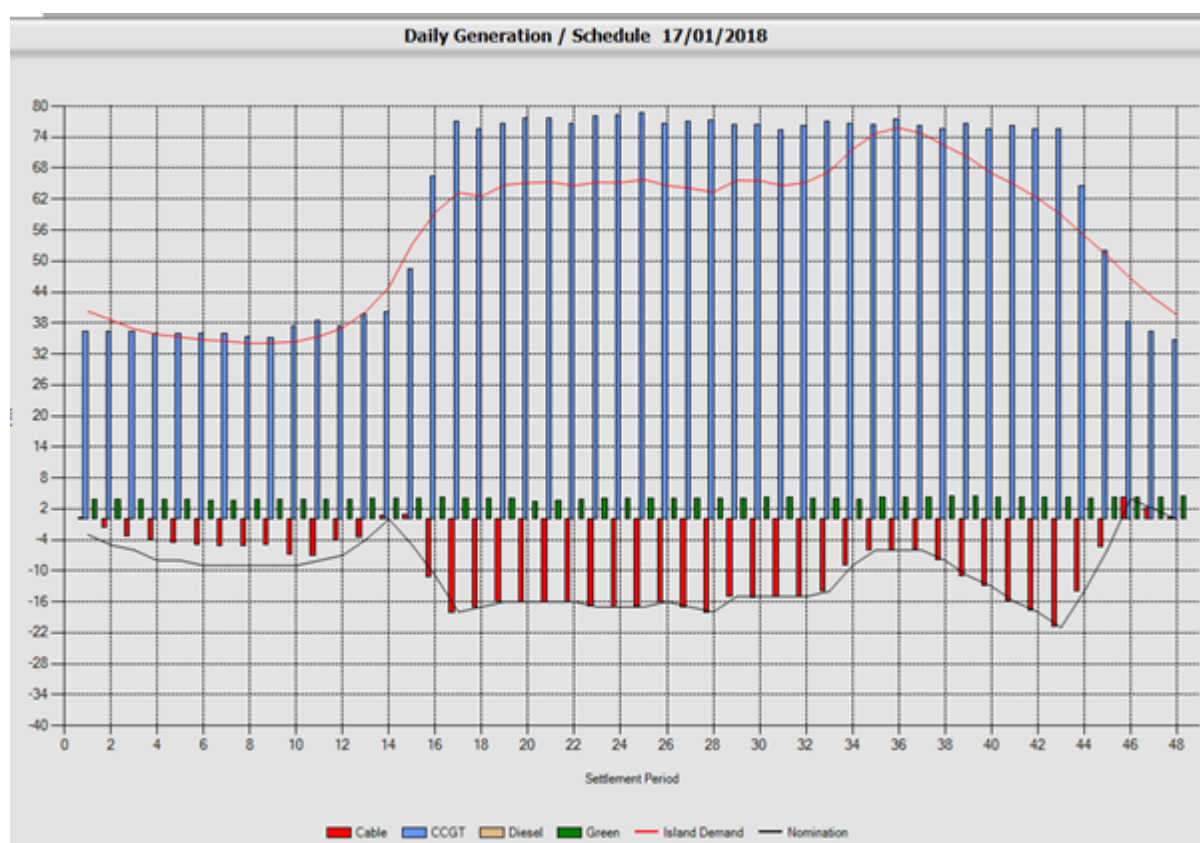
Source: Manx Utilities

The weekend days show a similar pattern, with little difference between the weekend and weekdays in terms of the level of aggregate system load. Figure 10 suggests that the peak load is driven substantially by domestic demand resulting from lighting and other activities in the early evening as families return home.

Figure 10 also indicates that the load peaks in the winter between November and February, with the summer months (April through to September) with considerably lower demand than during the winter. March and October are intermediate between these two.

Figure 11 shows how electricity is supplied through the day and night during a weekday in January 2018. During the night, the Pulrose power station operates with one gas turbine and the steam turbine and it exports any surplus or imports any deficit. As demand increases in the morning, but before it is technically and economically efficient to start the second gas turbine, the load is initially taken up with electricity imported from the market in mainland Great Britain (GB). Then as demand increases further the second gas turbine is started up and Manx Utilities starts exporting to mainland GB. The reverse happens as demand reduces in the late evening.

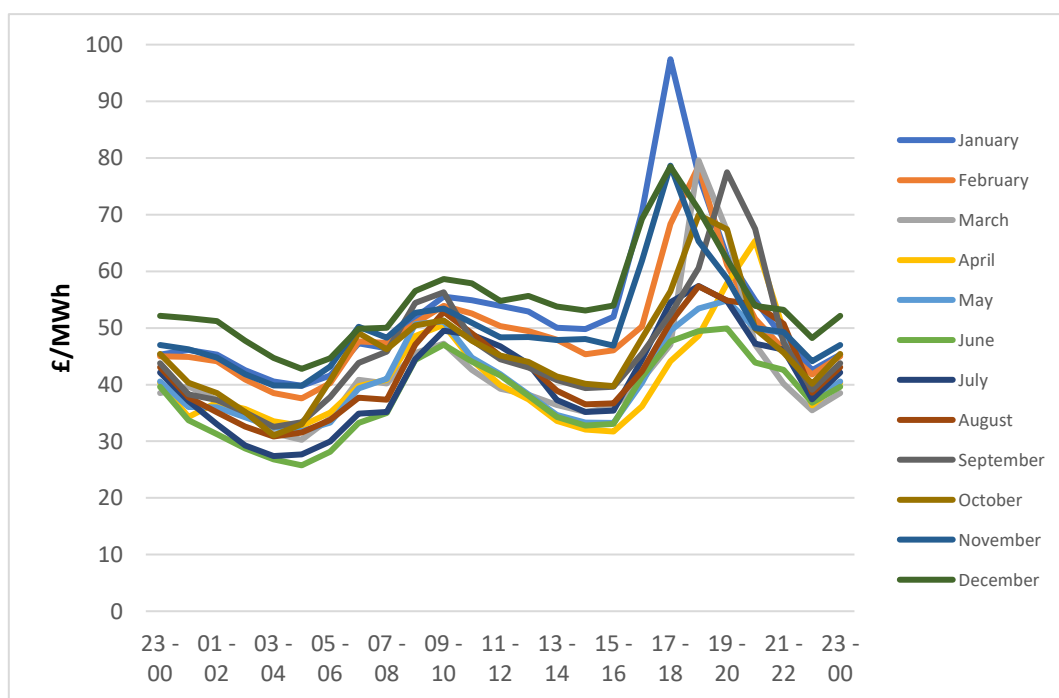
Figure 11 Daily load and generation schedule



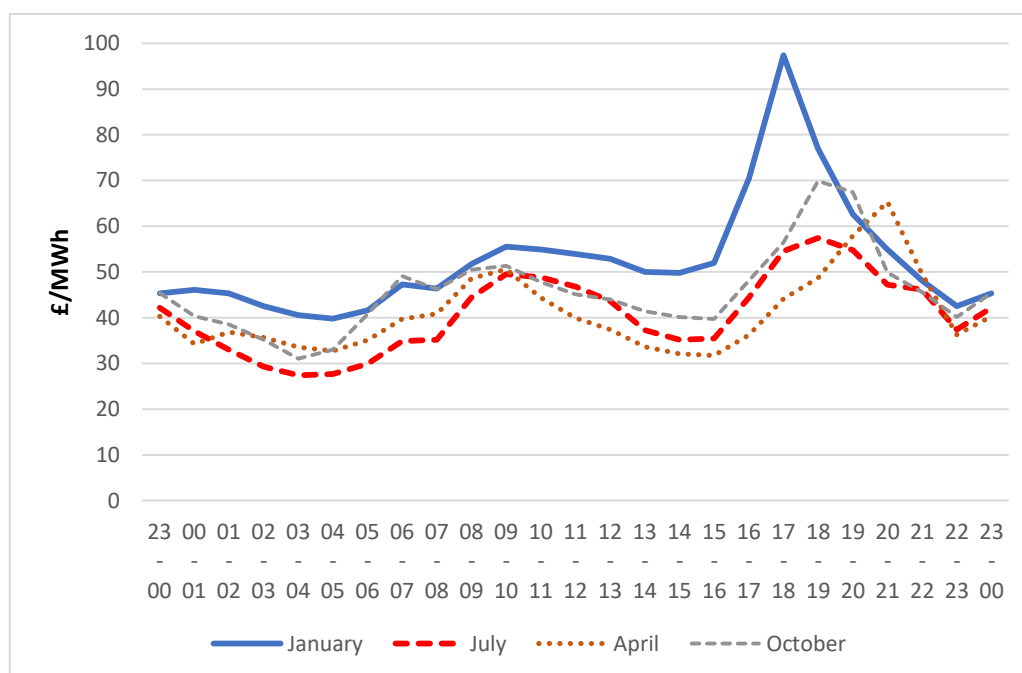
Source: Manx Utilities

Even though the Isle of Man is virtually self-sufficient in electricity generation, it trades electricity with mainland GB and the capacity of the interconnector is such that there are few constraints to that trade. The economic cost of wholesale electricity supply in the Isle of Man is therefore the mainland GB wholesale electricity price. In economic jargon, this is the opportunity cost and the opportunity cost in a market is the marginal cost. At times when Manx Utilities is exporting into the mainland GB market (which is most of the time), a kWh sold to a customer in the Isle of Man is a kWh that is not sold to the mainland GB market (taking account of losses). Similarly, at times when Manx Utilities is importing from the mainland GB market (early morning when the load is growing but it is not yet cost effective to bring the 2<sup>nd</sup> gas turbine into operation and late evening when the load is dropping) a kWh sold to a customer in the Isle of Man is a kWh that must be imported from mainland GB. The mainland GB market is therefore the benchmark for the economic cost of wholesale electricity supply for Manx Utilities and should guide the relative TOU prices and the structure of the TOU periods.

Figure 12 and Figure 13 below show monthly average prices for the year 2017. These show a sharp evening spike in prices in January between 17:00 and 18:00, but more generally it shows less pronounced evening spikes in the winter months (November to March) over the three hours 17:00-20:00.

**Figure 12 Mainland GB market prices - monthly averages by time-of-day**

Source: Nordpool, Historical Market Data, N2EX Day Ahead

**Figure 13 Mainland GB market prices - monthly averages by time-of-day in four months**

Source: Nordpool, Historical Market Data, N2EX Day Ahead

Technical losses are higher during times of peak demand<sup>24</sup> than they are at other times, and the higher costs of technical losses also need to be reflected in peak charges (demand and/or peak energy charges).

The opportunity costs relating to triad payments<sup>25</sup> in the E&W market (NGT's<sup>26</sup> transmission charges) at peak times might also need to be factored into the calculations of time-related costs and periods. To the extent that loads in the Isle of Man are correlated with those in E&W, the opportunity costs at peak times will include the loss of revenues from triad payments in the E&W market and this will tend to magnify the time-of-use costs indicated in Figure 13 above.

#### 4.2.8 TOU periods and costs by TOU period – Capacity costs

Capacity costs relate to the cost of meeting peak demand – both the cost of peak generation and network costs. Peak generation costs are reflected in the mainland GB market prices, but not the network costs. The network must be constructed to supply the peak demand. The exact date and time of the peak demand is not known in advance, though the tendency to peak at certain times of the day and times of the year are known (i.e., winter, at around 18:00 hours).

The trend of load over time is shown in Figure 14 below<sup>27</sup>. The downward trend in demand is significant for the design of tariffs. Peak prices (demand charges or peak TOU charges) are designed to partly reflect the cost of meeting **load related** growth in demand<sup>28</sup>. The timing of the replacement of existing assets is unaffected by the level of load growth and is not therefore considered a load related investment cost. With demand falling over time, this changes the basis for estimating demand charges or peak TOU charges to reflect **network costs**. With declining demand, when the existing assets reach the end of their economic lives and need to be replaced, the capacity of the asset replacement will depend on the level of demand and this could be used to estimate load related changes in costs<sup>29</sup>. In theory this could be estimated but it is impractical to ask Manx Utilities to provide the data necessary

<sup>24</sup> This is purely for technical reasons - copper losses increase with the square of the current (losses =  $I^2R$ , where  $I$  is the current (Amps) and  $R$  (ohms) the resistance and the losses are in Watts). The relationship between average losses and peak losses is often based on a standard equation where peak losses are average losses (%) divided by  $(0.3 + 0.7 \times \text{Load Factor})$ , so that the higher the load factor the closer are the peak losses to the average losses.

<sup>25</sup> This relates to NGT's charges for transmission use-of-system in the GB market. The charges are levied per kVA of demand at the three times of maximum demand on the GB transmission network. Manx Utilities is able to earn revenue by reducing its demand at these times.

