



**For Line Charges, effective 1 April 2017 to 2018**  
(Pursuant to Electricity Information  
Disclosure Requirements)

[www.topenergy.co.nz](http://www.topenergy.co.nz)

**TOP ENERGY®**  
TePuna Hihiko



**TOP ENERGY LIMITED**

**PRICING METHODOLOGY DISCLOSURE**

**2017-18**

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## 1. Introduction

Top Energy Limited (Top Energy) is the electricity distribution network in the Mid and Far North of the Northland region. The network distributes some 324,000 kWh of electricity to over 31,000 electricity consumers, who also own the company through the Top Energy Consumer Trust (TECT).

This pricing methodology document describes our key considerations and approach to setting distribution prices effective 1 April 2017. It also sets out our plans and strategy to revise pricing over a 5 year period.

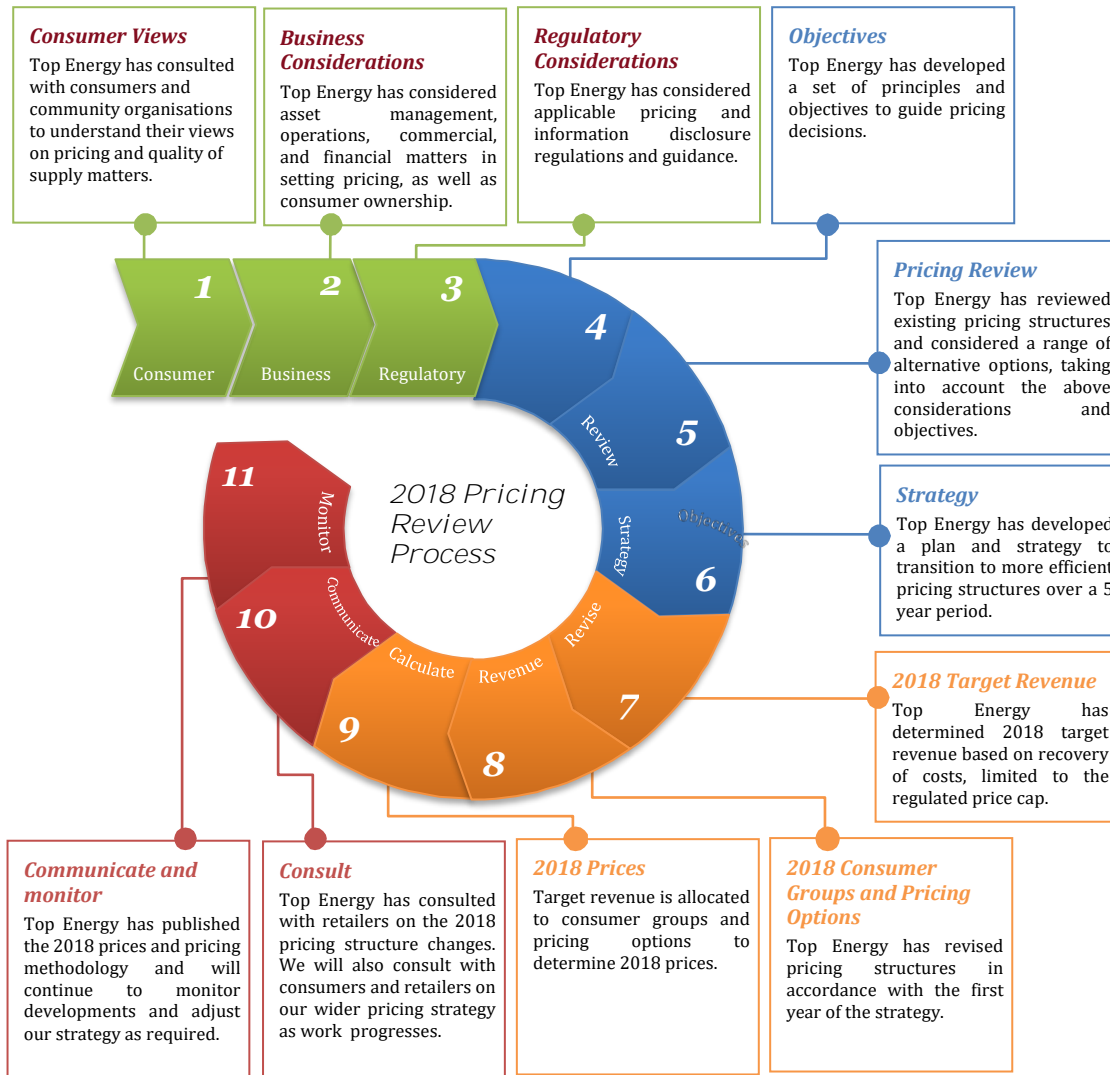
The pricing methodology is structured as follows:

- **Section 2** summarises our approach and key decisions for setting prices in 2017-18
- **Section 3** summarises key considerations we have taken account of in making decisions on pricing
- **Section 4** details our principles and objectives, recent review, and plans and strategy for pricing
- **Section 5 to 7** provides further detail on how prices are set, including:
  - how target revenue is determined
  - key decisions on consumer groups and available pricing options
  - how target revenue is allocated to each consumer and price option
- **Appendix 1** provides director certification of this pricing methodology
- **Appendix 2** maps compliance against section 2.4 of the ID Determination
- **Appendix 3** describes how this pricing methodology is consistent with the Electricity Authority's pricing principles published in February 2010
- **Appendix 4** provides a glossary of common terms used in this document
- **Appendix 5** details distribution prices that will apply from 1 April 2017

## 2. Summary of how prices are set

### 2.1. Process for setting prices

The following diagram illustrates Top Energy's process for reviewing and setting prices in 2017-18.



## 2.2. How prices are calculated

Prices have been set to recover our 2017-18 target revenue. Target revenue is calculated to recover our forecast costs, but is limited by a price cap determined by the Commerce Commission. Unit prices (comprising a daily fixed charge and/or a consumption-based variable charge) are calculated for each pricing option we offer by allocating target revenue:

- directly to a consumer, where costs are known for specific consumer groups
- using cost allocators for shared costs, which are based on consumer numbers or usage characteristics.

Figure 1 illustrates how target revenue is allocated to consumer groups and prices.

**Figure 1: Calculation of prices (illustrative)**



Notes: UM: Unmetered, IND: Industrial, DG: Distributed Generation

## 2.3. Key changes to prices in 2017-18

We have continued the focus on our pricing methodology over the past few years. A review of our pricing approaches was commenced in 2014 followed by incremental changes which opened up TOU periods for more consumers. Last year, following consultation with key stakeholders, we improved the efficiency and effectiveness of our pricing by achieving alignment with the industry with reference to the ENA's Distribution Pricing Guide (August 2015).

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This year we are not introducing any significant changes to our price structure other than continuing our alignment with the industry following the release of ENA's Pricing guidelines for electricity distributors - version two (September 2016). This will also enable us to start to collate data through the continual roll-out of smart meters from a consistent base and over a longer time period to support any future changes.

Distribution prices have increased by 7.2% on average in order to recover allowable revenues permitted under the price cap regulation. With the current changes being made to our pricing structure, these increases will be recovered through an increase in fixed charges (other than those in the low fixed charge category) and the balance through variable charges. Industrial (IND) consumers will continue to be assessed based on specific assets used. Overall prices have increased by 2.5% taking into consideration the reduction in pass-through costs.

Appendix 5 provides further detail on prices.



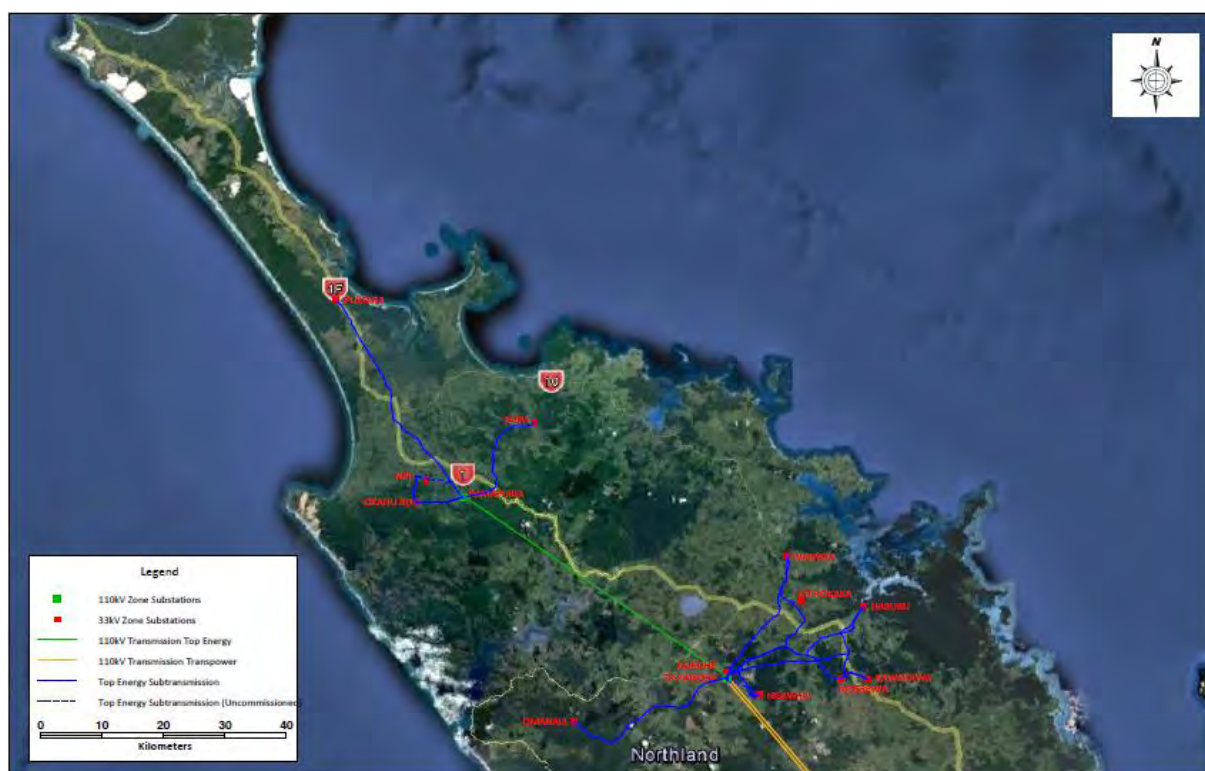
### 3. Pricing considerations

#### 3.1. Business considerations

Top Energy is the local electricity distribution network in the Mid and Far North of the Northland region. Top Energy's network begins in Hukerenui, approximately 25km north of Whangarei and ends at Te Pahi, 20 km south of Cape Reinga. It spans from the East Coast to the West Coast. The supply area is sparsely populated with no dominant urban centre and is recognised as one of the more economically depressed areas of the country.

