

Disclosure of Pricing Methodology

Regulation 23 (b)

**Electricity
(Information Disclosure)
Regulations 1999**



April 2001

1 Overview

Eastland Network Ltd (ENL) delivers electricity to the East Coast of the North Island from Wairoa to the East Cape, serving some 25,000 installation control points (ICPs). Prior to 2000 ENL served only the Gisborne region but late in 1999 ENL purchased the network in the Wairoa region. The two regions at that time had very different tariff structures.

ENL calculates its revenue requirements based on total costs plus return on its assets. The lines tariff is designed to recover this revenue, and the prices are calculated taking into account forecasts of maximum demand, total consumption and total number of ICPs.

In 2001 the government gave the industry a directive to adjust pricing such that an average domestic consumer, of about 8,000 kWh total consumption per annum, will always at least have the option of a tariff of which no more than 10% is made up of fixed charges. This condition on pricing significantly constrains ENL's options for forming tariffs in 2001/02.

2 Total Revenue Requirement

2.1 Distribution Network Costs

The distribution network connects between Transpower New Zealand's (TPNZ) points of supply, or Grid exit points (GXPs), on the National Grid and consumers connected to ENL's network. The optimised deprival valuation (ODV) of all components of the ENL network are calculated using the methodology set down by the Ministry of Economic Development (MoED.) These values are then aggregated to give a total asset value, upon which a return on assets is calculated at a rate set in consultation with its 100% shareholder, the Eastland Energy Community Trust.

This rate targets a return on investment equivalent to the company's Weighted Average Cost of Capital (WACC) on the value of its network assets as determined by the Optimised Deprival Valuation (ODV) methodology.

To this is added the costs of operating and maintaining the network, administration and management costs, and other costs such as insurance. This gives the total distribution revenue requirement including a return on assets.

2.2 Transmission Costs

TPNZ charges ENL for the delivery of electricity across the National Grid to each of ENL's GXPs. These charges are comprised of two major components: a fixed component (based on connection asset value) and a variable component that varies with demand (not kWh's). In 2001 the variable component is set at the rate of \$48.36 per kW of maximum demand, where the maximum demand is the average of the 12 highest demands over the last 12

months at the GXP. ENL forecasts the maximum demand for 2001 and calculates a forecast total transmission charge.

In 2001 TPNZ is also rebating back a substantial over recovery from previous years. ENL does not apply this rebate to its transmission recovery target but does include it in its overall calculation of revenue requirement. All Transpower derived rebates therefore reduce total revenue recovered through line charges.

2.3 Total Revenue Requirement

The total distribution network cost and the total forecast transmission charge are added together to give the total revenue requirement for 2001.

ENL's total revenue requirement for the financial year ending 31 March 2002 is broken down as follows:

| | |
|---|--------------|
| Forecast Network Maintenance | \$3,165,699 |
| Forecast Other Network Direct Costs | \$808,092 |
| Forecast Indirect Network Costs | \$1,158,129 |
| Forecast Insurance | \$297,279 |
| Forecast Depreciation | \$3,219,542 |
| Cost of Capital (7.53% of capital employed)* | \$4,824,015 |
| *after allowance for Trans Power rebates | |
| Total distribution revenue requirement | \$13,472,756 |
| Forecast avoided transmission charge | \$599,501 |
| (Allocated to the generation business of ENL) | |
| Forecast transmission charge | \$6,555,489 |
| Total forecast transmission costs | \$7,154,990 |
| Total revenue requirement | \$20,627,746 |

3 ENL's GXP Tariff

Traditionally, the variable components of power companies' tariffs were based on consumption at a consumer's meter and given in cents per kWh at these meters. Since the industry was split into lines and energy by the Electricity Industry Reform Act 1998, ENL has not owned the consumer's meters and obtaining metering data has proven difficult. In addition, ENL's contractual relationship is now with electricity retailers, whose electricity delivery into ENL's network is measured, not at consumers' meters, but at ENL's GXPs. Retailers' sales at each of ENL's GXPs are initially calculated by the retailers and then reconciled to the GXPs concerned by the National Reconciliation Manager.