<sup>26</sup> National Grid – Transmission. The GB electricity transmission company.

<sup>27</sup> The seasonal load pattern here appears to be overshadowed by a downward trend in electricity demand over time. This appears to contradict the seasonal pattern in Figure 10. Instead of one year cycles, this appears to show a three year cycle, though this is purely accidental.

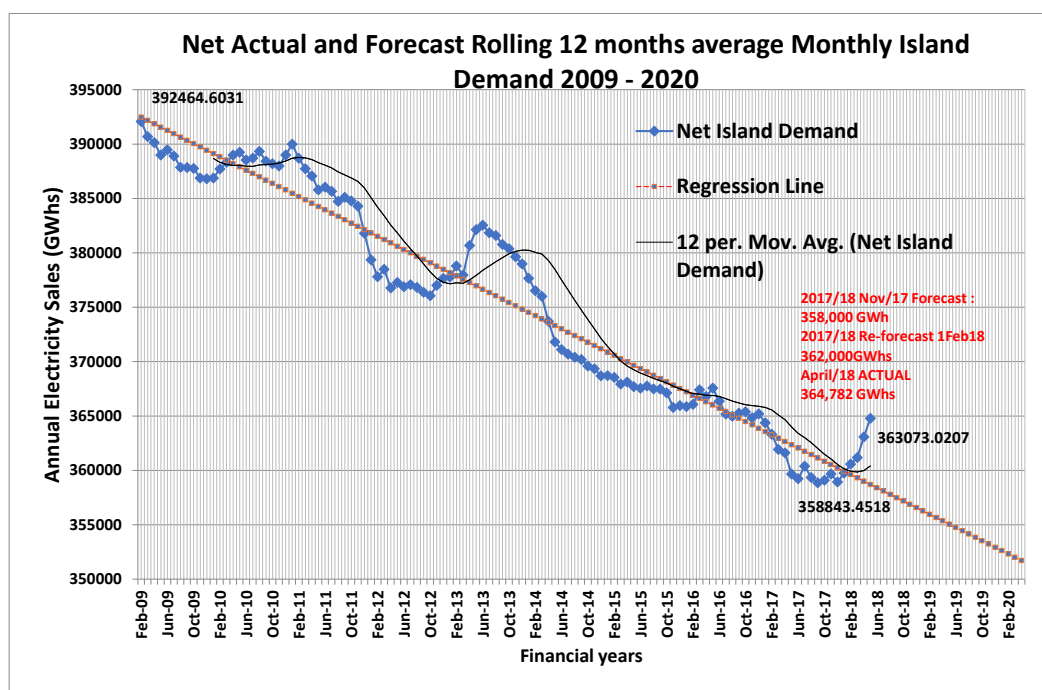
<sup>28</sup> Tariffs are designed around marginal costs, and marginal costs are defined as the change in cost resulting from a change in demand. This is typically calculated using long-run average incremental cost (LRAIC). There are several variants of LRAIC but all rely on data that is normally available from medium-term network investment planning. With falling demand, the definition of marginal costs is more complex and data to calculate marginal costs is generally not available.

<sup>29</sup> This would require an assessment of how asset replacement costs in 5, 10, 15 and 20 years time would differ from the base case projections of asset replacement costs if the level of demand at those time horizons were slightly higher or slightly lower than those used in the base case load forecast. This would be a complex exercise for any utility, including Manx Utilities.



for this calculation. In any case, with discounting, the load related differences in future asset replacement costs are likely to be relatively low compared with a situation where load is growing. We would therefore propose that the demand charge and the capacity component of the peak energy charge should be based on judgement and practice in other jurisdictions.

**Figure 14 Seasonal pattern of load and trend over time**



Source: Manx Utilities

#### 4.2.9 TOU periods and prices – Practice in other jurisdictions

The ratios of peak to off-peak prices in various jurisdictions are shown below in Table 2. With the exception of Alderney and Cyprus, the utilities listed in Table 2 are interconnected with mainland Europe and their cost drivers are likely to be broadly similar, though not identical. Jersey and Guernsey, for example, have long-term contracts with EDF<sup>30</sup> that include a fixed price component and a component that depends on the European (EEX<sup>31</sup>) market price. Though there is coupling between the French and mainland GB markets, the prices are far from identical.

Cyprus has a complex TOU tariff that differs by season (summer from June to September, and the rest of the year), with the peak/off-peak hours that differ by season (7 off-peak hours in the summer and 17 in the winter) and a sharper ratio of peak to off-peak prices in the summer when demand is highest. Though not shown, in Cyprus there is also a different rate on weekdays and weekends.

<sup>30</sup> Électricité de France. The contract was initially for 10 years, 2013-2022 but was then extended by 5 years to 2017.

<sup>31</sup> European Futures Exchange.

**Table 2 Examples of ratios to peak/off-peak prices in other jurisdictions**

	# periods per day	# off- peak hours	Ratio (peak to off-peak prices)	Notes
<b>Isle of Man</b>				
Domestic	2	8	2.3	00:00-06:00 and 14:00-16:00
Commercial	2	8	2.3	23:00-07:00
High Volume 2 rate	2	8	1.6	23:00-07:00
<b>Alderney</b>				No TOU tariffs
<b>Guernsey</b>				
Domestic - Super economy 12	2	12	2.4	
Industrial economy	2	10	2.0	
<b>Jersey</b>				
Domestic - Economy 20 (& Plus)	2	4	1.4	
Domestic - Comfy Heat	3	8	1.3	
Domestic - Economy 7	2	7	2.0	
Domestic - Economy 7 MD (HV)	2	7	1.4	Demand charge differs by season
Commercial – standard				Identical to domestic
Commercial – MD Economy 7 LV	2	7	1.5	Demand charge differs by season
Commercial – MD Economy 7 HV	2	7	1.4	
<b>Cyprus</b>				
Domestic – Two rate	2	10	1.2	23:00-09:00
Industrial & Commercial LV - Summer	2	10	1.5	Also a weekend rate
Industrial & Commercial LV - Winter	2	17	1.1	Also a weekend rate
Industrial & Commercial MV - Summer	2	10	1.5	Also a weekend rate
Industrial & Commercial MV - Winter	2	17	1.1	Also a weekend rate
<b>Malta</b>				
Non-domestic	2	Undefined	1.2	Premium for peak hours and discount for off-peak hours

Source: Websites of the respective national utilities

#### 4.2.10 Off-peak tariff period between 14:00 and 16:00

The discounted tariff for Comfy Heat customers between 14:00 and 16:00 has some commercial and economic logic as there is a tendency for mainland GB market prices to dip a little at around that time – though the actual dip seems to take place between 15:00 and



17:00 (see Section 4.2.6). The opportunity cost to supply customers during this period is not as high as it is during the mid-day and evening peaks. This period – the afternoon lull – does not represent peak load on the network and so network costs do not need to be concentrated in this period. For customers there some benefit in boosting storage heating during this period or heating the hot water. So the pricing strategy is not unreasonable.

Other jurisdictions also offer some similar incentives, though potentially for different reasons. Customers on the Comfort Heat tariff in **Jersey**, are able to use electricity for heating and hot water heating at the off-peak tariff for 2 hours during the day time (between 10:00 to 17:00) and for another 2 hours during the evening (between 19:00 to 24:00) as well as for 4 hours during the night (between 00:00 to 07:00). The commercial logic does not appear to exist except as a way to attract customers to electric heating through discounted prices that are cross-subsidised by other consumers. **Guernsey** offers a similar arrangement in the Super Economy 12 domestic tariff where the off-peak tariff is for 10 hours at night and for another 2 hours during the day between 12:00 and 16:40; this may have an underlying economic logic. **Cyprus** also offers such a scheme, though it is not well publicised but is not justified based on the cost of electricity supply. Alderney and Malta do not offer TOU tariffs for domestic customers.

#### 4.2.11 Prompt payment discounts

Prompt payment discounts of 1% are currently given to customers who pay within a prescribed period. The discount should reflect a combination of avoided administrative costs in chasing customers for payment (largely automated though management time may be incurred when arrears lengthen) and the opportunity cost of working capital at times when cash flows are negative. With the current cost of borrowing very low, the latter component is low and well below 1% and the balance will cover avoided administration costs of handling arrears. The 1% discount appears reasonable for electricity.

#### 4.2.12 Summary of proposed revisions to tariff designs

Our main conclusions regarding tariff designs for electricity are as follows:

- ❑ **Tariff categories:** We propose that Manx Utilities drop the high load factor category<sup>32</sup> for larger industrial customers but keeps the high volume category. The industrial tariff already captures the benefits of having a high load factor and it is not therefore necessary to distinguish a separate category. We also propose that there be a single high volume 3-rate time-of-use (TOU) tariff category, with all customers consuming more than 1,000 MWh per year included in this category.

We also propose that there be a single standard industrial (or Demand) category with three TOU rates to provide greater cost reflectivity.

- ❑ **Social tariff:** We propose no change to the current arrangements. Prepayment meter customers are currently charged the same price as post-paid customers – and this effectively gives such customers a discounted tariff. Manx Utilities

<sup>32</sup> A high load factor customer has a relatively flat consumption profile over the day and year. This results in lower average cost to supply than a customer with a variable consumption profile.

might consider the option of special targeted tariff for customers in receipt of certain welfare benefits but we note that this would require cross-subsidisation from other customers.

- ❑ **Green tariffs:** Analysis suggests that the current green tariffs do not reflect the costs of electricity supply (in the case of electric vehicles) or Manx Utilities' avoided costs (in the case of purchasing surplus renewable generation). A decision to maintain prices that deviate from cost reflectivity seems consistent with Government policy but should ideally be confirmed by Government. (Note the prices shown in section 4.5 are cost reflective without adjustment for policy).
- ❑ **Tariff components:**
  - ❑ **Demand charges:** These charges are based on customers' maximum demand (kW rather than kWh) and are designed to reflect the cost of providing peak capacity. The economic cost<sup>33</sup> of meeting peak demand on the Isle of Man is currently very low because demand is falling and new investment is not required. Despite the low economic costs, revenues must still be collected to cover Manx Utilities' historical capacity costs and, although such costs could be collected as a mark-up on all kWh sold, we recommend that these revenues are collected primarily from electricity used during the peak hours – either through demand/capacity charges or through peak TOU charges.

We recommend that capacity charges be used to recover network costs and to charge this on the basis of contracted demand (rather than maximum demand). Additionally we recommend that energy charges are used to reflect the costs of electricity generation and imports on a 3-rate TOU basis.

  - ❑ **Standing charges.** A large part of Manx Utilities costs are fixed and its marginal costs are low. This suggests that tariffs should be rebalanced toward more fixed charges (standing charges and/or capacity charges). The report proposes that this rebalancing is done through capacity charges for industrial (demand) customers. For smaller customers capacity charges do not apply and there could be an argument for increasing standing charges (per connection per day) to reflect some of the fixed costs that Manx Utilities faces. However, the existing levels of standing charges are not unreasonable and we would therefore suggest that these are only increased over time with inflation.
  - ❑ **Discounts:** We suggest that the prompt payment discount be kept at 1% for electricity as it is consistent with the cost savings to Manx Utilities.

The information available on the marginal cost of supply by TOU period suggests the following regime for the Isle of Man:

- ❑ Retain the current optional TOU tariffs for small customers (domestic and commercial).

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<sup>33</sup> This is based on forward-looking "marginal costs". See for example, *What are marginal costs and how to estimate them*, Prof. Ralph Turvey, University of Bath, 2000.

- ❑ Make TOU tariffs mandatory for larger customers.
- ❑ Remove the eligibility criteria for TOU tariffs (this needs to be combined with changes to the other tariff design changes proposed).
- ❑ Introduce three TOU periods within the day (peak, shoulder and off-peak).
- ❑ The period 22:00-07:00 (9 hours) would be the off-peak period compared with 8 hours at present (there could be an argument for putting 22:00-23:00 into the shoulder period, but this would complicate the tariff further. The shoulder period should be 07:00 to 17:00 (10 hours) and the peak period from 17:00 to 22:00 (5 hours).
- ❑ We suggest that the discounting of the cost of electricity between 14:00 and 16:00 for Comfy Heat customers reflects the opportunity cost of wholesale electricity but if it can easily be programmed to 14:30 to 16:30 this would reflect costs more accurately.