The company is an integral part of the Far North community. It is owned by its customers through TECT. Consumer trust ownership means that surpluses not required for the operation and development of the network are returned to consumers via sales discounts on electricity bills and through a dividend to TECT. Top Energy also employs more than 170 people and is one of the larger employers in the Far North.

The utilisation of the network is heavily weighted towards small consumers, representing 99% of connections and over 78% of maximum demand. This is evidenced by the fact that average consumption is the one of the lowest in the country at 10,447 kWh/consumer. Top Energy's pricing structures are therefore strongly focussed on the needs of the residential and general consumer groups, with only a few large connections.



The network receives supply from the national grid at the Kaikohe substation and from local generation at Ngawha. The Kaikohe substation supplies the southern part of the network directly, with the northern part of the network supplied from a single transmission circuit to Kaitaia. Electricity is then distributed to consumers across long distribution feeders supplied from a limited number of zone substations.

This configuration is a legacy of a network design focused on providing electricity to a sparsely populated, economically deprived area, at a time when cost rather than reliability was the main driver for network development. Over 35% of Top Energy's lines were originally built using subsidies provided by the Rural Electrical Reticulation Council (RERC). This levy assisted post-war farming development in remote areas and enabled the supply of electricity to consumers located in sparsely populated rural areas, which would otherwise have been uneconomic to service.

The original network infrastructure was also developed at a time when Kaikohe and Kaitaia were the dominant urban centres. This is no longer the case, with growth now occurring in the Bay of Islands and Kerikeri as well as the East Coast peninsulas. This is where the existing infrastructure is weakest.

Many existing lines now require extensive rebuilding and refurbishment. Many assets are located in sparsely populated rural areas which are uneconomic in some circumstances. However, Top Energy is required by legislation to maintain supply to consumers that were connected to these lines prior to 1993.

Within this environment, Top Energy has had to invest to meet both growth in new areas, while maintaining an appropriate level of service in existing high-cost network areas. The costs of these investments need to be reflected in prices going forward.

### **3.2. Consumer views**

To inform our decisions in regards to the above investments, in 2009 Top Energy consulted with consumers on our proposed network developments and consumer expectations for prices and the quality of service they receive. This was completed via a telephone survey.

The survey results established that 80% of consumers wished to see network reliability improve. There was overwhelming support from community organisations for the construction of a second 110 kV circuit to secure the electricity supply to the Kaitaia region. Accordingly, we embarked on a programme to improve security of supply in which we will invest around \$185 million by 2024; the single largest expansion in the history of the network.

Top Energy completed its annual survey in 2016 to obtain customer preferences for a range of electricity supply and pricing matters. It differs from previous surveys in that it asks for more focused questions around emerging technologies, alternative energy sources (including the alternative of going off-grid) and the emerging re-integration of lines and energy. This encompassed a customer telephone survey with an overall response rate of 23%. The response rate is comparable to 2014 but is down from last year where we achieved 32%.

The results of the consumer's surveyed revealed that:

- 90% of consumers perceive their current supply reliability to be acceptable or better than acceptable (2015 = 93%)
- Only 15% of consumers have switched retailers in the last 12 months, largely driven by direct offers from retailers and only 9% utilised the "what's my number" website
- 60% of consumers would be interested in using a power advisory service through Top Energy to find the cheapest retail deal with only 6% of those willing to pay for the service

The portion of consumers considering alternative energy sources dropped to 26% (2015 = 50%) and when asked if they were considering going "off grid", 16% said yes. The annual survey continues to assist us in our review of our current pricing and future developments.

### 3.3.Regulatory considerations

Top Energy is subject to regulations which influence our pricing decisions as well provide guidance on how prices should be set. These are summarised in Figure 2.

The Commerce Commission determines and annual cap on lines charge revenue which it considers is sufficient to recovery our reasonable costs, as well as an appropriate return on investment.

We must also publish a range of information on our prices and pricing methods. This pricing methodology is prepared pursuant to these requirements (see Appendix 2).

The Electricity Authority's pricing principles and information disclosure guidelines also provide useful guidance on setting economically efficient prices. We have considered the extent to which our pricing methodology aligns with these principles in Appendix 3.

**Figure 2: Summary of relevant regulations**

Regulation	How this affects Top Energy's prices
<b>Electricity Distribution Services Default Price-Quality Path Determination 2015 (DPP)</b>	Prices must not exceed allowable revenues determined by the Commerce Commission
<b>Section 2.4 of the Electricity Distribution Information Disclosures Requirements (ID)</b>	Requires Top Energy to publish certain information on prices and pricing methods

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<b>Distribution Pricing Principles and Information Disclosure Guidelines (Pricing Principles)</b>	Provides guidance on: <ul style="list-style-type: none"><li>• economic principles and market considerations for setting prices</li><li>• information that should be made available to support pricing methodologies</li></ul>
<b>The Electricity (Low Fixed Charges Options for Domestic Consumers) Regulations 2004 (LFC Regulations)</b>	Requires Top Energy to offer a price option to domestic consumers that has a fixed daily price not exceeding 15 cents.
<b>The Electricity Industry Participation Code, Part 6 - pricing of distributed generation.</b>	Limits prices for distributed generation to the incremental costs of connecting generation to the network, taking into account any avoided costs.
<b>The Electricity Industry participation Code, Part 12A.</b>	Top Energy must consult with retailers in relation to any changes to pricing structures.

### 3.4. Stakeholder (Retailer) considerations

In accordance with the requirements of the Electricity Industry Participation Code, Top Energy has engaged with all retailers that have connections on our Network when we have intended to make changes to our pricing structures. This occurred last year when we consulted with retailers in September 2015 on our proposed changes from 1 April 2016.

As there are no changes to our pricing structures this year, we have not formally engaged with any retailers. Engagement has been through attendance at industry workshops (e.g. Electricity Authority Distribution Pricing Workshop in August 2016) and informal discussions when retailers visit our region (e.g. Trustpower and Meridian have in the last 12 months) or when new retailers sign up for a Use of System Agreement.

## 4. Pricing Decisions

### 4.1. Pricing objectives

Top Energy has adopted the following six pricing objectives, informed by the above considerations:

1. Prices provide an adequate return to the shareholder within the restrictions of the Commerce Commission's price control regime.
2. Prices are economically efficient, transparent, and simple to understand, but also recognise the socio-economic needs of consumers and the region
3. Prices reflect a fair and efficient allocation of cost, regardless of actual volumes of electricity consumed
4. Prices provide consumers with opportunities to significantly reduce their charges where they are able to make changes in their usage of the network to reduce Top Energy's long run costs
5. Price stability and certainty is maintained by signaling changes in advance and by transitioning these changes over an appropriate timeframe to avoid price shock
6. Prices do not differentiate urban and rural consumers

These objectives are informed by the key considerations discussed in the previous section, including business considerations, consumer feedback, and regulatory guidance (in particular the Electricity Authority pricing principles).

Trade-off exists across these objectives which must be balanced. Our current focus in meeting these objectives is:

- To allocate costs fairly between consumer groups
- To establish a range of price options that reflect consumer requirements
- That prices reflect the potential demand and capacity required by consumers
- To comply with regulatory requirements
- To appropriately recover pass through costs
- To achieve a rate of return acceptable to shareholders.

### 4.2. Five year pricing strategy

Top Energy developed a plan and strategy to progress the key findings from the 2014 pricing review and to transition to new pricing structures by 2020. This has subsequently been reviewed and extended to 2021 due to a longer assessment period being required to ensure that any changes are aligned with the requirements of the wider industry and the regulators. In addition, a slower rollout of smart meters across the Network has meant that the data required to make decisions has not been available.