In 2001, ENL is moving to a GXP lines tariff in which the variable components are referenced to retailer off-take at each GXP, thus ensuring accurate, timely and reliable billing of retailers by ENL, for electricity delivery services over ENL's network.

The new GXP tariff consists of fixed components charged against each ICP and variable components charged in cents per kWh against retailers' reconciled off-take at each GXP in ENL's network.

4 Variable Charge Structures

In the longer term, the majority of ENL's costs are driven by the peak demands on its network. The time zones in ENL's GXP tariff were chosen to accurately reflect periods of peak and off-peak loading on the network, reflecting the potential, or lack thereof, of setting the maximum demand on the network. The four time zones in each day apply throughout the year and are the evening peak, morning peak, off-peak and night zones.

The differentials between the rates in each time zone were chosen partly to signal the probability of setting the peak demand, and partly to ensure that consistent pricing signals can be given over the longer term.

5 Transmission Line Charge Components

The transmission components of ENL's lines tariff are a set of fixed ICP charges and a set of variable charges in the four time zones. The prices are set to recover forecast transmission costs given forecast total ICPs for 2001 and forecast total delivery of electricity, in kWh, via ENL's network.

Since transmission charges are levied at the GXPs, there is no distinction between rural and urban or domestic and non-domestic consumers. However, it is reasonable to assume that the fixed connection charges are also driven by the size of each GXP, so the fixed ICP charges increase with capacity.

6 Distribution Cost Recovery

Distribution network costs are driven largely by the ODVs of the network assets used to connect them to the GXPs. ENL has calculated how much of the asset costs are attributable to each class of consumer - urban, rural, domestic, non-domestic, by installed capacity.

Although significantly constrained by the government's 10% test for the average domestic consumer, ENL has attempted to form its distribution line charges to reflect these calculations. This approach to pricing is economically efficient in that it signals the underlying costs of delivering electricity to various classes of consumer.

Fixed distribution line charges increase with installed capacity, reflecting the costs of plant dedicated to consumers in each consumer class.

6.1 Rural-Urban Differential

The number of customers per kilometre of line in rural areas is significantly lower than in urban areas, with the result that the cost of providing delivery

services to rural consumers is considerably higher per customer than in urban areas. ENL signals this by building in a rural-urban differential in its fixed distribution line charges. The pricing differential is substantially smaller than the cost differential. Therefore a cross subsidy exists from urban to rural markets. ENL's policy is to eliminate cross subsidy progressively at a pace that doesn't create an unacceptable level of rate shock.

6.2 Domestic and Non-Domestic Differential

Small non-domestic consumers have a higher fixed charge than similar sized domestic consumers reflecting lower levels of controllability this load presents to ENL and the higher service level needs. The differential has been constrained by the desire to minimise rate shock in the integration of the tariffs in the two regions.

7 10% Test

In addition to the methodology above, the government's 10% test is applied to the transmission line charges and distribution line charges summed together. To preserve some rural-urban differential, the test is applied to the average urban and rural domestic consumers, weighted by the number of ICPs in each class. Since there are more urban than rural consumers, and the underlying costs of supplying rural consumers is greater than for urban consumers, the urban consumers have less than 10%, and the rural more than 10%, fixed charge. However the total revenue requirement is still recovered from Retailers on a 10% fixed charge basis for domestic consumers.

ENL has a low consumption per connection compared to the national average. The 10% requirement therefore creates a bigger impact in terms of rate shock for other consumers than in other network companies pricing .

8 Integration of Gisborne and Wairoa Tariffs

In 2001 ENL is undertaking a one-off integration of the two very different tariff structures in these two regions. A major factor in forming the new GXP tariff, therefore, was to minimise the changes to total line charges apportioned to each consumer. Pricing has therefore been an iterative process arriving at a "best compromise" type of solution.