## 4.3 Water

### 4.3.1 Conclusions of a Paper in 2015

The sewerage and water charging regimes were reviewed by Consultants to Manx Utilities (Cornwall Energy) in a Paper in 2015<sup>34</sup>. The main recommendations of the review were:

- ❑ If domestic water metering is not introduced, and the present rating system is replaced with a capital value system, the sewerage charges should be adapted to a capital value system. Until the rateable value system is reformed, the current charging based on rateable value should be retained. By extension, this recommendation would also apply to water charges.
- ❑ It recommended against household occupancy as a basis for charging because it does not have the merit of allowing customer management of usage and yet it has the demerit that high occupancy is likely to correlate with low income and the charges would have a negative social impact. The Paper found that only Ireland charged for sewerage on the basis of household occupancy, though in relation to water, Jersey also charges per occupant.
- ❑ It argued that *“the economic case for introducing meters in the Isle of Man is very weak primarily as water supplies are not generally constrained and therefore have low marginal cost, meaning lower savings from leakage repairs and improved usage efficiency than in other regions of the British Isles”*.

These findings are discussed below.

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<sup>34</sup> Review of Sewerage Charging Regimes: a Paper for Manx Utilities; Cornwall Energy, 2015. Though the Paper's title refers to sewerage charges, it also covered water charges to some extent and some of the findings regarding sewerage charges are relevant to water.

## Charging on the basis of household occupancy

Charging on the basis of household occupancy would correlate to some extent with water consumption and therefore with the costs of water supply, but, as Cornwall Energy observe, charging on the basis of occupancy does not incentivise efficient use of water and would have negative social impacts. Only Jersey currently uses occupancy as the basis for water charging (Ireland briefly introduced charging based on occupancy, but has now reverted to funding through taxation). We would therefore also endorse their recommendation against the use of occupancy to charge households. The option of a single person discount is discussed below.

## Water metering

The findings of Cornwall Energy in relation to water metering were based on analysis originally undertaken by Ofwat and applied to the water resource constraints, or lack of constraints, on the Isle of Man. Similar analysis in other jurisdictions with good water availability reached similar conclusions. The drought in the summer of 2018 was challenging for the water industry in E&W and also for Manx Utilities but this was an exceptional event and foreseen as part of normal investment planning that anticipates rare events. The conclusion still remains that the Isle of Man is not a water constrained environment. Water metering is currently not mandatory for domestic customers in the Channel Islands and Scotland and in much of E&W<sup>35</sup>.

The analysis by Cornwall Energy was conducted before a decision had been taken by Manx Utilities to roll out smart meters and AMI for electricity. The availability of AMI for electricity provides an opportunity to lower the costs of meter reading. However, for Manx Utilities the staff engaged in meter reading for electricity could also have undertaken the meter reading for water, so the extra costs relating to water meter reading will be relatively small (compared with E&W where electricity and water meter reading is done by different utilities). **The savings to water meter reading from the AMI roll-out for electricity in the Isle of Man will therefore also be small.** The cost-benefit analysis prepared by Cornwall Energy concluded robustly against metering domestic water consumption, and this finding will still hold after AMI is rolled out.

## But what if there is no need for local taxation, how does this impact the cost-benefit analysis?

The role of the Consultant is not to advise on the optimum basis for collecting revenues for local authorities. We understand that the review of the domestic rates system<sup>36</sup> conducted in 2015 did not consider the option of abandoning property taxes as the basis for raising income for local authorities on the Isle of Man. Should this be an option, then the choices for pricing water would be:

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<sup>35</sup> The water companies in E&W may make water metering compulsory in areas that are classified as severely water stressed (as well as for customers satisfying other criteria), primarily in the South-East of England. Some of the major water companies chose to apply for compulsory water metering including Southern Water, Thames Water and South East Water. Sources: House of Commons Library, Briefing Paper No. CBP 7342, 17 February 2016 and Ofwat.

<sup>36</sup> Consultation on the Reform of Domestic Rates, Treasury, March 2015.

- 1) Retain property tax partly for the purposes of charging for water
- 2) Introduce fixed charges per property (charges would not then be linked to any extent with property size or ability to pay)
- 3) Introduce water metering

The first of these then has a cost or a share of the cost of administering the property taxation system. Currently Manx Utilities pays £150,000 per year to Treasury to cover its share of the costs of administering the current system. This figure should increase if the cost of a revaluation or the cost of introducing a system based on capital values is recovered through these charges over time.

If the cost-benefit analysis of water metering recognised the cost of administering the system of property tax (at more than £150,000 per year), then the benefit/cost ratio for water metering edges upwards becoming more favourable to metering, though it still remains in favour of the status quo. It is however, quite sensitive to the assumptions regarding the value of greenhouse gas emissions and the savings in water consumption. Ofwat used values of £21/tonne for traded<sup>37</sup> CO<sub>2</sub> saved (and £52/tonne otherwise<sup>38</sup>), and 12.5% water consumption savings. Higher monetary values for CO<sub>2</sub> savings will raise the benefit/cost ratio in favour of metering, but lowering it and reducing the consumption savings (based on recent empirical evidence<sup>39</sup>) will again make the cost of metering higher than the benefit of metering. On balance, the analysis confirms that even if account is taken of the cost of administering the system of property taxation, Cornwall Energy's findings against water metering still remain valid.

### Charging on the basis of rateable value or capital value

We agree with Cornwall Energy's recommendations regarding the use of rateable value for water charges and, when it is replaced, the use of capital value.

However, in the Isle of Man the water and sewerage charges form the largest component of the rates bills to households. Normally, the system of local taxation can be taken as a given, but in the Isle of Man, the need to reform the rating system could be seen to be driven significantly by the water and sewerage charging framework rather than by local taxation. The question could therefore be asked: *"if local authorities (and churchwardens, etc.) are not required to collect their income through property taxes, would it still make sense for water and sewerage charges to be collected on the basis of property values?"* Or conversely: *"if Manx Utilities does not collect water and sewerage charges based on property value, would it still make sense for local revenues to be raised through property taxation?"* E&W, Northern Ireland, Scotland, Guernsey and Alderney all use property taxes as the basis for charging for water and sewerage – only Jersey and Ireland use occupancy (discussed above) – but in the jurisdictions where property taxation is used for water/sewerage charges, it can be assumed

<sup>37</sup> Traded in the European Trading Scheme. This scenario is possibly high. Prices are currently around €15 per tonne but a year ago were only €5 per tonne.

<sup>38</sup> This is based on the UK government's revealed willingness-to-pay, or willingness to allow the population to pay, for greenhouse gas emission reductions through policies, subsidies, challenge funds, etc.

<sup>39</sup> Ofwat assumed savings of 12.5% from water metering but recent empirical evidence suggests it is around 2.5%.



that there is a need for property taxation and water and sewerage charges are the add-on to the existing taxation system. In the Isle of Man, the situation could be different.

We are not aware of any countries where income for local authorities is not obtained through property-based taxation and we have therefore assumed that property taxation will continue on the Isle of Man and that whatever system of property tax is introduced, it can continue to be used as the basis for water and sewerage charges (for unmetered users).

### **ECA recommendations on use of rateable/capital values**

The above suggests that Manx Utilities should continue to base water charges for domestic and small commercial customers on rateable values until such time as the system of property tax is changed to capital values and thereafter it should be based on capital values.

#### **4.3.2 Tariff categories**

As shown in Figure 9, there are currently only two tariff categories – metered and unmetered. The unmetered category is essentially domestic and small commercial and water is charged on the basis of rateable value, and the other category is non-domestic.

For cost reflectivity, customers should be divided into categories if there are significant differences in the cost of supply and those differences cannot economically or practically be captured through metering. For example, if water metering is not practical, then it is necessary to distinguish between customers with swimming pools and those without<sup>40</sup>.

Cost per m<sup>3</sup> of water supply will vary with the volume supplied because of economies of scale in relation to larger diameter water pipes needed to supply larger customers (for the same reason that electricity customers tend to be differentiated by voltage of supply). Customer size is therefore potentially an indicator of cost. Some utilities<sup>41</sup> charge customers based on the diameter of the pipes supplying the premises, though this is not the case in the Isle of Man.

However, the aggregate volume of water demand is not projected by Manx Utilities to grow and, though capital expenditure has been identified to replace and rehabilitate existing assets, capital expenditure to satisfy growing demand is limited to around £300k per year (in real prices) over the period to 2043/44 but even this may not be truly needed to satisfy demand growth. The economic argument in favour of a tariff that distinguishes customers based on their contribution to the need for new investment is therefore not strong.

Mandatory metering is common for non-domestic customers<sup>42</sup> but the argument against water metering in the Isle of Man also holds for small commercial premises. However, for customers above a certain estimated volume or other supply characteristics we recommend that metering should be mandatory. We propose that this is applied for customers with a supply pipe exceeding 40mm diameter.

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<sup>40</sup> Though not shown in the tariff schedule, some customers with swimming pools in the Isle of Man are metered and therefore charged more than other domestic users.

<sup>41</sup> E.g. Jersey Water, Northern Ireland Water, Scottish Water.

<sup>42</sup> E.g. Northern Ireland Water and GB companies.

A continuation of the current customer categorisation of domestic and small commercial (unmetered) and non-domestic (metered) seems sensible.

### 4.3.3 Rebalancing water and sewerage charges

Sewerage costs were covered from general taxation until 2013/14. In April 2014 sewerage charges were first introduced as a flat fee of £50 per household with the intention to increase to £100 per household in the following year. In April 2015 this was replaced with a charge based on rateable value, as for water. The initial intention was to increase the charge to cost recovery levels but the increase in sewerage charges to cost recovery levels was postponed and the charges are currently under-recovering sewerage costs whereas water charges are over-recovering water supply costs, and there is some cross-subsidisation between the two. Treasury is providing a grant to cover some of the under-recovery of sewerage costs but this is scheduled to be withdrawn in 2017/18 as the sewerage charges are raised over time.

A rebalancing of sewerage and water charges would have little or no impact on the majority of household customers who use both sewerage and water services. It would impact those few households (unmetered) who are connected to the water mains but not the sewerage system (4,637 – this is consistent with numbers of properties with septic tanks)<sup>43</sup>.

Rebalancing would decrease average water charges by around 44% and increase sewerage charges by around 157% although the combined amount charged to typical customers receiving both mains water and sewerage will be unchanged.

### 4.3.4 Special social tariffs and single occupancy discounts

The use of rateable values for charging for water for domestic users helps ensure, though imperfectly, that poor households pay less than better-off households. When the rating system is reformed and capital valuation introduced, this will improve the targeting of charges on those with the ability to pay.

Manx Utilities currently provides water free-of-charge to certain charitable and religious premises. This is not an economic policy issue but many private companies' donations and taxation policies worldwide support charitable/religious institutions. This policy accounts for a relatively modest 0.6% of water supplied by Manx Utilities<sup>44</sup>. This policy of providing water (and sewerage) services free-of-charge can be justified for similar reasons. We have no professional basis for commenting on the continuation of this arrangement.

Regarding **single-person discounts** for households with only one occupant, this is not currently offered by Manx Utilities. Jersey effectively offers (and Ireland previously offered) discounts through charges that are linked to occupancy, so a single person household in these countries would pay less than a household with multiple occupants. In E&W, some local authorities offer discounts on rates for the primary residence of properties with single occupants, but this is not extended to water (or sewerage) charges. Although pensioners on low incomes may often be the single occupant of a household, it is an imperfect indicator of

<sup>43</sup> Data provided by Manx Utilities. There are some (436) charged for sewerage, but not water, based on rateable value. These are thought to be customers with water meters; they will not be affected significantly by rebalancing.

<sup>44</sup> 2017/2018. Data provided by Manx Utilities.

income status and the latter is best organised through formal welfare support schemes. Single occupancy discounts would also need to be monitored and this would create additional complexities and administrative cost burdens on Manx Utilities that would need to be reflected in charges to other customers. On balance we would argue against the introduction of single occupancy discounts.

E&W water companies are required to provide social tariffs for certain types of customer. As with electricity, it may be possible for Manx Utilities to offer a similar scheme for households in designated welfare support categories that also provide discounted charges for water as well as electricity (and sewerage).

### 4.3.5 Charges and discounts for non-domestic customers

Manx Utilities' charges for non-domestic customers are currently uniform apart from:

- ❑ charitable and religious premises, which are provided with water free-of-charge, and
- ❑ commercial premises (including factories, garages, cinemas, theatres etc.), which are charged at half the standard rate<sup>45</sup>.