The timeframe to develop and implement these changes is considered appropriate, factoring in:

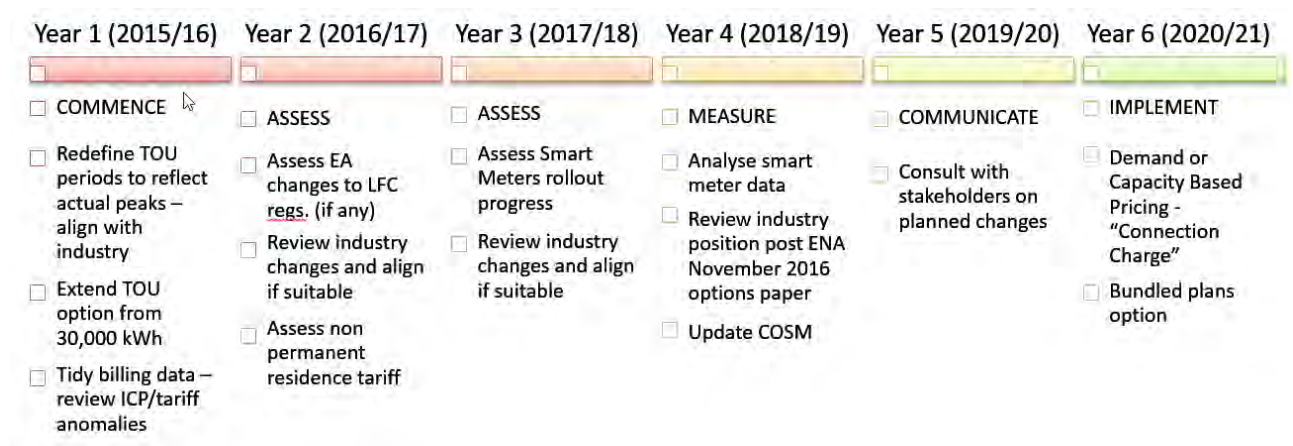
- The need to collect and analyse available pricing and billing information

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- New consumer insights and pricing applications made available by the roll out of smart meters (note: that with only 45% of smart meters currently installed up from 14% 12 months ago, it will take a period of time to have a reasonable amount of data to fully understand trends and usage patterns)
- Upcoming pricing guidance expected to be provided through:
  - The Electricity Authority's review of electricity distribution pricing regulations, low user fixed charge regulations including clarification on the published guidelines, and DG pricing
  - The Electricity Network Association's (ENAs) work stream to review and develop common price definitions and solutions. Top Energy is represented on the ENA working group.
- Consultation with consumers and retailers
- Sufficient time to transition prices to avoid price unreasonable shock to individual consumers.

The following table highlights the journey that has been completed to date and the planned approach to achieve Top Energy's objective of demand/capacity based pricing by 2021.

**Figure 3: Top Energy's pricing strategy**



It is difficult to quantify the impact of these changes at this stage. We plan to provide further information on how consumers will be impacted along with the resources required to implement as our review progresses.

We acknowledge that the Electricity Authority (EA) outlined their expectations in October 2016 that distributors will publish their plans for adopting efficient price structures. The plans are to include information that signals to stakeholders, including retailers and consumers, the distributor's goals and timeframes including:

- A clear outline of the process the distributor will adopt, including the nature of the consultant that will be undertaken with retailers and other stakeholders
- A timeline with the key milestones
- Discussion of distributor resourcing implications including how resources(s) will be allocated.

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The following table outlines the roadmap that will be provided to the EA and updated in line with the pricing strategy.

**Figure 4: Top Energy's future pricing roadmap**

Future Pricing Roadmap		EDB : <span style="border: 1px solid black; padding: 2px;">Top Energy Limited</span>					
Roadmap Stages	Activities	Timeline (Pricing Years)					
		2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
<b>1. Initiate pricing reform</b>							
Problem Identification & Discovery	Justification and early modelling	X					
Define overall objectives for reform	Set overall goals including target dates or date ranges	X					
Develop strategy to deliver reform	Develop ideas on how to go ahead (including long list of future pricing options if available)	X					
Communicate	Prepare and publish future pricing roadmap, include reasoning and why it's important	X					
Identify challenges	eg. resourcing implications, billing systems, EIEP1 file formats, AMI penetration and technology, accessing data	X					
Consult retailers	Socialise ideas & plans with retailers		X				
Establish high level plan	Gain commitment to reform, agree plan, allocate resources		X				
Gather basic data for analytics	What do we need to know to progress reform (eg. AMI penetration, customer groups)		X				
Define pathway	Prepare final strategic pricing plan (including target dates)		X				
Alignment across EDBs	Compare with other EDB's, form coalitions where appropriate			X			
<b>2. Plan changes in more detail</b>							
Develop detailed plans, including:	Identify issues/prepare detailed pricing reform plans			X			
- customer interactions	Establish program and focus groups (retailer + end-user)			X			
- data analysis to assess customer impacts	Narrow down preferred options and test market impacts (where applicable)			X			
- implementation and transition arrangements	Identify what will drive success			X			
- feedback loops and issues resolution	Develop processes to account for stakeholder views and review against target dates.			X			
- communication	Educate customers and retailers about change				X		
- regulatory compliance	Check plan meets regulatory expectations				X		
<b>3. Manage roll out of new pricing options</b>							
Develop transition strategies	Incentivise and manage take-up over time for retailers and customers				X		
Adopt risk management approach	Identify and manage risks to markets, customers, EDBs (eg political and financial risks)						
Review progress and make adjustments	Actively consider progress towards outcomes over time						
Ongoing customer interactions	Monitor customer responses and manage as required						

Resources to deliver the above roadmap will be internally driven by Top Energy Limited

### 4.3.Pricing review

The introduction of our year pricing strategy has provided the framework for the changes being made this year. To assist in the delivery of the framework, Top Energy is a member of the ENA's Distribution Pricing Working Group (DPWG) to better understand and to be involved in industry discussions on pricing and also assist in industry alignment with the transition from a historical pricing structure.

Recent regulatory initiatives (including the Electricity Authority review of Top Energy's pricing methodology against the pricing principles), release of LFC Guidelines and industry developments (e.g. deployment of smart meters, uptake of solar PV) are other factors that are being considered in the wider pricing review.

In 2014 PwC was engaged to develop a cost of service model (COSM) and look at more efficient pricing structures. Initial analysis suggested that the pricing methodology could be improved to better reflect economic, regulatory and industry best practice.

Key findings from the COSM analysis were that:

- There was minimal subsidisation between consumers in rural and urban areas under existing prices
- Subsidies were identified between the north and south regions of the network
- Prices for industrial, low users and streetlights under recover the average cost to serve these consumer groups.

Based on this review, Top Energy is considering moving from largely consumption based pricing towards prices based on demand/capacity-utilisation with time of use consumption charges which better reflect the service we provide and cost structure (i.e. network capacity). These forms of pricing are dependent on the roll out of smart meters, with the rollout currently sitting at 45% of ICP's. Other pricing improvements being considered include:

- Better alignment of prices with implied cost allocations calculated under the new COSM
- Increasing the proportion of fixed charges to reduce billing volatility (fixed charges currently represent only 12% of revenue)
- Reviewing the current approach to complying with low fixed charge regulations, taking into account the guidelines that were released in August 2016
- Aligning time of use periods to peak demand periods on the network to incentivise more efficient use of existing network capacity

In 2016, with the completion of the Year 1 "Commence" items, Top Energy reviewed the key aspects of Year 2 "Assess". As part of this assessment, the pricing structure was updated to achieve some of the pricing improvements identified above along with modernising the structure to achieve better industry alignment. Key to this is the ENA's Distribution Pricing Guidelines. The main changes are summarised below:

- Introduction of a Residential Consumer Group with a Low User and Standard User Category Code
- Introduction of a General Consumer Group for all other connections that are not Residential and don't fit within other Groups
- A new price structure for Unmetered based on a "per lamp" basis which will be transitioned to as data becomes available

In addition, the pricing structure has been simplified with improved usage of Consumer Groups, Category Codes and Register Content Codes.



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For 2017 - Year 3 "Assess" is the second year of assessment where we have looked at the extent of smart meter rollout and further industry alignment with version two of the ENA's pricing guidelines. The rollout of smart meters has increased over the past 12 months from 14% to 45% which is starting to enable limited analysis to be completed. This should continue to improve over the next 12 months.

With reference to the ENA's Pricing Guidelines version two, we have continued to refine our pricing schedule for consistency. The change this year is minor with the change to Units - the metric for price moving to industry standard of \$ and standard decimal points.

## 5. Target revenue

The first step in the pricing process is to establish the total target revenue to be recovered through prices. Distribution prices are set to generate sufficient revenue for Top Energy to recover its costs, subject to DPP allowable revenues. These costs are discussed in further detail below:

**Figure 5: 2017-18 Breakdown of Target Revenue**

COMPONENT OF TARGET REVENUE			
	2017-18	2016-17	Change %
Transpower Charges	5,577,786	5,472,321	1.9%
Avoided Cost of Transmission (ACOT) - Transpower	-	1,803,583	-100.0%
Avoided Cost of Transmission (ACOT) – DG	3,078,894	2,748,037	12.0%
Pass-through Costs	203,865	194,689	4.7%
Other recoverable costs	2,186,175	2,263,022	-3.4%
<b>Pass-Through subtotal</b>	<b>11,046,720</b>	<b>12,481,651</b>	<b>-11.5%</b>
Network Operating Costs	5,772,000	5,745,000	0.5%
Non-Network Operating Costs	9,316,594	7,831,311	19.0%
Depreciation	7,919,000	8,478,000	-6.6%
Pre-tax return on investment	19,633,436	18,889,645	3.9%
<b>Distribution subtotal</b>	<b>42,641,029</b>	<b>40,943,956</b>	<b>4.1%</b>
<b>Annual Revenue Requirement</b>	<b>53,687,749</b>	<b>53,425,607</b>	<b>0.5%</b>
DPP Compliance Adjustment	(2,748,192)	(4,246,889)	-35.3%
<b>TOTAL TARGET REVENUE</b>	<b>50,939,558</b>	<b>49,178,718</b>	<b>3.6%</b>

The total Target Revenue has increased by 3.6 % (price and quantity) largely driven by the increase in the asset base from the last regulatory period the corresponding increases allowed under the DPP.

## 5.1. Price cap regulation

Top Energy has set total target revenue for 2017-18 at \$50.9m to comply with the default price path (DPP) and based on consumption and connections forecasts. The target revenue is before any discretionary line charge discounts that are paid to consumers through a reduction in their electricity bill. Discretionary discounts are forecast to be in the vicinity of \$5.3m for the year, representing 10.4% of target revenue.