As noted above, we have no professional basis for commenting on the zero charges for charitable and religious premises. Regarding the provision of water at half price to commercial premises, this is not justified on the basis of the cost of supply but may be justified based on Government policy to support small and medium enterprises (we understand that this is not currently a formal policy). Government policy will consider broader issues beyond those within the domain of Manx Utilities (local employment, promoting local services, environment, etc.). If this is not a formal Government policy, there would be a case to be made for standardising the charge for commercial premises to that of other customers. From Manx Utilities' perspective, although not cost-reflective, it will not distort customer consumption behaviour if they are charged on the basis of rateable value but will make customers less efficient in the use of water if the charges are below cost of supply. Given that the marginal economic costs of water supply (given that many of the costs are sunk and there are no water supply constraints) are low, this is not a major concern. The other consequence is that the discounted charge means that there is cross-subsidisation from other users to this group. We estimate that the cross-subsidy leads to charges for domestic and metered customers to be approximately 12.5% higher than they would otherwise have been. **Although the policy of discounting commercial charges has no consequence for Manx Utilities itself, we would recommend that it is removed unless Government makes this a formal policy and requests Manx Utilities to adopt this discount.**

### 4.3.6 Standing charges

Standing charges are relatively common for water (and sewerage) even for unmetered consumption where the charges are levied depending on rateable/property values or bands. The argument for using standing charges that are independent of property value is less

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<sup>45</sup> Not shown in the Tariff Schedule at the start of this section but it is described in Board Paper MU1803 of January 2018. The same discount is offered for sewerage charges.



strong when the charges are based on property values and, effectively, a form of taxation. But Northern Ireland Water (£58.48 and £81.42 per year for water and sewerage respectively), Guernsey Water (£27.89 per quarter, or £111.56 per year plus tax for a standard domestic water customer) and Anglian Water (E&W, £32.63 for water and £55.05 for sewerage), for example, all have such charges.

Standing charges also generally apply to consumers with metered water consumption.

The cost-reflectivity argument for using standing charges was described in relation to electricity and these arguments apply equally to water (and sewerage). The fixed costs relating to metering, billing and customer handling will be similar for water (and sewerage) as they are for electricity (19.5p per day or approximately £70 per year). However, despite being revenue neutral overall, as this is likely to be more controversial for water and sewerage we propose that around half this amount is charged for both metered and non-metered customers.

#### 4.3.7 Prompt payment discounts

Discounts are available for prompt payment (5%), for payment by direct debit (£1 per bill) and eBilling (50p per bill). The discount of 5% for prompt payment appears generous and is greater than the benefit to Manx Utilities from prompt payment. The majority of payments are from rates bills and is applicable if the bill is paid by 30 June, which is 3 months into the financial year. The benefit is therefore largely the foregone interest earned on revenues, which is currently well below 5%. **The discount therefore represents a cross-subsidy between those who do not pay by 30 June and those who do.** Those who pay promptly are more likely to have higher incomes, and the policy may therefore cross-subsidise between those with less income and those with more income.

Legislation provides that discounts of up to 5% can be made for prompt payment (see section 2.2). The discount for electricity is only 1% and this seems a more appropriate reflection of the foregone interest on revenues (see section 4.2.11) plus other costs avoided through prompt payment.

One issue with the reduction in the discount to 1% will arise if the Treasury does not wish to reduce the prompt payment discount for payment of rates to 1%. There would then be a need to differentiate between the water (and sewerage) charges component of bills and the rates component of the bills. The simplest and most cost-efficient solution would be for Treasury to issue two invoices simultaneously and for property owners to pay the two separately to two (possibly separate) accounts operated by the Treasury. This would avoid the need for Manx Utilities to incur substantial additional costs in administering a system for billing and collecting water (and sewerage) revenues from property holders. The bills could potentially be branded as coming from Manx Utilities though they would continue to be administered by Treasury without any change to billing and revenue collection processes.

**We would therefore propose that the discount is harmonised with electricity at 1%.** The higher revenues from this change will be reflected in lower water charges – we estimate it is equivalent to a 1.6% reduction in bills.

### 4.3.8 Summary of proposed revisions

We support the findings of an earlier study conducted by Cornwall Energy for Manx Utilities in 2015 in-so-far as their findings impact on water charges:

- ❑ The report recommended against metering of domestic water as cost-benefit analysis suggested it was not economically justified. It also recommended that domestic customers continue to be charged on the basis of rateable value until such time as the rating system is reformed to capital values, and then switch to a capital value charging system.
- ❑ It recommended against the introduction of water charges linked to household occupancy (or a single person discount).

Our other recommendations are, in summary, as follows:

- ❑ No change to tariff categories.
- ❑ Harmonise the discount for prompt payment with that of electricity at 1% (and reduce water charges correspondingly). A discount of 1% more accurately reflects the benefits to Manx Utilities and the existing 5% is effectively a cross-subsidy to those who pay promptly.
- ❑ Rebalance water (-) and sewerage charges (+). This does not matter for the majority of customers but it would reflect costs more accurately.
- ❑ Introduce standing charges for both metered and non-metered customers. This better reflects the fixed costs of billing and customer management.
- ❑ Mandatory metering for customers above a certain size.
- ❑ Continue with discounted tariffs for charitable and religious premises.
- ❑ Eliminate the discount to commercial premises (unless this is a specific Government policy). We estimate that elimination of the discount would allow average water charges to other customers (domestic and non-domestic metered customers) to drop by approximately 16%.

## 4.4 Sewerage

Several of the recommendations in relation to water charges would also apply to sewerage charges, including:

- ❑ Continue to charge domestic sewerage customers on the basis of rateable value until such time as the rating system is reformed to capital values, and then switch to a capital value charging system.
- ❑ No introduction of sewerage charges linked to household occupancy (or single person discount).

- ❑ Harmonise the discount for prompt payment with that of electricity at 1% (and reduce sewerage charges correspondingly by approximately 1.6%).
- ❑ Rebalance water (-) and sewerage charges (+).
- ❑ Continue with discounted tariffs for charitable and religious premises if Manx Utilities considers this appropriate.
- ❑ The 50% discount for commercial premises is not based on cost reflectivity; it is not a problem for Manx Utilities but is cross-subsidised by other customers.

The Cornwall Energy Paper<sup>46</sup> suggested that consideration be given to the following:

- ❑ To base charges on the services customers receive including offering reductions for those who do not benefit from surface water drainage and determining charges for dealing with waste from cesspits/septic tanks based on the costs of doing so rather than on the average sewerage bill;
- ❑ Manx Utilities should consider introducing a separate charge for non-domestic customers for trade effluent discharges. This should account for both the amount and strength of trade effluent discharged, using the Mogden formula as the basis for determining these charges.

#### 4.4.1 Tariff categories

There is currently only one tariff category for sewerage – all customers are charged on the basis of rateable value – but, as for water, a 50% discount applies for commercial customers and this effectively gives rise to two categories.

Although water metering is not proposed for domestic customers, we do propose mandatory water metering for customers above a certain size. We would propose that customers whose water is metered should also be charged for sewerage on the basis of metered water consumption. This is based on the assumption that a certain proportion of water consumption becomes wastewater.

As with water, we recommend that the 50% discount is removed unless Government makes this a formal policy and requests Manx Utilities to adopt this discount.

This would give rise to two categories of sewerage customer – those who have metered water and those without metered water.

#### 4.4.2 Special social tariffs and single occupancy discounts

As with water, if charges are based on rateable or capital values, there is no need for social tariffs. Single occupancy discounts are only indirectly available for sewerage customers in other jurisdictions when water is charged on the basis of occupancy. As with water, we would argue that the additional administrative burden on Manx Utilities is not warranted.

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<sup>46</sup> Review of Sewerage Charging Regimes: a Paper for Manx Utilities; Cornwall Energy, 2015.

#### 4.4.3 Sewerage charges for customers with metered water

Cost reflectivity would suggest that customers with metered water should be charged for sewerage on the basis of water consumption. Sewerage volumes are based on the assumption that a certain proportion of water consumed becomes wastewater. This is slightly arbitrary but the typical value is 90%<sup>47</sup> (10% used on the garden or lost in evaporation).

The cost of administering this pricing scheme should be low as it will only require that the sewerage charge is added to the water bill and there are no additional metering costs.

**We would therefore recommend that sewerage charges be based on metered water consumption for those customers with metered water.**

#### 4.4.4 Wastewater vs. surface water drainage

The Cornwall Energy Paper<sup>48</sup> suggested that consideration be given to offering reductions for those who do not benefit from surface water drainage, though did not make a recommendation in favour or against this. This is common practice in E&W, Scotland and Ireland, but not in the Channel Islands.

The offer of a discount for premises that do not benefit from surface water drainage would have relatively substantial administration costs as this will require a visit by staff from Manx Utilities as well as systems of administration and complaint handling.

On balance, given the small size of Manx Utilities and the administrative burden and cost that this would impose on the utility, and practice in other small utilities, we would **recommend against offering discounts for premises without surface water drainage.**

#### 4.4.5 Trade effluent charges

The Cornwall Energy Paper<sup>49</sup> suggested that consideration be given to introducing a separate charge for non-domestic customers for trade effluent discharges based on the amount and strength of trade effluent discharged using the Mogden formula (see Annex A2).

The Mogden formula is more cost reflective than charges linked to metered water consumption but potentially more complex to implement. The formula requires sampling of effluent to determine the chemical oxygen demand and the suspended solids. These are generally fixed annually based on an analysis of samples taken over previous years but may require monitoring if there is a change in production processes. A process needs to be introduced for new customers or customers who expand or contract or develop new product lines. The elements of the formula<sup>50</sup> applied to each customer could be subject to legal challenge by customers.

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<sup>47</sup> E.g., Guernsey and GB water companies. Northern Ireland Water uses 95%.

<sup>48</sup> Review of Sewerage Charging Regimes: a Paper for Manx Utilities; Cornwall Energy, 2015.

<sup>49</sup> Review of Sewerage Charging Regimes: a Paper for Manx Utilities; Cornwall Energy, 2015.

<sup>50</sup> Ot and St in the formula described in Annex A2.

Although the application of the Mogden formula is considerably more complex than a charging system based on rateable value, it is not significantly more complex than a licensing system that imposes requirements on the licensee relating to the type of discharges to the sewers. Sampling needs to be undertaken for a licensing regime just as it does for a charging regime using a variant of the Mogden formula. The benefit of a Mogden-formula charging regime is that it gives the customer the option of discharging waste to the sewers and paying higher charges to Manx Utilities, or cleaning the waste before it is discharged. If the charges are cost reflective and the customer evaluates the options correctly, this ought to be a better outcome for the Isle of Man than simply imposing licence conditions on the customer. But it does require that the charges are cost reflective and they are implemented properly and that the customer understands them.

A variation on the Mogden formula is to use standard coefficients. An example is provided in Annex A2. This avoids the need to sample the effluent, though it makes the charges less cost reflective because customers cannot reduce costs by improving or changing the process, other than to reduce the volumes. Nevertheless, it is more cost reflective than a uniform sewerage charge that is independent of the process. A similar alternative would be to introduce customer categories that depend on the typical content of the effluent with the charges for those categories calculated based on the Mogden formula and published as a tariff schedule.

The Mogden formula is used in E&W, Scotland and Northern Ireland. It is not used in the Channel Islands. In the Republic of Ireland the responsibility for trade effluent disposal is handled by 44 authorities who, at the time of writing this Report, have a range of approaches<sup>51</sup>. Some use the Mogden formula, but most do not. Nevertheless, all do have a system of licensing of trade effluent and may control trade effluent through licence conditions.

As the Isle of Man is introducing a licensing regime for trade effluent, it is a short step from this to the introduction of a charging regime based on the Mogden formula. The processes needed for licensing, including sampling, are similar to those required for charging based on the Mogden formula. In addition, for smaller customers producing trade effluent, for whom sampling will be too costly, standard coefficients can be used. However, the introduction of such a scheme will be a major undertaking and cannot be implemented quickly and **we would recommend that the licensing regime for trade effluent is first implemented in the Isle of Man before Manx Utilities considers whether to adopt charging based on the Mogden formula. We also recommend that Manx Utilities follows the review being undertaken in the Republic of Ireland in relation to the standardised approach to charging for trade effluent** and whether the Commission for Regulated Utilities recommends that the Mogden formula is adopted for the small sewerage service providers in the Republic.

#### 4.4.6 Prompt payment discounts

As for water, we propose that the discount is harmonised with electricity at 1%. The higher revenues from this change will be reflected in lower sewerage charges. As with water, all else being equal, it is likely to result in a 1.6% reduction in sewerage charges.

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<sup>51</sup> Though it is being rationalised and a more uniform approach is to be adopted. A review is ongoing, conducted by the Commission for Regulation of Utilities (CRU).

#### 4.4.7 Standing charges

As with water, we propose that standing charges are introduced for sewerage for all customer categories.