Under the 2015 DPP Determination, Top Energy was allowed a price increase of 8.29% in the 2015-16 pricing year and CPI + 7% price increases in the four subsequent pricing years. This decision was based on an allowable return on investment for the 2016-2020 regulatory period of 7.19% (67<sup>th</sup> percentile vanilla Weighted Average Cost of Capital (WACC)).

In addition, Top Energy is allowed to recover pass-through and recoverable costs including transmission charges, Avoided Transmission, Avoided Distribution, rates, levies, claw-back and NPV wash-up.

## 5.2. Transpower charges

Top Energy passes through all transmission charges at cost in accordance with the DPP and its own pricing principles. The transmission charge is equitably distributed across all customers. Transmission charges include:

- Connection Charges – Transpower charges for use of Kaikohe GXP connection assets to which Top Energy's network connects to the national grid
- Interconnection Charges – Transpower charges for use of core grid assets based on Top Energy's share of Regional Coincident Peak Demand (RCPD) in Transpower's Upper North Island demand measurement region
- New investment charges – Transpower contractual charges for grid connection capacity and security upgrades determined by agreement between Transpower and Top Energy.

## 5.3. Avoided Transmission – Transpower assets

Transmission assets between Kaikohe to Kaitia sub stations were transferred from Transpower to Top Energy on 1 April 2012. This resulted in a decrease in Transpower's Connection Charges. A notional avoided connection charge has been incorporated in Top Energy's pricing as a transmission recoverable cost, as allowed under the DPP. This will be recovered through prices for a limited period of 5 years, after which consumers will benefit through lower lines charges. The purpose of this charge is to incentivise transmission spur-line asset transfers where this reduces consumer prices in the long-run. This charge is no longer applicable for the 2017-18 pricing year.

## 5.4. Avoided Transmission – Distributed generation

Avoided transmission and voltage support charges may be payable to embedded generators of greater than 1MW output, when suitable terms have been negotiated with Top Energy. Avoided interconnection charges are paid in recognition of a generator's contribution to reducing Top Energy's share of Transpower RCPD peaks.

## 5.5.Avoided Distribution – Distributed generation

Avoided distribution may be payable to embedded generators of greater than 1MW output, when suitable terms have been negotiated with Top Energy.

## 5.6. Other Pass-through costs

This includes rates and regulatory levies.

## 5.7. Other recoverable costs

The DPP allows Top Energy to recover an allowance for the under-recovery of allowable revenues in previous assessment periods (comprising a “Claw-back” and “NPV Wash-Up” allowance). This allowance is \$2.4m in 2017-2018.

## 5.8.Network costs

Network costs comprise mainly maintenance costs. These are derived from the network maintenance programme which provides consumers with acceptable levels of safety and reliability, including an allowance for repairs following faults. The amount is determined in conjunction with Top Energy’s Asset Management Plan.

## 5.9. Non-Network costs

These are costs incurred in managing the day to day operations of the business, including management, finance and administration costs, as well as system operations and network support. It also includes investment in systems and resources as Top Energy moves to cost reflective pricing with the availability of and access to smart meter data.

## 5.10.Depreciation

Depreciation represents the return of Top Energy’s asset investment and is estimated using 2016 Regulatory Asset Base (RAB) roll-forward.

## 5.11. Pre-Tax WACC

A pre-tax return on investment is derived by applying a pre-tax weighed average cost (WACC) to Top Energy’s regulatory asset base (RAB). Our 2018 WACC estimate of 8.76% is based on the DPP WACC (7.19%) expressed on a pre-tax basis.

## 5.12. DPP compliance adjustment

This represents an adjustment to our breakdown of costs to ensure compliance with allowable revenues under the DPP. In the 2017-18 year, the adjustment is negative as Top Energy is charging below what is required to achieve the allowable return on the investment in the network. This has occurred as Top Energy’s price path is smoothed under the DPP to prevent any potential price shocks to consumers (e.g. 7% + CPI per year).

## 6. Consumer Groups and Pricing Options

### 6.1. Cost drivers

We have sought to align our consumer groups and pricing options to reflect differences in the key drivers of our costs. Approximately, 85% of our costs is associated with directly investing in, maintaining and operating the network, as well as receiving supply from Transpower. The remaining 15% is associated with general management and administration of the business. Top Energy considers that our network cost drivers are:

- peak demand
- the length of circuit required to supply consumers
- the number of consumer connections
- dedicated asset costs.

The cost drivers that are relevant to Top Energy's current pricing methodology are peak demand, the number of connections, and dedicated asset costs, as discussed below.

#### **Peak demand**

Top Energy builds capacity in the network to meet forecast demand. As demand increases, Top Energy must consider further investments in capacity. Consumers' peak usage of existing network capacity is therefore a key driver of future costs. For instance, the network potentially faces capacity constraints in a number of growth areas (as identified in 3.1 Business considerations) and Top Energy has undertaken a large investment programme in these areas to meet forecast demand.

#### **Circuit length**

The distance between a consumer's premises and the point of supply to the network influences the length of lines and cables required to deliver electricity to consumers. Effectively, consumers that are further away from the Kaikohe GXP create relatively higher costs for Top Energy.

In our view, it is not practical, or necessarily fair, to distinguish individual consumers by circuit length. However, groups of consumers within network sub-regions can be distinguished. Recently we investigated the merits of adopting pricing sub-regions, reflecting rural and urban and Northern and Southern network supply areas, respectively. While some cost differences were evident across these regions, potentially justifying different prices, consumers have sent a clear message that rural consumers should pay no more than urban areas. For similar reasons, we have decided not to distinguish between the Southern and Northern networks.

Therefore, while circuit length is a relevant cost driver, Top Energy has decided not to reflect this in pricing other than for Industrial customers.

### Consumer connections

New connections create investment and ongoing operations and maintenance costs. Top Energy's policy is for consumers to contribute towards capital costs in an upfront capital contribution. Remaining connection related costs must therefore be recovered through pricing.

### Consumer specific costs

As a general principle, costs that are specific to individual consumers or groups of consumers should be directly recovered from these consumers, where practical. The provision of street-lighting and community lighting is an example of a cost that is only caused by a specific group. Transmission and assets costs for large industrial consumers can also be identified and prices set to reflect these costs through non-standard contracts.

Pricing distinctions could also be made based on network regions (discussed above), use of the high voltage network only, and use of dedicated transformers. However, our review of pricing suggests there is little benefit for Top Energy in disaggregating prices to reflect these costs.

## 6.2.Consumer Groupings

Prices are disaggregated into four consumer groups, which reflect the use of assets, connection profiles, and contribution to maximum demand, consistent with key network cost drivers:

**Figure 6: Consumer Groups**

Consumer Group	Criteria	Rationale	Pricing and commercial terms
Larger	Large commercial and Industrial loads consuming >200,000MWh per annum, with a fuse capacity of 110kVa or greater	Pricing incentivises the efficient use of network capacity by large loads through variable charges levied on peak, shoulder and off-peak time of use periods for Large Commercial.	Standard
		Industrial loads are distinguished by much larger load size, time of use metering and Transpower and Top Energy's distribution costs can be identified for each consumer.	Non-Standard
Residential	Loads have similar capacity with a common load profile which is often controllable	Recognises the large majority of small load connections (with or without time of use meters) and providing compliance for low user regulations.	Standard

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<b>General</b>	All connections that do not fit within other consumer groups	<p>Same pricing options as 'standard residential' are available.</p> <p>In addition pricing incentives through General Advanced variable charges levied on peak, shoulder and off-peak time of use periods.</p> <p>Also recognises that some connections will be without time of use meters.</p>	Standard
<b>Unmetered</b>	Street and community lighting and other unmetered connections	This group recognises the unique cost and network usage profile of street and community lighting.	Standard

### 6.3. Summary of pricing options

Top Energy offer the following pricing options within the above consumer groups.

**Figure 7: Pricing Options**

Price Code	Description and rationale	MWh	ICPs
<b>Industrial (IND)</b>	Fixed price recovery of costs associated with industrial loads consuming >3,000MWh per annum and a fuse capacity of 110kVa or greater.	59,521	3
<b>Large Generation (LDG)</b>	Fixed price recovery of costs associated with the connection of large scale distributed generation into the distribution network.		1
<b>Micro Generation (DG)</b>	Variable price recovery of costs associated with the connection of small scale distributed generation into the distribution network. Currently set at zero.	762	

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<b>General</b>	Default code for all customers with an annual consumption exceeding 200,000kWh but less than 3,000,000kWh (TOU). Total charges for this plan include a fixed price for each day connected and a variable consumption price based on kWh consumption during three pricing periods, representing peak, shoulder and off-peak demand periods, as follows:	40,369	57
<b>Advanced Metering (TOU) and (GA)</b>	<p>Advanced metering is for small commercial connection with pricing beneficial for customers using between 30,000 and 200.000 kWh (GA) per annum.</p> <p>Both have pricing in the following time periods.</p> <ul style="list-style-type: none"> <li>• Peak: 07:00-9:30 and 17:30-20:00</li> <li>• Shoulder: 09:30-17:30 and 20:00-23:00</li> <li>• Off-peak: 23:00-07:00</li> </ul>		
<b>Residential ICP / General ICP</b>	All residential and general ICP's are split over Day/Night, Controlled, Un-controlled and All Inclusive meters.	26,451	
<b>Day/Night (D16/N8)</b>	Total price for this plan include a fixed price for each day connected (DAYF) and two variable consumption prices during a day and night period. The higher day price (DAYV) applies from 7 am to 11 pm. A lower night price (NGTV) applies from 11 pm to 7 am to encourage consumers to shift their consumption from the peak day-period. To qualify for this plan consumers must offer at least 3kW of load controllable by Top Energy for up to 6 hrs per day.	15,745	
<b>Uncontrolled (UN24)</b>	Total price for this plan include a fixed price for each day connected and a variable consumption price. Variable prices are set higher than other controlled codes to incentivise consumers to take up controlled or D/N prices.	78,157	
<b>Controlled (CN20)</b>	Top Energy can control load for up to 4 hrs per day and the load offered must be at least 10 kW. Total price for this plan include a fixed price for each day connected and a variable consumption price. Prices are lower than under the UN and IN price options to encourage consumers to offer up large interruptible loads.	4,440	
<b>All inclusive (IN18)</b>	Top Energy can control load for up to 6 hrs per day. The load offered must be at least 3 kW (e.g. a hot water cylinder). Total price for this plan include a fixed price for each day connected and a variable consumption. Variable prices are set higher than other controlled codes as the supply is a single meter and therefore it is not possible to determine the actual portion of controlled and uncontrolled load.	118,244	
<b>CAP150 (CLOSED)</b>	For customers on CT Metering, with a capacity of greater than 100 Amps per phase. Total price for this plan include a fixed price for each day connected and a variable consumption price on all loads. This plan is closed to new consumers from 1 April 2015 with existing consumers transitioned to other pricing options as soon as possible.	6,341	57



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<b>UM</b>	Prices for streetlights (UML) are based on a price per lamp equivalent. Other connections (UMG) are supplied with continuous supply less than 500watts. Prices are wholly fixed.	57	
<b>UM (CLOSED)</b>	<p>11 different prices targeted at a range of unmetered supply configurations including:</p> <ul style="list-style-type: none"> <li>• 9 different street and community lighting configurations</li> <li>• Continuous supply equipment less than 500watts (e.g. Battery Chargers, Electric Fences, Irrigation, PCM Cabinets, Phone Booths, Radio Repeaters, TV Boosters)</li> <li>• Intermittent supply equipment (Fire Sirens, Railway Crossing Lights, Traffic Counters).</li> </ul> <p>Prices are wholly fixed given these connections are not metered.</p> <p>This plan is closed to new consumers from 1 April 2016 with existing consumers transitioned to other pricing options as soon as possible.</p>	1,993	261

#### 6.4. Industrial (Non-Standard)

Industrial pricing aims to recover Top Energy's costs to service these consumers. To meet these consumers' requirements, Top Energy charge a wholly fixed annual price divided into twelve equal payments. There is no variable component. This fixed charge comprises the following individual charge items:

- Transpower Connection charges
- Transpower Interconnection Charges
- Avoided transmission charges payable to embedded generators
- Avoided distribution charges payable to embedded generators
- Top Energy connection and interconnection charges for its sub-transmission assets
- Top Energy operations and maintenance charges

The charges have been calculated consistent with network cost drivers on the basis of:

- Asset usage (e.g. no low voltage or distribution level costs are assigned to these consumers as they connect directly into the sub-transmission system)
- Coincident peak demand (i.e. to directly allocate Transpower charges)

Top Energy does not have additional obligations or responsibilities regarding interruptions to supply for non-standard connections beyond those incorporated in its standard contracts. While additional circuit redundancy and specialist equipment is provided to these consumers in some circumstances, which is sometimes beyond what is provided to many standard connections, these consumers pay for this enhanced level of security on a cost recovery basis.

## 6.5. General Advanced Metering

Pricing comprises of a fixed and variable component.

Fixed prices have been set to maintain historical linkages, reduce stranding risk associated with larger connections, as well as reflect the proportion of asset used compared to other pricing options.

Variable rates are set relatively higher during periods of peak demand and progressively lower during shoulder and off-peak demand periods. These time periods have been designed:

- To align with typical demand periods on the network
- To incentivise consumers to shift demand from peak periods to shoulder periods and from shoulder to off-peak periods
- To maintain consistency with industry standard TOU periods
- To maintain consistency with the Day/Night pricing periods.

## 6.6. Residential/General

This pricing is where the connection does not have access to half hour data or chooses not to select a plan that uses half hour data. This is common for residential connections. A daily fixed price is levied on these plans as follows:

- a 15 cent per day is applied to all Residential consumers who meet the criteria of being a low user (LR) to comply with the low user fixed charge regulations
- A \$1 per day is applied to all Residential consumers who do not meet the low user criteria
- A \$1 per day is applied to all other consumers who are not Residential
- CAP150 (closed): A higher fixed charge is set for these commercial customers to reflect a higher average levels of consumption and demand

A base line variable price is charged to all uncontrolled consumers (UN). Discounts to this standard price are applied to Day/Night, recognising their contribution to reducing peak demand, and Controlled plans (All Inclusive and Controlled 20), to incentivise consumers to offer up controllable load.

## 6.7. Unmetered

Unmetered pricing is wholly fixed. Fixed charges have historically been set with reference to historical amounts and rolled forward by inflation. However, recent costing analysis suggests unmetered prices are possibly not recovering the cost of supplying these connections. Top Energy will investigate this further over its 5 year pricing strategy horizon.

## 6.8. Distributed generation

Under Part 6 of the Electricity Industry Participation Code, Top Energy must price distributed generation at no more than the incremental cost of connecting this generation, taking into account any avoided costs.

Top Energy has not developed separate charges for distributed generation, other than for negotiated avoided transmission, avoided distribution and voltage support payments to large scale generators (greater than 1MW output). These generators are able to demonstrate on an annual basis that they are making a material contribution towards Top Energy avoiding additional transmission costs.

#### **Large scale distributed generation (>1MW)**

Connection charges have been set to recover the costs through a non-standard contract.

Avoided interconnection charges may be paid to generators that are connected to the Top Energy's network and which have actively contributed to reducing Top Energy's contribution to RCPD peaks, used to set Transpower's interconnection charges. Avoided transmission and voltage support charges are calculated based on the notified Transpower charges for the applicable pricing period. This requires appropriate metering facilities at each site, so that the contribution to RCPD or voltage support charge reductions can be verified.

In the event that there is more than one eligible embedded generator providing a contribution to lowering the RCPD, avoided transmission charges are calculated based upon the pro-rata value of the metered contribution from each generator at the times of the RCPD peaks.

#### **Other distributed generation**

Top Energy considers that other distributed generation customers (e.g. small scale solar PV) already receive a significant benefit through reduced distribution consumption prices, to the extent that electricity generated on site reduces the amount of electricity delivered via the network. Conversely, the cost to Top Energy of servicing these connections (i.e. an average domestic connection) is not reduced by the presence of the distributed generation, especially if the connection requires access to the network at times of peak demand. Accordingly, we believe that some connections with distributed generation are paying less than the incremental cost of providing the connection to that consumer.

While there are only a relatively small number of distributed generation connections on the network, the planned move to demand / capacity pricing and a higher proportion of fixed charges will ensure that consumers with distributed generation pay a fair share of costs, to satisfy cost recovery and fairness considerations under Top Energy pricing objectives.

## **6.9.Discounts**

All discounts will be treated as a discretionary discount. It is our intention to maintain the same consumption based methodology that has previously been used for posted discounts. Discounts calculated on this basis represent approximately \$5.3m and will be processed through the retailers to be applied to consumer invoices.

## 6.10. Capital contributions

A customer may be required to make an upfront contribution to the cost of extending or upgrading the network (e.g. arising from connecting to the network). This contribution pre-funds Top Energy's investment, with these costs excluded from line charges.

The value of the Capital Contribution is calculated from the total cost of extension work and reduced by the value of the Top Energy connection subsidy. The contribution represents the uneconomic cost of constructing the line, but does not grant any ownership rights; Top Energy retaining ownership, and responsibility for repairs and refurbishment of the reticulated extension.

Capital Contributions may be non-refundable or refundable depending on the circumstances. Standard charges and requirements apply to typical connection configurations.

The full details of the methodology for determining capital contributions is publically disclosed on the website [www.topenergy.co.nz/network/network-disclosures/](http://www.topenergy.co.nz/network/network-disclosures/)

## 7. Calculation of Prices

Tariffs are calculated by allocating costs to consumer groups and prices, based on assumed splits between fixed and variable tariffs. Figure 8 summarises the allocators used to allocate target revenue and the rationale for these decisions.

**Figure 8: Summary of cost allocators used to set prices**

Cost Category	Allocator used	Rationale
Transmission costs	<i>Interconnection charges and ACOT - DG:</i> Coincident share of RCPD (kW) for industrial consumers and Anytime Maximum Demand (AMD) for other connections	Allocation of interconnection charges aligns with Transpower's use of RCPD to apportion charges at a national level.
	<i>Connection charges and ACOT - Transmission:</i> Share of AMD	Connection charges represent investment in GXP capacity. AMD broadly represents usage of this capacity.
Network Costs	Customer group demand on the system as a percentage of ORC	Spreads maintenance cost in portion to demand, weighted by the replacement cost of assets (recognising higher maintenance is usually attributed to higher cost assets).

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Non-Network Costs	Regulatory Asset Base (RAB)	Spreads costs that are relatively static with the size of a customer.
Depreciation	IND: Demand (kW) General Advanced: RAB Residential/General/UM: kWh volume	Allocation based on utilisation of asset utilisation, which broadly corresponds with depreciation representing use of capital.
Pre tax ROI	RAB	Allocates return in proportion to value of assets ODV/RAB, consistent with regulatory framework.

The above allocation approach results in the following allocations of target revenue to consumer groups.