#### 4.4.8 Summary of proposed revisions

As for water, we recommend:

- ☐ Continue to charge domestic sewerage customers on the basis of rateable value until such time as the rating system is reformed to capital values, and then switch to a capital value charging system.
- ☐ No introduction of sewerage charges linked to household occupancy (or single person discount).
- ☐ Harmonise the discount for prompt payment with that of electricity at 1% (and reduce sewerage charges correspondingly).
- ☐ Rebalance water (-) and sewerage charges (+).
- ☐ Continue with discounted tariffs for charitable and religious premises.
- ☐ Eliminate the discount to commercial premises (unless this is a specific Government policy). We estimate that elimination of the discount would allow average sewerage charges to other customers (primarily domestic) to drop by approximately 13%.

We further recommend:

- ☐ Customers with metered water should be charged for sewerage based on water consumption – assuming that 90% of water becomes wastewater.
- ☐ The introduction of standing charges for all customer categories.
- ☐ Once the current licensing system for trade effluent customers is introduced, review the possibility of introducing the Mogden formula for charging for trade effluent.

### 4.5 Proposed tariffs

Following the recommendations above, the tariffs designs proposed for electricity are shown in Table 3 below. To avoid confusing the impacts of changes in the required revenues with changes in the tariff designs, we show the new tariff designs such that they achieve the forecast revenues for 2018/19. To give tariffs for 2019/20, these would need to be decreased by -0.4% for electricity, increased by 2.7% for sewerage and kept constant for water. The standing charges are not shown in the Table but have been kept constant at current levels (19.5p/day and 34p/day for small and large customers respectively). The charges for



Electric Vehicles and Sustainable Generation are based on cost-reflectivity but may be adjusted to provide some cross-subsidy if this is consistent with Government policy.

**Table 3 Revised electricity tariffs to achieve the forecast revenues for 2018/19**

Tariff category and components	Existing tariff (2018/19)	Proposed (2018/19)		Change
Domestic (pre-paid and post paid)	16.3p / kWh		16.6	2%
Domestic – comfy heat; Peak	16.3p / kWh		17.8	9%
Off-peak	7.1p / kWh		9.9	39%
Electric Vehicle Peak	16.3p / kWh		17.8	9%
Off-peak	8.9p / kWh		9.9	11%
Sustainable generation	-8.9p / kWh		-4.7	-47%
Commercial	16.3p / kWh		15.9	-3%
Commercial Plus; Peak	16.3p / kWh		17.8	9%
Off-peak	7.1p / kWh		9.9	39%
Economy 8 Commercial; Peak	16.3 / kWh		17.8	9%
Off-peak	8.1p / kWh		9.9	22%
Demand; Energy charge	14.2p / kWh	Peak (p/kWh)	14.4	2%
		Shoulder (p/kWh)	11.3	-20%
		Off-peak (p/kWh)	9.6	-32%
Demand charge	£2.2 / kVA / month	Peak (£/kVA/month)	0.00	n/a
		Shoulder (£/kVA/month)	0.00	n/a
		Off-peak (£/kVA/month)	0.00	n/a
Capacity charge	£1.2 / kVA / month		4.08	240%
Economy 8 Demand	14.2p / kWh	Peak (p/kWh)	14.4	2%
		Shoulder (p/kWh)	11.3	-20%
		Off-peak (p/kWh)	9.6	-32%
Demand charge	£2.2 / kVA / month	Peak (£/kVA/month)	0.0	n/a
		Shoulder (£/kVA/month)	0.0	n/a
		Off-peak (£/kVA/month)	0.0	n/a
Capacity charge	£1.2 / kVA / month		4.08	240%
High Load Factor (now High Vol 3 rate)	9.1p / kWh	Peak (p/kWh)	14.2	56%
		Shoulder (p/kWh)	11.1	21%
		Off-peak (p/kWh)	9.4	3%
Demand charge	£2.2 / kVA / month	Peak (£/kVA/month)	0.0	n/a
		Shoulder (£/kVA/month)	0.0	n/a
		Off-peak (£/kVA/month)	0.0	n/a
Capacity charge	£1.2 / kVA / month		1.35	12%
High Volume (now High Vol 3 rate)	13.2p / kWh	Peak (p/kWh)	0.0	n/a
		Shoulder (p/kWh)	0.0	n/a
		Off-peak (p/kWh)	0.0	n/a
Demand charge	£2.2 / kVA / month	Peak (£/kVA/month)	0.00	n/a
		Shoulder (£/kVA/month)	0.00	n/a
		Off-peak (£/kVA/month)	0.00	n/a
Capacity charge	£1.2 / kVA / month		1.35	12%
High Vol 2 rate (now High Vol 3 rate)	13.2p/kWh	Peak (p/kWh)	14.2	7%
		Shoulder (p/kWh)	11.1	-16%
Off-peak	8.1p / kWh	Off-peak (p/kWh)	9.4	16%
Demand charge	£2.2 / kVA / month	Peak (£/kVA/month)	0.00	n/a
		Shoulder (£/kVA/month)	0.00	n/a
		Off-peak (£/kVA/month)	0.00	n/a
Capacity charge	£1.2 / kVA / month		1.35	12%
Public Lighting	15.6p / kWh		15.6	0%

The average electricity prices by main tariff category are shown below. The averages are based on the consumption of existing or similar customers. Comfy Heat customers, for example, would have low average costs because much of their consumption occurs at off-peak hours whereas the existing pattern of consumption of EV customers indicates that much of their consumption is during the high cost hours. The slightly higher average charges for the High Volume 2-rate customers compared with the standard High Volume customers is because the existing 2-rate customers appear to have lower load factors than the standard High Volume customers.

**Table 4 Average electricity prices by main tariff category 2018/19**

Tariff	Average p/kWh
Domestic + Prepayment (D+PP)	18.5
Domestic - Comfy Heat (DT)	14.4
Domestic - Electric Vehicle (EV)	17.0
Commercial (NA/NC)	16.5
Economy 8 Commercial (E8)	15.6
Commercial Plus (CP)	15.4
Demand (M1/M2/M1GT)	15.1
Economy 8 Demand (M3LV/M4HV)	14.1
High Volume (HVU1)	11.6
High Volume 2 rate (HVU2)	11.7
Public lighting	15.6

Source: ECA calculations

The proposed tariff designs for water and sewerage are shown in Table 5. The main changes arise because of the rebalancing of water and sewerage charges and the elimination of the 50% discount for commercial customers.

**Table 5 Revised water and sewerage tariffs to achieve the forecast revenues for 2018/19**

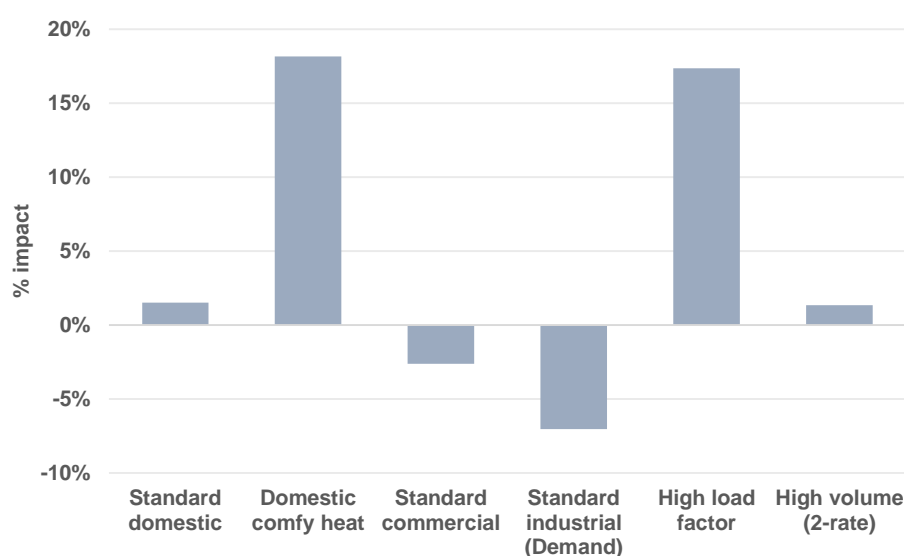
Tariff category and components	Existing tariff (2018/19)	Proposed (2018/19)		Change
Water		Standing charge (p/day)	Variable charge	
Residential	£3.418 per £ rateable value	10	1.491	-56%
Commercial	£1.709 per £ rateable value	10	1.789	5%
Religious and charitable premises	£0 per £ rateable value	0	0.000	n/a
Metered	£2.13 per m3	10	1.11	-48%
Sewerage				
Residential	£0.980 per £ rateable value	10	1.737	77%
Commercial	£0.490 per £ rateable value	10	1.737	254%
Religious and charitable premises	£0 per £ rateable value	0	0.000	n/a
Other unmetered	£0.980 per £ rateable value	10	1.737	254%
metered	n/a	£/m3 (90% of water)	2.28	n/a



## 5 Tariff impact analysis

Unsurprisingly, the tariff impact analysis indicates that there will be winners and losers due to a rebalancing of the charges between customer groups. Standard domestic customers would be relatively unaffected by these changes as indicated below. The impact on other domestic (Comfy heat) and on the average or typical non-domestic customers is shown in Figure 15. The tariff design changes are intended to be revenue neutral so that the winners (shown to be standard commercial and standard industrial customers) are compensated by the losers (shown to be the industrial High Load Factor customers and the Comfy Heat domestic customers). The High Load Factor customers would be moved to the High Volume (3-part) tariff and although they would not benefit from the attractive rates previously provided, they would have the opportunity to optimise their energy and power consumption in order to lower their electricity costs. The High Volume 2-rate customer group is largely unaffected (a 1.2% increase in average charges). The percentage changes in the diagram are not volume-weighted but we note that the largest customer groups (by kWh sales) are standard domestic, standard commercial and standard industrial (Demand).

**Figure 15 Impact of making charges more cost reflective on larger customer groups**



The average tariff for a high load factor customer in the Isle of Man is compared with Gibraltar and Malta in Annex A1.3

## 6 Framework for updating charges

An objective for the pricing strategy is to secure the financial sustainability of Manx Utilities and meet debt repayment schedules. As per the LTFP, this will be achieved with sufficient revenues from charges to cover costs and build-up the sinking fund and cash reserves for the repayment of debt.

However, over the duration of the plan, and in the absence of revenue adjustments, revenue and costs will inevitably diverge. If costs were greater than expected, then this could jeopardise Manx Utilities' financial position and service to customers. Conversely, if costs were to be lower than expected, then consumers could be paying more than is necessary. The same issues arise if revenues are different from those expected - eg as a result of outturn demand being different from forecast demand.

Given the above, there is a need for the pricing strategy to address the adjustment of charges to take account of divergences between revenues and costs. This was explicitly recognised in Treasury's report which envisaged a pricing framework with links to relevant costs and the objectives of the LTFP (see section 2.3). The Treasury's report also anticipated that, at the same time, the pricing strategy will *"provide transparency and provide greater certainty for residents and businesses."* (para 4.15).

In this chapter we develop a recommendation for the framework for updating charges, including an assessment of the options (section 6.2) and details for implementation of the recommended option (section 6.3). First, however, we consider alternative models for the regulation of utilities' revenues.

### 6.1 Models of economic regulation of utilities

There are two main problems with monopoly utilities, arising from the absence of competition:

- ❑ Monopoly suppliers will tend to set price above cost, earning excess profits. This may be less of a problem with monopoly suppliers that are publicly owned.
- ❑ Monopoly suppliers may have weaker incentives for productive efficiency and for supplying at a desirable level of quality.

Below we characterise and assess two of the key models of economic regulation to address these problems – namely, rate of return regulation and incentive (or price-cap) regulation. In doing so, we note that Manx Utilities is far from a typical utility; it is publicly owned, operates in a relatively small jurisdiction and is vertically integrated. These factors mean that lessons for Manx Utilities from these models must be interpreted carefully. Notwithstanding, they provide useful context to developing the options for updating charges as part of Manx Utilities' pricing strategy.

### 6.1.1 Rate of return regulation

Under this model, revenues may be reviewed following a request either by the regulated company or by the regulator (often prompted by the intervention of an interested party). These circumstances may arise when there is a divergence between revenues and costs such that the company believes its rate of return is too low or the regulator believes it is too high. It is for this reason that the model is referred to as “rate of return” regulation. Alternatively, this model may involve frequently scheduled reviews (eg annually, or more often), preventing any material divergence between revenues and costs and, thereby, limiting scope for excess profits.

### 6.1.2 Price- and revenue-cap (or incentive) regulation

Under this model, revenues are reviewed at predetermined intervals, typically every four to five years. In the review a utility’s revenue is based on a forecast of its efficient costs. To the extent that the utility spends less than forecast, it is allowed to retain the additional profits until revenues are next reset. Conversely, if it spends more than forecast, it will bear the reduced profit (or loss) until the next review. The main distinction between the price cap and revenue cap is who carries the market or volume risk - with prices capped it is the utility that carries the risk, but with revenue capped it is customers.