**Figure 9: Cost allocation results**

				Pass through \$'000's	Distribution \$'000's							
Consumer Group	Regulatory Asset Base 2016(\$m)	Number of ICPs	Energy Consumption Forecast 2018 (MWh)	Transmission, Other Pass-through and Recoverable Costs	Network Costs (Maintenance)	Non-Network Costs (Overheads )	Depreciation	Pre tax WACC	Annual Revenue Requirement	DPP compliance Adjustment	Total Target Revenue	
IND	5.2	3	59,521,913	967	135	218	185	460	1,965	(67)	1,898	
TOU	20.0	57	40,368,725	1,290	515	832	707	1,753	5,097	(1,360)	3,737	
LDG	1.8	1	-	-	47	76	65	160	348	(284)	64	
Unmetered <sup>1</sup>	0.7	318	1,993,559	-	18	29	24	60	131	313	444	
Residential	165.8	26,451	155,796,250	5,558	4,271	6,894	5,860	14,528	37,110	(1,730)	35,380	
General	30.5	4,866	67,132,339	3,231	786	1,268	1,078	2,673	9,036	381	9,417	
Total	224	31,696	324,812,785	11,047	5,772	9,317	7,919	19,633	53,688	-	2,748	50,940

Appendix 5 summarises the resulting prices for 2017-2018 which are also located on the Top Energy website;

[www.topenergy.co.nz/network/network-disclosures/](http://www.topenergy.co.nz/network/network-disclosures/)

## Appendix 1 – Certification for Year Beginning Disclosures



### Certification for Year-beginning Disclosures

Pursuant to Schedule 17

Clause 2.9.1 of section 2.9

Electricity Distribution Information Disclosure Determination 2012

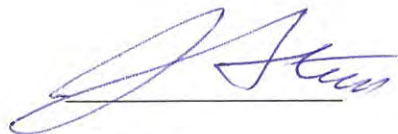
We, Murray Ian Bain and Gregory Mark Steed, being directors of Top Energy Limited certify that, having made all reasonable enquiry, to the best of our knowledge –

- a) The following attached information of Top Energy Limited prepared for the purposes of clause 2.4.1 of the Electricity Distribution Information Disclosure Determination 2012 in all material respects complies with that determination.
- b) The prospective financial or non-financial information included in the attached information has been measured on a basis consistent with regulatory requirements or recognised industry standards.



M I Bain

28 March 2017



G M Steed

## Appendix 2 - Glossary

ACOT	Avoided Cost of Transmission
ACOD	Avoided Cost of Distribution
AMD	Anytime Maximum Demand, which is defined as the average of the 12 highest off-take quantities for the customer at the connection location during the Capacity Measurement Period.
Capacity Measurement Period	12-month period starting 1 September and ending 31 August inclusive, immediately prior to the commencement of the pricing year.
Consumer	A purchaser of electricity from the Retailer where the electricity is delivered via the distribution network and is interchangeable with customer.
Consumption Data	Data provided by the Retailer to the Distributor as required under the Use of System Agreement, showing details of the measured electricity consumption on the distribution network.
Code	The Electricity Industry Participation Code 2010
Demand	The rate of expending electrical energy expressed in kilowatts (kW) or kilovolt amperes (kVA).
Distributor	Top Energy as the operator and owner of the distribution network.
Distributed Generation (DG)	Electricity generation that is connected and distributed within the distribution network, the electricity generation being such that it can be used to avoid or reduce transmission demand costs.
ENA	Electricity Networks Association
GXP	Grid Exit Point, a point of connection between Transpower's transmission system and Top Energy's distribution network.
GST	Goods and Services Tax as defined in the Goods and Services Tax Act 1985.
HV	High Voltage, voltage above 1,000 volts.
ICP	Installation Control Point. Point of Connection on the Distributor's network, which the Distributor nominates as the point at which a Retailer is deemed to supply electricity to a Consumer.
IND	Industrial Customer defined by Top Energy.
Line Prices	The prices levied by Top Energy on Consumers for the use of the Network as described in this Pricing Methodology.
Load Control Equipment	The equipment (which may include, but is not limited to, ripple receivers and relays) which is from time to time installed in a consumer's premises for the purpose of receiving load management service signals.

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LV	Low voltage. Voltage up to 1,000 volts, generally 230 or 400 volts for supply to most Consumers.
Pricing Year	12-month period from 1 April to 31 March the following year.
RPDP	Regional Peak Demand Period, relates to an Upper North Island defined by Transpower where Top Energy is located. The half hour in which any of the 12 highest regional demands occurs during the capacity measurement period for the relevant pricing year.
RCPD	Regional Coincident Peak Demand, relates to the customer's off-take at the connection location during a regional peak demand period.
Retailer	The supplier of electricity to Consumers with installations connected to the distribution network.
ToU	Time of Use Customer, who is metered according to their electricity consumption for a particular period (usually half-hourly).
Transpower	Transpower (NZ) Limited.
UN	Uncontrolled



## Appendix 3 – Compliance with ID determination

ID Clause	Information Disclosure requirement	Pricing Methodology Reference
2.4.1	Every EDB must publicly disclose, before the start of each disclosure year, a pricing methodology which:	This Pricing Methodology will be published on our website prior to 1 April 2017.
2.4.1(1)	Describes the methodology, in accordance with clause 2.4.3 below, used to calculate the prices payable or to be payable;	See below for document references to compliance against clause 2.4.3.
2.4.1(2)	Describes any changes in prices and target revenues;	Prices have increased for all customers by an average of 2.5% when comparing 2017 and 2018 pricing schedules. See section 2.3  Changes in target revenues are described in Section 5.
2.4.1(3)	Explains, in accordance with clause 2.4.5 below, the approach taken with respect to pricing in non-standard contracts and distributed generation (if any);	See section 6.4 and 6.8
2.4.1(4)	Explains whether, and if so how, the EDB has sought the views of consumers, including their expectations in terms of price and quality, and reflected those views in calculating the prices payable or to be payable. If the EDB has not sought the views of consumers, the reasons for not doing so must be disclosed.	Public consultation was completed during 2016 (see section 3.2)

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2.4.2	Any change in the pricing methodology or adoption of a different pricing methodology, must be publicly disclosed at least 20 working days before prices determined in accordance with the change or the different pricing methodology take effect.	Any changes will be disclosed on 1 March 2017.
2.4.3	Every disclosure under clause 2.4.1 above must-	
2.4.3(1)	Include sufficient information and commentary to enable interested persons to understand how prices were set for each consumer group, including the assumptions and statistics used to determine prices for each consumer group;	Top Energy considers this document provides sufficient information on how prices have been set but will continually review for improvements.
2.4.3(2)	Demonstrate the extent to which the pricing methodology is consistent with the pricing principles and explain the reasons for any inconsistency between the pricing methodology and the pricing principles;	See Appendix 4  TEL considers our pricing is broadly consistent with the pricing principles but we also discuss how potential changes to our pricing methodology will align more closely with these principles.
2.4.3(3)	State the target revenue expected to be collected for the disclosure year to which the pricing methodology applies;	See section 5.
2.4.3(4)	Where applicable, identify the key components of target revenue required to cover the costs and return on investment associated with the EDB's provision of electricity lines services. Disclosure must include the numerical value of each of the components;	See section 5.

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2.4.3(5)	State the consumer groups for whom prices have been set, and describe- <ul style="list-style-type: none"> <li>the rationale for grouping consumers in this way;</li> <li>the method and the criteria used by the EDB to allocate consumers to each of the consumer groups;</li> </ul>	See Section 6.2.
2.4.3(6)	If prices have changed from prices disclosed for the immediately preceding disclosure year, explain the reasons for changes, and quantify the difference in respect of each of those reasons;	See section 2.3 and Appendix 5
2.4.3(7)	Where applicable, describe the method used by the EDB to allocate the target revenue among consumer groups, including the numerical values of the target revenue allocated to each consumer group, and the rationale for allocating it in this way;	See tables in Section 7.
2.4.3(8)	State the proportion of target revenue (if applicable) that is collected through each price component as publicly disclosed under clause 2.4.18.	See tables in Section 7.
2.4.4	Every disclosure under clause 2.4.1 above must, if the EDB has a pricing strategy-	
2.4.4(1)	Explain the pricing strategy for the next 5 disclosure years (or as close to 5 years as the pricing strategy allows), including the current disclosure year for which prices are set;	Our pricing strategy is discussed in section 4.2
2.4.4(2)	Explain how and why prices for each consumer group are expected to change as a result	See section 4.2
2.4.5	Every disclosure under clause 2.4.1 above must-	

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2.4.5(1)	Describe the approach to setting prices for non-standard contracts, including-	See Section 6.4 and appendix 5
(a), (b), (c)	<ul style="list-style-type: none"><li>• the extent of non-standard contract use, including the number of ICPs represented by non-standard contracts and the value of target revenue expected to be collected from consumers subject to non-standard contracts;</li><li>• how the EDB determines whether to use a non-standard contract, including any criteria used;</li><li>• any specific criteria or methodology used for determining prices for consumers subject to non-standard contracts and the extent to which these criteria or that methodology are consistent with the pricing principles;</li></ul>	
2.4.5(2)	Describe the EDB's obligations and responsibilities (if any) to consumers subject to non-standard contracts in the event that the supply of electricity lines services to the consumer is interrupted. This description must explain-	See Section 6.4
	<ul style="list-style-type: none"><li>• the extent of the differences in the relevant terms between standard contracts and non-standard contracts;</li><li>• any implications of this approach for determining prices for consumers subject to non-standard contracts;</li></ul>	

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2.4.5(3)	Describe the EDB's approach to developing prices for electricity distribution services provided to consumers that own distributed generation, including any payments made by the EDB to the owner of any distributed generation, and including the- <ul style="list-style-type: none"><li>• prices; and</li><li>• value, structure and rationale for any payments to the owner of the distributed generation.</li></ul>	See Section 6.8
2.9.1	Where an EDB is required to publicly disclose any information under clause 2.4.1, clause 2.6.1 and sub-clauses 2.6.3(4) and 2.6.5(3), the EDB must at that time publicly disclose a certificate in the form set out in Schedule 17 in respect of that information, duly signed by 2 directors of the EDB.	Completed and attached as Appendix 1

## Appendix 4 – EA Pricing Principles

Pricing principles	Extent to which pricing methodology is consistent with pricing principle
<p>(a) Prices are to signal the economic costs of service provision by:</p> <p>(i) being subsidy free (equal to or greater than incremental costs, and less than or equal to standalone costs), except where subsidies arise from compliance with legislation and/or other regulation</p>	<p>We interpret ‘incremental cost’ as the additional cost of connecting a consumer, comprising connection costs, network upgrades, and incremental operating costs.</p> <p>Top Energy requires a capital contribution for new connections and asset upgrades if the expected line charge revenue from the connection is less than the associated incremental capital cost (i.e. an uneconomic connection). Accordingly, distribution prices will typically be in addition to incremental capital costs.</p> <p>Remaining incremental operating costs resulting from a new connection will be recovered through distribution prices. Over the last ten years a new connection has contributed approximately \$300 per annum (real) to operating expenditure. An uncontrolled consumer (UN) would need to consume less than 1,150kWh in a year for prices to fall below this incremental cost (i.e. based on the 15 cent per day fixed charge and existing UN prices). This highlights that the application of the 15 cent per day low fixed charge creates cross-subsidisation at very low levels of consumption.</p> <p>Top Energy considers ‘stand alone cost’ means the cost for a consumer to disconnect from the distribution network and install onsite generation. Solutions do exist for small loads to disconnect from the network through installation of onsite solar generation and batteries. However, these systems are relative expensive when compared to</p>

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distribution supply. For example, a small 8kWh/day system can cost in excess of **\$50,000** to install. We estimate this would cost \$1.82/kWh in ideal circumstances, assuming the full 8kWh is generated each day over a 15 year period and the installation is funded by a mortgage. This is significantly more expensive than the average 38.5c/kWh charge Top Energy's consumer's pay (source: MBIE quarterly survey of electricity prices, August 16). Nevertheless, the cost of installing these systems is falling rapidly and Top Energy will continue to keep a watch on this market and respond appropriately through pricing.

(ii) having regard, to the extent practicable, to the level of available service capacity

Top Energy's primary service is to provide capacity in the distribution network. We are currently considering the adoption of demand/capacity and TOU based prices for all consumers facilitated through smart meters. This will align pricing more closely with the level of available service capacity.

Nevertheless, current pricing structures do recognise available service capacity in the network as follows:

- Consumer groups recognise different load sizes
- Many network and transmission related costs are allocated to consumer groups in proportion to demand
- Capital contributions help fund the uneconomic proportion of new investments in capacity
- Consumption based prices provide a broad incentive to reduce consumption
- Industrial sites (IND) are charged for specific asset usage and therefore the capacity these assets provide, and are apportioned transmission charges directly based on their contribution to RCPD
- TOU/Advanced Metering and Day/Night prices structures encourage consumers to shift load outside peak usage periods

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	<ul style="list-style-type: none"> <li>Controlled prices encourage consumers to offer up controllable load which Top Energy can use to manage congestion during interruptions to supply, when the network maybe constrained</li> </ul>
(iii) signalling, to the extent practicable, the impact of additional usage on future investment costs	For the same reasons discussed above, Top Energy's pricing structures signal the cost of investing in additional network capacity. Top Energy's plans to move to demand/capacity or TOU pricing will improve these signals.
(b) Where prices based on 'efficient' incremental costs would under-recover allowed revenues, the shortfall should be made up by setting prices in a manner that has regard to consumers' demand responsiveness, to the extent practicable	<p>This principle suggests that consumers with a higher willingness to pay should pay relatively more than consumers with a lower willingness to pay. Top Energy considers pricing based on willingness to pay should be linked to the level of service provided. This is a common pricing practice in many competitive markets. For instance, the UN and CN pricing options give consumers a choice over whether heating loads are interrupted. Consumers that are unwilling to have supply interrupted pay relatively more than a customer that is willing to accept a slightly lower level of service. Similarly, consumers on Day/Night and TOU pricing options that do not want to shift load to off peak periods pay more for using electricity at time that suits them.</p>
(c) Provided that prices satisfy (a) above, prices should be responsive to the requirements and circumstances of stakeholders in order to:	
(i) discourage uneconomic bypass	Top Energy is not aware of any disconnections arising from uneconomic bypass of its network. Small scale DG (e.g. solar connections on houses) creates a risk of uneconomic bypass that is detrimental to Top Energy. However, as discussed, we consider it is currently uneconomic for a consumer to disconnect from the network in this manner.



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	<p>However, in many cases these connections demand power at peak times, however, contribute very little at non-peak times. Connections with small scale DG therefore contribute little to fixed costs of connecting them to the network. A move towards capacity/demand/TOU pricing and a higher proportion of fixed charges will address this issue. The latter has been introduced in this pricing year.</p> <p>Another potential area of uneconomic bypass is where large loads are situated close to a Transpower GXP and could bypass Top Energy's network to connect directly to the Grid. Only one large industrial load (based in Kaitaia) would be of a size sufficient to connect to Transpower's network. It would be uneconomic for this consumer to connect to the nearest GXP at Kaikohe which is 70km away.</p>
(ii) allow for negotiation to better reflect the economic value of services and enable stakeholders to make price/quality trade-offs or non-standard arrangements for services	Capital contributions and non-standard contracts provide a mechanism where a consumer can request assets that provide a higher level of service. The costs of specific assets are either recovered upfront through a capital contribution or within pricing. Consumers can also request alternative pricing structures under non-standard contracts to address their own risks (eg IND prices are wholly fixed).
(iii) where network economics warrant, and to the extent practicable, encourage investment in transmission and distribution alternatives and technology innovation	Avoided transmission, Avoided distribution and voltage support charges may be payable to embedded generators of greater than 1MW output. This may help justify investments in local generation
(d) Development of prices should be transparent, promote price stability and certainty for	The pricing strategy explained in this document provides stakeholders with an overview of Top Energy's plans for prices over the next several years. We plan to consult with consumers and retailers to seek their feedback on any changes which will be incorporated into any pricing decisions. Any changes will be transitioned over a reasonable

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stakeholders, and changes to prices should have regard to the impact to stakeholders	period to avoid price shock to consumers. This period in this document (2020/21) aligns with the 5 year regulatory period set by the Commerce Commission which will also provide consumers with certainty and transparency over total allowable revenues.
(e) Development of prices should have regard to the impact of transaction costs on retailers, consumers and other stakeholders and should be economically equivalent across retailers	<p>The same price structures apply to all retailers supplying consumers on Top Energy's network. We do not consider our pricing structures provide an advantage to any individual retailer.</p> <p>The new TOU time periods from 1 April 2015 were established after considering standard practices used by other distributors to minimise transaction costs for retailers with reference to peaks on Top Energy's network. Future pricing innovation will continue to reference to standard distribution sector pricing solutions developed in conjunction with the ENA.</p> <p>Transmission and distribution charges are bundled for all consumers except large industrials.</p>

## Appendix 5 - Network Line Charges 2017 – 2018

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# 2017 / 18 Price Schedule

Effective from 1st April 2017. All prices exclude GST.

Consumer Group	Price Category Code	Price Code	Register Code	Description	Daily Fixed Charge (\$/Day)	Total (\$/Year)
<b>Residential</b>						
Low User (LR)	No. of Users LR012					
	LR			LR Daily Price	0.1500	
	LUC	UN24		LR Uncontrolled		0.2400
	LA	IN18		LR All Inclusive		0.3661
	LPC	CN20		LR Controlled 20		0.0683
	LD	D16		LR Day		0.1831
	LN	N8		LR Night		0.0398
	DG	EG24		Exported Micro generation		-
	No. of Users LR019					
	SRL			SRL Daily Price	1.000	
Standard User (SR)	SUC	UN24		SRL Uncontrolled		0.2012
	SA	IN18		SRL All Inclusive		0.1963
	SFC	CN20		SRL Controlled 20		0.0604
	SD	D16		SRL Day		0.1504
	SN	N8		SRL Night		0.0350
	DG	EG24		Exported Micro generation		-
	No. of Users SR019					
General	GR			GR Daily Price	1.000	
	GUC	UN24		GR Uncontrolled		0.2012
	GA	IN18		GR All Inclusive		0.1963
	GFC	CN20		GR Controlled 20		0.0604
	GD	D16		GR Day		0.1504
	GN	N8		GR Night		0.0350
	DG	EG24		Exported Micro generation		-
	No. of Users GR					
	GAF	TOL or SM		GR Daily price on HHR	8.2951	
	G1	PK000		GR Peak (See Note 1.6)		0.1965
General Advanced User (GA)	G2	SP000		GR Shoulder (See note 1.6)		0.1336
	G3	OP000		GR Off peak (See note 1.6)		0.0398
	DG	EG24		Exported Micro generation		-
	No. of Users GA					
	CAP150F			CAP150F Daily Price	8.2951	
CAP150 (Classed 1.1.1-2.1.1)	CAP150	TOL or SM		CAP150 Uncontrolled		0.1233
	FC	CN20		FC Controlled 20 (only with CAP150)		0.0683
<b>Large Commercial</b>						
TOU	No. of Users LR					
	TOL			TOL Daily price on HHR (a capable meter and greater than 200000 kwh/yr)	23.8745	
	TOL1	7304		Peak (See Note 1.6)		0.3468
	TOL2	7304		Shoulder (See note 1.6)		0.0998
	TOL3	7304		Off peak (See note 1.6)		0.0074
	DG	EG24		Exported Micro generation		-
	LDO	7304		Exported Large generation		-
	IND			Industrial price is on individual based on consumption >3,000,000 kWh/yr		-
	IND1	IND1		IND		-
	IND2	IND2		AFPCO		-
<b>Unmetered (UL)</b>						
STL (Classed 1.4.2.1.1 for new connections)	No. of Users 2796					
	STL			All unmetered connections		
	UMLSH			Unmetered supply consisting of Pedestrian Crossing, Streetlights, Bollards, Unmetered Lights with 1 lamp.	0.4182	
	UMLDH			Unmetered supply consisting of 1 pole with 2 lamps.	0.8374	
	UMLTH			Unmetered supply consisting of 1 pole with 3 lamps.	1.2545	
	UMLSHLPMC			Unmetered supply consisting of 1 lamp mounted on a Top Energy Pole eg Pedestrian Crossing, Streetlights, Bollards.	0.5159	
	UMLDHPMC			Unmetered supply consisting of 2 lamps mounted on a Top Energy Pole.	0.9341	
	UMLTHLPMC			Unmetered supply consisting of 3 lamps mounted on a Top Energy Pole.	1.3533	
	UMDECL			Unmetered supply consisting of String lighting of Incandescent light bulbs.	0.4182	
	UMGL			Unmetered supply consisting of Community Lighting, Convenience Lighting, Jetty Lights, Under Verandah Lighting.	0.1401	
UMGLPMC				Unmetered supply consisting of Community Lighting, Convenience Lighting, Jetty Lights mounted on a Top Energy pole.	0.2368	
	UMCON500			Unmetered continuous supply less than 500watts eg Battery Chargers, Electric Fences, Irrigation, PCM Cabinets, Phone Booths, Radio Repeaters, TV Boosters.	0.4040	
	UMINT			Unmetered intermittent supply consisting of Fire Sirens, Railway Crossing Lights, Traffic Counters.	0.2237	
<b>New Connections (NM) from 1.4.2.1.1</b>						
NIL	No. of Users 57					
	UNL			Unmetered and metered street lights		
	UMLF			Streetlight daily price	0.4182	
	UML			Streetlight variable price		0.00
	UMG			General unmetered connections		
	UMGF			General Unmetered daily price	0.4182	
NIL	UMG			General Unmetered variable price		-
	NIL			Business Sirens	-	-