### 6.1.3 General assessment of the models

The main trade-off between these two models for adjusting revenues is the risk to the utility of not recovering its costs and the incentives for productive efficiency.

Price-cap regulation provides strong incentives for efficiency, as the utility retains any cost savings it makes during the price control period, after which the future benefit of these savings is passed on to customers through reduced revenues. The longer the price control period, the greater the retained savings and the stronger the incentive for efficiency. In contrast, under rate of return regulation, the divergence between costs and revenues would trigger a review, with the utility only keeping the saving for the time it takes to conduct the review. This ‘regulatory lag’ means there are some incentives for efficiency under rate of return regulation, but they are muted compared to price cap regulation. Under rate of return regulation, with reviews occurring annually, or more frequently, there is little if any incentive for cost efficiency.

This efficiency incentive, however, involves a trade-off with risk to the utility of not recovering its costs. Under rate of return regulation, if a utility’s costs increase, it can seek a review and its revenues will be brought back in line with costs, albeit potentially subject to a slight lag and (potentially) a review to ensure the costs were prudently incurred. In contrast, a utility subject to price-cap regulation, must bear cost increases for the duration of the price control. The risk of a utility not recovering its costs is, therefore, greater under price cap regulation.

Because of the strong cost efficiency incentives under price-cap regulation, there is a risk that cost reductions will be made at the expense of quality. For this reason, price-cap regulation usually includes minimum quality standards, which are intended to mitigate the risk of

under-investment. However, the long-lived nature of typical utility assets means that the effect of under-investment may take time to materialise.

Conversely, the weaker incentives for cost efficiency under rate of return regulation means it can suffer from the opposite problem, with potential incentives for 'gold-plating' investments,<sup>52</sup> although this will likely result in a high quality of service. In practice, the strength of this incentive depends on several factors of the regime, including the cost of capital (with a higher value providing more incentive to over-invest), and whether there are reviews of the prudence of expenditure (and how effective these are).

It can also be argued that rate of regulation is simpler and more objective than price-cap regulation. This is partly a consequence of price-cap regulation usually relying on forecasts of efficient costs, which are subjective and take time and resources to develop. As a consequence, the process for setting a price cap can be long and involved, requiring significant resources both in the company and in the regulator.

A final distinction between the models for adjusting revenues is pricing predictability. As price-caps are set for a fixed period of time, they tend to afford greater pricing predictability than rate of return regulation. However, this is not say that price-caps cannot change during a control period – many regulators will allow for adjustments within period for factors such as previous under or over-recovery of revenue, or changes in costs over which the utility has no control. This may include either linking revenues to inflation indices or passing through costs to consumers.

Rate of return regulation has been the dominant form of regulation in the US. However, over the past 25 years, incentive regulation has become more prevalent worldwide and is the most dominant form of economic regulation in Europe.

#### **6.1.4 Considerations for Manx Utilities' pricing strategy**

Currently, under the requirements of the Electricity and Water Acts, Manx Utilities must perform its functions to secure sufficient revenue to cover its actual costs and to make allocations to reserves it considers appropriate. In the case of sewerage charges, it must consider the amounts it needs to perform the functions to which a charge relates. For these purposes Manx Utilities can set electricity and water tariffs, and set sewerage tariffs subject to the approval of Tynwald.

Of the above models, Manx Utilities' regime most closely resembles rate of return regulation with annual updating of tariffs. As summarised above, this model of regulation tends to provide high certainty of cost recovery, which aligns well with the objective of Manx Utilities' LTFP to secure financial stability. This model also tends to promote a high quality of service relative to other models, but to have weaker incentives for efficiency than price cap regulation and have less predictable prices from year to year.

These features are tendencies and depend on the specific circumstances. That Manx Utilities is publicly owned is a relevant circumstance in relation to the incentive for efficiency. As

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<sup>52</sup> This is referred to as the Averch-Johnson effect, after Averch, H and Johnson, L (1962): "*Behaviour of the Firm under Regulatory Constraint*", *American Economic Review*, 52, No 5, December 1962, pp 1052-1063.

explained above, incentive regulation relies on the profit motive to deliver cost efficiencies. However, in publicly owned utilities this profit seeking behaviour may not be as strong as in privately owned monopolies and potential advantages from a form of incentive regulation of Manx Utilities, may not be very significant. In this regard, we note the experience in Guernsey, where a review of the regulation applied to Guernsey Electricity Limited (as a state-owned utility) indicated that price regulation may not be appropriate.<sup>53</sup> Rate of return regulation also tends to have less predictable prices from year to year than incentive regulation. It is this feature that helps ensure recovery of costs.

## 6.2 Options for updating tariffs

In this section we describe and assess options for adjusting tariffs over time as part of the pricing strategy. We consider that the main decision, as reflected in the options described further below, is how frequently, or under what circumstances, tariffs should be updated.

In assessing the options for updating tariffs, the following recommended charging principles (see section 3.3) are particularly relevant:<sup>54</sup>

- ❑ *Cost-recovery.* To meet the objective of the LTFP, the options need to ensure that tariffs provide sufficient revenue to cover costs and to make allocations to reserves to achieve zero net debt by the early 2030s. This provides little alternative as to the level of revenues over the medium to long-term (ie they need to cover costs and build up funds to pay-off debt), particularly for electricity and water. For example, if, in the short run, costs are greater than expected, contributions to the sinking fund and/or cash reserves will be less than expected. If debts are to be paid off by this fund, in accordance with the LTFP, then these shortfalls will subsequently need to be made up through higher revenue (and tariffs). Accordingly, whilst, it might not be necessary for revenues to cover costs in each and every year, over the medium to longer term, all options need to ensure that revenues cover costs and the build-up of adequate reserves to pay off debts.
- ❑ *Stability.* If charges, and the approach to setting charges, are stable then uncertainty is reduced. As noted above, the Treasury anticipated that the pricing strategy will provide greater certainty for consumers. Stability over the charging regime (and possibly charges themselves) are also of potential benefit to Manx Utilities by enabling them to plan with greater certainty over their revenues.

### 6.2.1 Option 1: Review and reset tariffs annually

Under this option, Manx Utilities reviews and resets its tariffs every year to ensure that revenue covers costs and adequate funds are being built up to pay-off debt. The adequacy of funds could be established by comparing the actual sinking fund and cash reserves to those forecast in the LTFP.

<sup>53</sup> Guernsey Electricity Price Review 2012, A New Approach to Price Regulation, Consultation Paper, Jan 2012, Office of Utility Regulation. Link: <https://www.cicra.gg/media/4038/e12g-consultation-guernsey-electricity-price-review-2012-a-new-approach-to-price-regulation.pdf>

<sup>54</sup> The other recommended charging principles are more relevant to the structure of charges.

The alignment of revenues and costs means there is no material risk to the LTFFP's objectives not being achieved, while the annual updating of tariffs (and revenues) means that there is also little, if any, financial risk to Manx Utilities. The little financial risk to Manx Utilities comes from large fluctuations in costs within year. Gas costs are the likeliest source, being both large and volatile. However, Manx Utilities can (and does) hedge gas costs.

A potential drawback for customers of this option is they would face changes in tariffs each year. Whilst the process for updating tariffs could be made transparent, the resulting level of tariffs would not necessarily be very predictable, creating uncertainty for consumers.

### **6.2.2 Option 2: Review and reset tariffs every 3-5 years**

Under this option, Manx Utilities would review and reset tariffs after a pre-defined period, say three to five years, rather than annually. In between times, tariffs would be fixed. With tariffs fixed, customers would have greater certainty. This certainty will last as long as the duration for which tariffs are fixed. However, at review times there is the potential for larger step changes in tariffs than would be the case with updating tariffs annually.

Through the periodic review of tariffs, revenues would be brought back in line with actual costs (including the build-up of funds to pay off debt) so there is no material risk to the LTFFP's objectives. However, in the shorter term (ie the period for which tariffs are fixed) there is greater financial risk to Manx Utilities, compared to annually adjusting tariffs, as there is a longer period, and therefore greater risk, of revenues and costs diverging.

In practice, inflation is likely to create differences between costs and revenues over the period, unless an estimate is included in fixed tariffs. Without the inclusion of inflation in tariffs, revenues would diverge from costs and significant increases in tariffs would likely be required when they are periodically reset. Alternatively, tariffs could be adjusted annually for actual inflation (and for other cost drivers outside of Manx Utilities control), as in the next option.

Fixing tariffs for several years may enable Manx Utilities to plan with greater certainty as well as providing an additional financial discipline by requiring Manx Utilities to operate within a budget set for several years, rather than just one.

### **6.2.3 Option 3: Review tariffs every 3-5 years, but reset annually according to pre-determined factors**

Under this option, whilst tariffs themselves are not fixed for the period, the basis on which tariffs may change is. These changes could be implemented annually and would be for changes in factors that drive Manx Utilities costs and over which it has no (or limited) control. For example, tariffs could be linked to changes in general inflation, in gas prices, and in demand.

This option is a half-way house between the previous two options. It provides customers (and Manx Utilities) with a greater degree of predictability over their tariffs than when they are fully updated annually (option 1), with tariffs only changing within the period for pre-defined reasons, but less certainty than with fully fixed tariffs (option 2). Conversely, there is less short term financial risk to Manx Utilities under this option compared to fully fixed tariffs (option 2) but slightly more than under annual adjustment of tariffs for actual costs



(option 1). Given that within the period tariffs would only vary for factors outside of Manx Utilities control, this option (as with option 2) may enable Manx Utilities to plan with greater certainty over tariffs. It also provides an additional financial discipline for Manx Utilities by requiring it to operate within a budget (subject to adjustments, eg for inflation) set for several years, rather than just one.

#### 6.2.4 Option 4: Reset tariffs in response to a trigger event

As an alternative to updating tariffs at predetermined periods (either annually or longer), tariffs could be reset if the objectives of the LTFP are at risk. There are at least two approaches for identifying this risk to the plan:

- ❑ *The build-up of the sinking fund and cash reserves* is different from forecast in the LTFP. Operating surpluses achieved in each of electricity, water and sewerage can contribute to the build-up of fund and reserves. Under this approach, if contributions in aggregate are different from those forecast, then the plan is at risk. For example, if contributions are greater than expected, and the fund is ahead, then tariffs could be reduced. Conversely, if contributions are less than expected, tariffs would need to increase. Thresholds could be put around the level of contributions - ie if actual reserves are within, say, 5% to 10% of those forecast, then tariffs would not be reset. Under this approach, by looking at the fund and reserve in aggregate, cross-subsidies could emerge between activities.
- ❑ *The operating surplus of any one sector* (electricity, water and sewerage), and hence contributions to the sinking fund and cash reserves, is different from forecast (within thresholds). By looking at the contributions of each sector to the build-up of the sinking fund and reserve individually, this approach both ensures that the total funds are in line with the plan and that changes in one-sector do not cross-subsidise changes in another sector.

Under either of the above approaches, tariffs could be linked to changes in costs beyond Manx Utilities control (eg inflation and gas prices). If this is not done, then the above triggers may quickly be met, and tariffs frequently updated, ie this option would, in effect, be the same as option 1.

Like option 1, this option provides a high degree of surety in meeting the LTFP's objectives but, unlike option 1, it achieves this by only changing tariffs when there is a material divergence between the expected and actual contributions to reserves (once costs are covered), rather than every year. It may, therefore, result in fewer changes in tariffs than option 1. However, the timing of the review of tariffs is less predictable under this option than any of the other options, as it occurs once a trigger is met, rather than at pre-determined time (ie annually under option 1 or after several years under options 2 and 3), resulting in some uncertainty for both consumers and Manx Utilities.


























#### 6.2.5 Comparison of options

Table 6 provides a comparison of the above four options against the following factors:

- ❑ short-term financial certainty to Manx Utilities – this is the extent to which Manx Utilities' costs may diverge from revenues in the short to medium term.

- ❑ short-term stability in charges – this reflects both how much charges may change from one year to the next and how predictable the change is.
- ❑ certainty over the timing of changes in tariffs – ie do customers know when tariffs will change.
- ❑ stability in charges at review – this reflects the relative risk that customers are exposed to large changes in levels of tariffs when they are reviewed
- ❑ efficiency incentives – do the options introduce efficiency incentives or additional discipline on Manx Utilities.

Table 6 Comparison of options

	Short term financial certainty	Short term stability in level of charges	Certainty over timing of tariff changes	Stability in charges at review	Incentives for efficiency
Option 1: Review and reset tariffs annually					
Option 2: Review and reset tariffs every 3-5 years					
Option 3: Review tariffs every 3-5 years, but reset annually according to a pre-determined formula					
Option 4: Reset tariffs in response to a trigger event					
Keys:					
	< Very low-----Medium-----Very high >				

All of the above options have some relative advantages and disadvantages, and the choice between options, therefore, depends on the priorities placed on these. As noted above, we consider two of the key considerations to be the stability of tariffs to customers and Manx Utilities' recovery of costs. There are trade-offs between these two considerations.

Of all the options, reviewing and resetting tariffs annually (option 1) provides greatest financial certainty to Manx Utilities but does so by offering relatively little stability of charges to customers (ie they change every year and in a manner that is not very predictable or transparent). Resetting tariffs whenever the objectives of the LTFP are in jeopardy (option 4) also provides a relatively high degree of financial certainty to Manx Utilities, but offers relatively little stability of charges to customers. Fixing tariffs for a period of 3-5 years (option 2) provides greatest certainty to customers over tariffs in the short to medium term but could result in large changes when charges are reset as costs may have changed



significantly over the period, which would also undermine Manx Utilities financial position within the period. By allowing tariffs to change within this 3-5 year period (option 3) for pre-defined factors, such as inflation and gas costs, the risk to consumers of large changes in tariffs when they are reset is reduced (as is the financial risk to Manx Utilities). This option also introduces an additional discipline on Manx Utilities (by only allowing for tariffs to changes within the period for factors beyond their control).

Overall, we consider that option 3 provides an appropriate balance between certainty to consumers and Manx Utilities. In the following section we consider some of the details in implementing this option.

## 6.3 Implementation

### 6.3.1 Annual updating of tariffs

As noted in section 2.3, we use the level of revenues from the latest version of the LTFP as the basis for setting tariffs. These revenues are slightly below those from the version of the LTFP reviewed by NERA, which were based on cost forecasts which that report (broadly) concluded were based on reasonable assumptions for long term planning purposes but with uncertainty in these forecasts, particularly those based on gas prices.

The financial risk to Manx Utilities from the forecasts in the LTFP being wrong can be reduced by updating tariffs annually for changes in pre-determined factors that drive Manx Utilities costs and over which it has no (or limited) control. As identified in section 2.4.3, inflation and gas prices are key drivers of Manx Utilities' costs. We propose that the revenues Manx Utilities collect from tariffs are adjusted annually for these two drivers as follows:

- ❑ *Gas costs* are a significant element of Manx Utilities' costs and gas prices can be volatile, making forecasts particularly uncertain. Whilst Manx Utilities has some ability to influence these costs, eg through hedging, they do not have the ability to influence gas prices. To reduce the risk from fluctuations in gas costs, we propose that they are passed through in full to revenues, ie that Manx Utilities' gas costs are included in revenues to be collected through tariffs.
- ❑ *Inflation*. The LTFP links a significant proportion of Manx Utilities costs to forecast inflation. Again, these forecasts are uncertain, and we propose that the risk from them being wrong is removed by indexing the revenues (excluding the gas costs component which is passed through in full) that Manx Utilities can recover from tariffs to an appropriate inflation index.

### 6.3.2 Monitoring within the period

Although tariffs will be updated annually for changes in inflation and gas costs, uncertainty remains – for example obligations on Manx Utilities could change thereby requiring it to spend more (or less), or its costs may change by more (or less) than general inflation, or it may be subject to unforeseen (force majeure) events. These circumstances could jeopardise the LTFP objectives before tariffs are fully reviewed and reset at the end of the period (see

below). To manage these risks, we propose that performance against the LTFP objectives is monitored throughout the period.

As summarised in section 2.4.1, the objective underlying the LTFP is to secure the financial sustainability of Manx Utilities by targeting zero net debt by the early 2030s. This is expected to be achieved through the build-up of a sinking fund to pay off bonds and the build-up of cash reserves to pay off the CLF debt. The Electricity Act requires that allocations to reserves are only made after costs are covered.

We propose that progress against the objective is monitored through whether the contributions to the sinking fund and cash reserves are as forecast. If contributions, in aggregate, are higher than forecast then the plan is ahead, whilst if contributions are lower the plan is behind. Where the divergence is considered significant (in either direction), we propose that relevant stakeholders (eg Manx Utilities, the Treasury and Department of Infrastructure) consider and agree the appropriate course of action, rather than mechanistically requiring a full review and resetting of tariffs.

## Tariff benchmarking

As part of the scope of the review, we were asked to consider appropriate, available and sustainable pricing benchmarks in order to monitor the effectiveness of the pricing strategy and its impact on consumers.<sup>55</sup>

Benchmarking of prices across jurisdictions can increase transparency for consumers as well as flagging potential concerns (eg where there are differences in prices). Differences in prices across jurisdictions that are due to inefficiency would be a cause for concern. However, prices differ across jurisdictions for a variety of reasons, most of which would not be a cause for concern. For example, jurisdictions may be subject to different government policies and operating requirements, have different levels of taxation, have different operating and network characteristics, and different economies of scale. Moreover, identifying the difference in price levels across jurisdictions that is attributable to inefficiency is a challenging and, ultimately, subjective exercise.

Notwithstanding, we recommend that price benchmarks for Manx Utilities services are produced at least annually. As noted above, this can increase transparency for consumers. In practice, given the above pricing framework, Manx Utilities' prices within the period will only vary according to factors which are largely outside of their control, so there will be limited inference for efficiency within periods from these benchmarks.

In Annex A1 we provide examples of potential tariff benchmarks across electricity, water and sewerage. As an example of monitoring and promoting transparency for consumers, Northern Ireland's Utility Regulator (UR) publishes a Quarterly Transparency Report for electricity.<sup>56</sup> This covers a range of metrics that impact on consumers, including a comparison of Northern Ireland prices to other jurisdictions.

<sup>55</sup> We consider in section 5 the impact on consumers of the recommended tariff structures.

<sup>56</sup> Retail Market Monitoring, Quarterly Transparency Report, Q1: January to March 2018. Link: <https://www.uregni.gov.uk/sites/uregni/files/media-files/2018-05-31%20Transparency%20Report%20Q1%202018.pdf>

### 6.3.3 Reviewing and setting tariffs

Above we referred to tariffs being reviewed every 3-5 years. The trade-offs between the shorter and longer periods are as described above – ie the certainty of pricing to consumers and additional discipline on Manx Utilities against the financial risk to Manx Utilities.

The choice of review period is a judgement. Within the context of incentive regulation, 5 years is a common review period, but others are used (see Table 7). On balance, we consider that a 4-year review period is appropriate for Manx Utilities, whilst recognising that, through annual monitoring, an earlier review could happen if actual performance diverges appreciably from forecast.

**Table 7 UK regulators price control durations (energy and water)**

Regulator	Sector / period	Duration
Utility Regulator Northern Ireland	Water PC10	3 years
	Water PC13	2 years
	Water PC15	6 years, with mid-term review
	Gas GD14	3 years
	Gas GD17	5 years
	Gas GT17	5 years
	Electricity RP4	5.5 years
	Electricity RP5	6.5 years
Ofgem	Electricity and gas RIIO-1	8 years with mid-period review
	Electricity and gas RIIO-2	5 years
Ofwat	Water	5 years
WICS	Water	6 years

Source: ECA

The purpose of the periodic review is to assess whether the LTFP<sup>57</sup> provides a suitable basis for setting tariffs for the next 4-year period. The scope for the review should include:

- ☐ the continued appropriateness of the objectives of the LTFP,
- ☐ the reasonableness of updated forecasts in the LTFP (eg for demand and costs),
- ☐ an assessment of the financial sustainability of Manx Utilities under the plan, and
- ☐ recommendations for changes relating to the above.

Consideration should also be given to a bottom-up efficiency review of Manx Utilities' operations. Whilst independent of the periodic review, such an efficiency review could take place shortly in advance of it. The purpose of this review would be to seek to identify potential opportunities to reduce costs or otherwise improve performance. This review

<sup>57</sup> An LTFP with the latest actual data and updated forecasts.

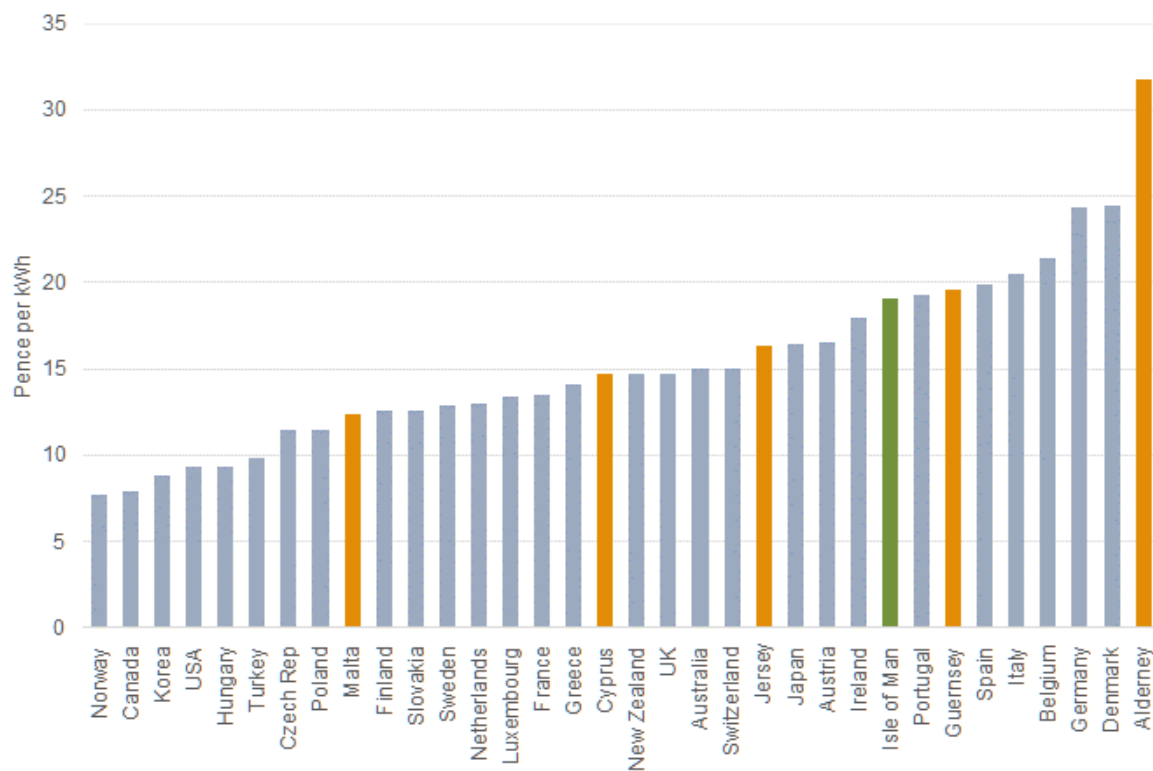
should be a constructive exercise, conducted in close partnership with Manx Utilities in order for it to result in practical and implementable recommendations.

## ANNEXES

## A1 Tariff Benchmarks

### A1.1 Electricity – domestic

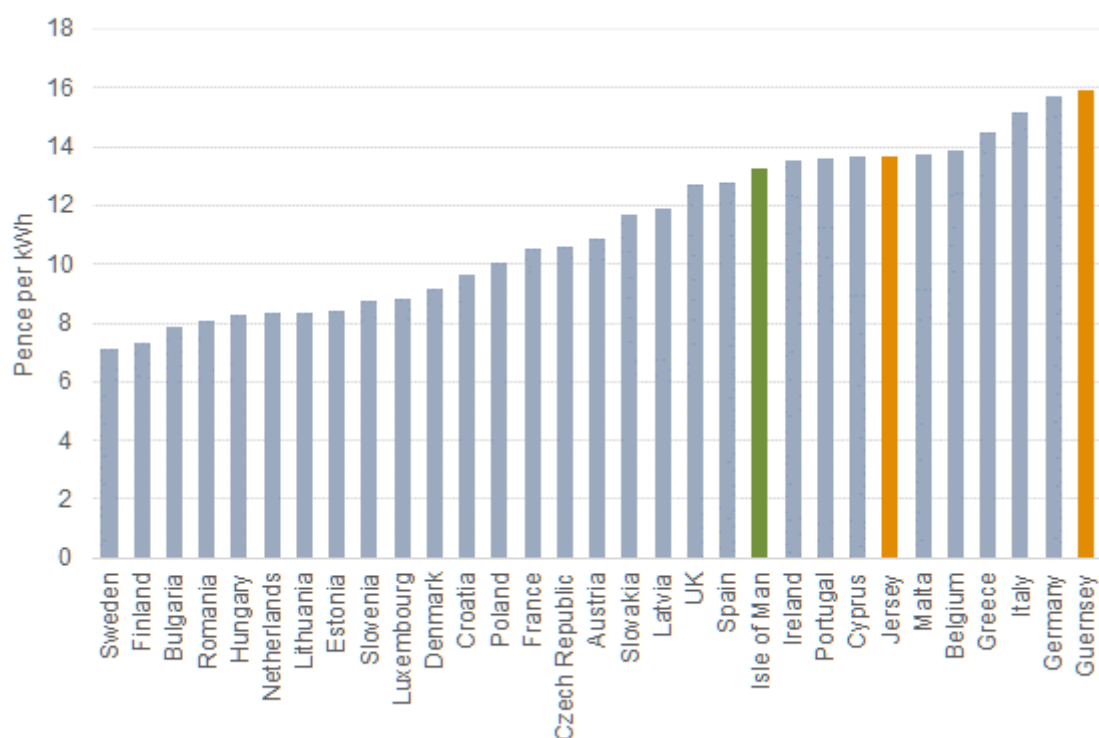
Figure 16 Electricity prices for domestic customers



Source: Domestic Electricity Prices in the IEA, BEIS, 31 May 2018, and company websites for Malta, Cyprus, Isle of Man, Jersey and Guernsey.