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# 2017 / 18 Price Schedule Conditions

GENERAL

A	All Prices stated are exclusive of GST.
B	The estimated number of users is at 1.4.2017 (34,413).
C	The charge comprise of a fixed network price and a variable price based on quantities distributed.
D	Each ICP is liable for 1 daily fixed network price.
E	The 15c per day fixed price provides for 21kVA maximum demand.
F	Budgeted pass-through prices, including transmission, comprise approximately 25.2% of the Delivery Price.
G	Unmetered supply tariffs are wholly fixed.
H	Industrial prices for large consumers are user specific and are wholly fixed.

PRICE CATEGORY INFORMATION

The price categories are Residential (Low User and Standard User), General, Larger Connections and Unmetered.

1.1	A Residential connection is one for the purpose of supplying electricity to a premise that is used or intended for occupation principally as a place of residence, and excludes those premises described in paragraphs (a) to (i) of section 90 of the Electricity Industry reform Act 1998. The standard user price category applied to all residential connections unless the consumer has elected and is eligible for the retailers low user pricing plan.									
1.2	Residential are further defined to belong to either low or standard categories. To be eligible for the low user price category the consumer must be on the retailer low user pricing plan and the premises must be a Principal place of residence. For avoidance of doubt, eligibility for the low user price category excludes holiday homes and buildings and meters that are ancillary to a users principal place of residence.									
1.3	A General User is where the connection is for the purpose of supplying electricity to a connection that does not meet the criteria of a residential user or any other price category.									
1.4	For new connections, each category from the 1.4.2016 can have one meter per connection, unless approved by Top Energy Network. Prior to this date various configurations were available.									
1.5	Any one connection can have a generation installation capable of exporting up to 10kW of electricity on to the network (or greater by approval from Top Energy Network).									
1.6	A General Advanced User price category is based on usage in half hour (HHR) time periods as defined below and is available to general connections where a user has nominated a qualifying pricing plan with their retailer.									
	<table><tr><th>Peak</th><th>Shoulder</th><th>Off Peak</th></tr><tr><td>07.00 - 09.30</td><td>09.30 - 17.30</td><td>23.00 - 07.00</td></tr><tr><td>17.30 - 20.00</td><td>20.00 - 23.00</td><td></td></tr></table>	Peak	Shoulder	Off Peak	07.00 - 09.30	09.30 - 17.30	23.00 - 07.00	17.30 - 20.00	20.00 - 23.00	
Peak	Shoulder	Off Peak								
07.00 - 09.30	09.30 - 17.30	23.00 - 07.00								
17.30 - 20.00	20.00 - 23.00									
	A retailer price plan will qualify if the plan:									
1.6.1	Has at least 2 time periods per day									
1.6.2	Has at least two hours per day where the highest priced time period overlaps with TEL's peak time periods									
1.6.3	The meter installed is capable of measuring usage per half hour (HHR)									
1.6.4	General Advanced User pricing is expected to be cost effective for consumers using more than 30,000 kWh's per annum									
1.6.5	Has been appropriately notified to and accepted by Top Energy; and									
1.6.6	The criteria remain valid.									
2.0	Larger Connections all have a fuse capacity of 110kVA or greater, are TOU metered and have a connection voltage of 400V, 11kV or 33 kV.									
3.0	Streetlighting users include all metered and unmetered connections.									
3.1	The Unmetered Price Category codes to be closed are current until the 31 March 2018, after which prices will be based on a per lamp equivalent price per connection.									
3.1	Unmetered Users are connections that have been approved to be unmetered and may require a nominated and approved lamp equivalency.									

EXPLANATION OF HOW EACH PRICE IS APPLIED

4.1	Fixed price is a daily price for any day the connection has a status 002 Active.																									
4.2	Uncontrolled, and time dependent supply prices apply under normal operating circumstances for the continuously available electricity supply, ie. anytime, peak, shoulder or off peak time periods. (See 1.6 above). IND pricing is demand based and negotiated for connections with usage over 3,000,000 kWh/ann.																									
4.3	A "Controlled" supply is: where the distributor has the ability to periodically interrupt the supply to a particular meter at an installation. The controlled meter, or meter register, would be connected to the controlled circuit with separately wired appliances such as a hot water cylinder. Controlled pricing plans available on the TEL network are: (i) Controlled (CN20): A minimum of 10 kW load, controlled up to 4 hours during any one day. (ii) Day/Night: Night/Controlled for up to 8 hrs between 11pm and 7 am, Day 7am to 11 pm and does not need to have a minimum kW controllable load.																									
4.4	All inclusive price (IA, SA, GA): An "All Inclusive" (IN18) supply is a single meter register that measures both controlled and uncontrolled supply to an installation. The All Inclusive setup results in both the controlled and uncontrolled load being recorded on a single meter register, and therefore it is not possible to determine the actual portion of uncontrolled and controlled load for each connection. A minimum of 3kW controlled load is required for 6 hours during any one day.																									
4.5	Peak, shoulder and off peak supply prices: The price per half hour is multiplied by the volume of energy used, measured in kilowatt hours (kWh), that under normal operating circumstances is continuously available during the time periods determined by the retailers pricing plan. (See 1.6 for TEL price periods). This pricing option is only available if appropriate metering is installed i.e. TOU or Smart Meter. The 'GA' register codes were approved by the Electricity Authority (EA).																									
4.6	Generation export price is a variable price multiplied by the energy exported measured in kilowatt hour (kWh), from a users connection point into the TE network for delivery to other network users. The installation of micro generation requires a meter capable of recording both import and exported volume data.																									
4.7	Unmetered price is for both metered and unmetered, streetlights and unmetered connections with less than 500watt load: (i) Streetlighting: the price is per lamp equivalent. The equivalent factor will depend on the number and type of lamp, pole ownership and location. (ii) Approved unmetered connections are supplied with continuous supply less than 500watts.																									
4.8	CAP150 and CAP150FC have been closed since 1 April 2015. The General Advanced (GA) is the equivalent price, dependant on usage, that can be used by all connections that are capable of HHR (half hour usage measurement). These prices will remain on the schedule until the meter is changed and the connection can be allocated to a new price plan.																									
4.9	Loss factors for the Top Energy Network are:																									
	<table><tr><th>Distributor Code</th><th>GDSP Losses factors applicable to</th><th>Registry loss category code</th><th>Loss Factor</th><th>Consumer Group / Category Code</th></tr><tr><td>TOPE</td><td>LI Network (Non-Technical + IV)</td><td>RLF D</td><td>1.1220</td><td>Residential / General TOU</td></tr><tr><td>TOPE</td><td>Site-Specific Customers</td><td>RLF 11 (IND)</td><td>1.0275</td><td>Larger (IND)</td></tr><tr><td>TOPE</td><td>Site-Specific Customers</td><td>RLF 12 (AFRCO)</td><td>1.0464</td><td>Larger (IND)</td></tr><tr><td>TOPE</td><td>Site-Specific Customers - Generators</td><td>RLF 51 (NGA)</td><td>1.0000</td><td>Larger (IDG)</td></tr></table>	Distributor Code	GDSP Losses factors applicable to	Registry loss category code	Loss Factor	Consumer Group / Category Code	TOPE	LI Network (Non-Technical + IV)	RLF D	1.1220	Residential / General TOU	TOPE	Site-Specific Customers	RLF 11 (IND)	1.0275	Larger (IND)	TOPE	Site-Specific Customers	RLF 12 (AFRCO)	1.0464	Larger (IND)	TOPE	Site-Specific Customers - Generators	RLF 51 (NGA)	1.0000	Larger (IDG)
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