## A1.2 Electricity – small industrial<sup>58</sup>

Figure 17 Electricity prices for small industrial customers



Source: *Industrial Electricity Prices in the EU*, BEIS, 31 May 2018, and company websites for Isle of Man, Jersey and Guernsey.

<sup>58</sup> Small industrial – annual consumption of 20-499MWh



### A1.3 Electricity – high load factor<sup>59</sup>

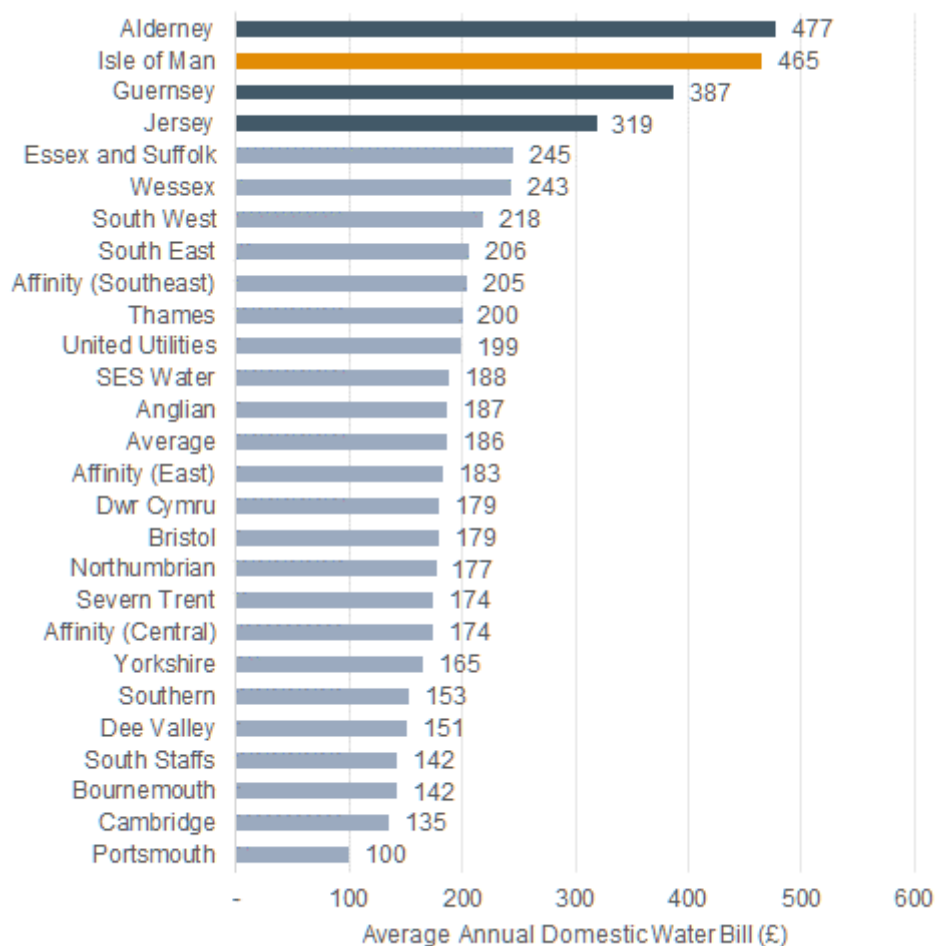
Figure 18 Electricity prices for high load factor customers



<sup>59</sup> For a customer with annual consumption of approximately 3 GWh and an 80% load factor. Note, Malta's tariffs only distinguish domestic and non-domestic customers.

## A1.4 Water

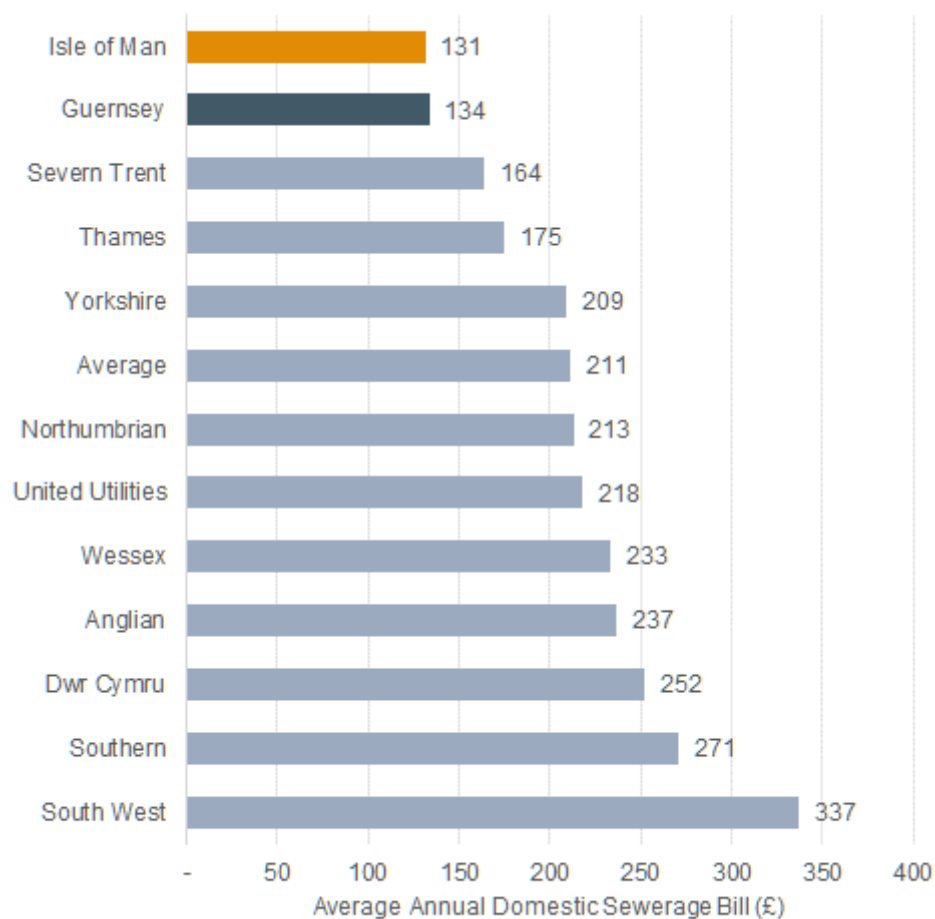
**Figure 19 Annual domestic water bills**



Source: UK data from <https://www.discoverwater.co.uk/annual-bill>. Other data from company websites.

## A1.5 Sewerage

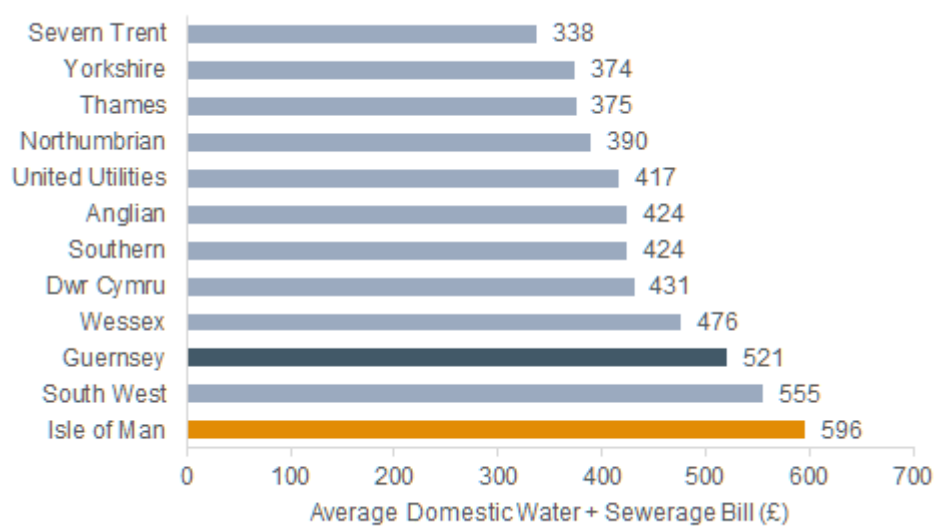
Figure 20 Annual domestic sewerage bills



Source: UK data from <https://www.discoverwater.co.uk/annual-bill>. Other data from company websites.

## A1.6 Water and sewerage

Figure 21 Annual domestic water and sewerage bills



Source: UK data from <https://www.discoverwater.co.uk/annual-bill>. Other data from company websites.

## A2 The Mogden formula

Charges for trade effluent based on the Mogden formula are as follows (source: Ofwat website):

$$\text{Charge per unit of effluent}^{60} = R + [(V + Bv) \text{ or } M] + B(Ot/Os) + S(St/Ss)^7$$

Where:

**R** = reception and conveyance charge [p/m<sup>3</sup>]

**V** = primary treatment (volumetric) charge [p/m<sup>3</sup>]

**Bv** = additional volume charge if there is biological treatment [p/m<sup>3</sup>]

**M** = treatment and disposal charge where effluent goes to sea outfall [p/m<sup>3</sup>]

**B** = biological oxidation of settled sewage charge [p/kg]

**Ot** = Chemical oxygen demand (COD) of effluent after one hour quiescent settlement at pH 7

**Os** = Chemical oxygen demand (COD) of crude sewage one hour quiescent settlement

**S** = treatment and disposal of primary sewage sludge charge [p/kg]

**St** = total suspended solids of effluent at pH 7 [mg/litre]

**Ss** = total suspended solids of crude sewage [mg/litre]

The terms in bold are prices (p/m<sup>3</sup> or p/kg); the other terms are parameters.

Customers charged according to the Mogden formula are incentivised to reduce the volume (V), chemical oxygen demand and (Ot) and suspended solids (St). This lowers their sewerage charges but also lowers the costs to the utility.

There are other versions of the formula used by, for example, E&W water companies and approved by Ofwat. An example of the prices adopted by Anglian Water for 2018/19, using the Ofwat formula above, is provided in Figure 22 below.

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<sup>60</sup> Usually per m<sup>3</sup> of effluent.

Figure 22 Anglian Water – Non-household trade effluent charges

	Reception & Conveyance (R)	Volumetric & Primary Treatment (VB)	Biological (B)	Sludge (S)	Fixed Charge p.a.
<b>Streamline Green</b>	21.53p	45.02p	41.00p	27.47p	£7.50
<b>Streamline Orange</b>	21.53p	44.37p	39.22p	26.51p	£12.50
<b>Streamline Blue</b>	21.53p	43.07p	37.72p	25.55p	£60.00
<b>Profile Plus</b>	20.71p	37.25p	32.33p	21.99p	£125.00

Source: Anglian Water, 2018/19 Wholesale Charges Schedule. Note, VB combines V and Bv in the formula above.

The formula can use standard parameters dependent on the category of customer. Anglian Water in E&W uses the standard parameters shown in Figure 23. The standard parameters are only available for smaller scale processes. The disadvantage of using standard parameters is that it removes the incentive for customers to improve the processes to reduce chemical oxygen demand or suspended solids but it does mean that the charges are more reflective of costs than a one-size-fits-all charge.

Figure 23 Anglian Water – Standard parameters for certain processes

Business type	Average COD mg/l	Average SS mg/l
Swimming pools	31	128
Vehicle wash	427	239
Launderettes	722	287
Boiler Blowdown	85	35
Cooling Towers	74	28
Air Compressor Condensate	426	182
Water Treatment & Softener Plants	17	15
Gas Holder Run Off	58	12
Photographic Processes	350	35
Mobile domestic wheelie bin cleaners	911	334
Cement, lime, plaster, ready mixed concrete manufacture	61	116

Source: Anglian Water, 2018/19 Wholesale Charges Schedule