9 Major Consumers

Although the cost of plant dedicated, or partly dedicated, to major consumers is higher than for smaller consumers, the costs of upstream plant, for example power lines and zone transformers, is lower on a per unit basis. To recognise this, and as part of the effort to minimise changes to line charges apportioned to consumers in 2001, ENL has built in discounts for major consumers on its distribution line charges only. Approximately 260 consumers using more than 50,000 kWh per annum qualify for a discount in 2001/02.

10 Allocation of Costs by Consumer Group

| Allocation of Costs | Allocator | Urban | | | Rural | | | Total |
|---------------------------------|-----------|--------------------|--------------------|---------------------|--------------------|--------------------|--------------------|---------------------|
| | | Domestic | Non-Dom. | Total | Domestic | Non-Dom. | Total | |
| Network Maintenance | ODRC | \$1,088,151 | \$166,572 | \$1,254,723 | \$1,277,291 | \$633,685 | \$1,910,976 | \$3,165,699 |
| Other Network Direct Costs | ODRC | \$277,767 | \$42,520 | \$320,287 | \$326,048 | \$161,758 | \$487,805 | \$808,092 |
| Indirect Network Costs | Conn's | \$559,836 | \$85,699 | \$645,534 | \$342,617 | \$169,978 | \$512,595 | \$1,158,129 |
| Insurance | ODRC | \$102,184 | \$15,642 | \$117,826 | \$119,946 | \$59,507 | \$179,453 | \$297,279 |
| Depreciation | ODRC | \$1,106,658 | \$169,405 | \$1,276,063 | \$1,299,016 | \$644,463 | \$1,943,479 | \$3,219,542 |
| Cost of Capital | ODRC | \$1,658,166 | \$253,829 | \$1,911,995 | \$1,946,386 | \$965,633 | \$2,912,020 | \$4,824,015 |
| Total Distribution Costs | | \$4,792,761 | \$733,667 | \$5,526,429 | \$5,311,304 | \$2,635,023 | \$7,946,327 | \$13,472,756 |
| | | 35.57% | 5.45% | 41.02% | 39.42% | 19.56% | 58.98% | |
| Avoided Transmission | kWh | \$200,769 | \$228,762 | \$429,531 | \$114,241 | \$55,729 | \$169,970 | \$599,501 |
| Transmission Charges | kWh | \$2,195,393 | \$2,501,488 | \$4,696,881 | \$1,249,217 | \$609,391 | \$1,858,608 | \$6,555,489 |
| Total Transmission Costs | | \$2,396,163 | \$2,730,249 | \$5,126,412 | \$1,363,458 | \$665,120 | \$2,028,578 | \$7,154,990 |
| | | 33.49% | 38.16% | 71.65% | 19.06% | 9.30% | 28.35% | |
| Total Cost Allocation | | \$7,188,924 | \$3,463,917 | \$10,652,841 | \$6,674,762 | \$3,300,143 | \$9,974,905 | \$20,627,746 |
| | | 34.85% | 16.79% | 51.64% | 32.36% | 16.00% | 48.36% | |

10.1 Determination of Allocators

Calculation of Cost Allocators

By Asset Value

| | | | | | | |
|-------|--------|------------|--------------|--------|------------|---------|
| ODRC | | 53,251,000 | | | | 100.00% |
| Urban | 39.63% | 21,106,000 | Domestic | 86.72% | 18,304,049 | 34.37% |
| | | | Non Domestic | 13.28% | 2,801,951 | 5.26% |
| Rural | 60.37% | 32,145,000 | Domestic | 66.84% | 21,485,633 | 40.35% |
| | | | Non Domestic | 33.16% | 10,659,367 | 20.02% |

By Consumption

| | | | | | | |
|-----------|--------|-------------|--------------|--------|-------------|---------|
| Total kWh | | 303,400,000 | | | | 100.00% |
| Urban | 71.65% | 217,380,231 | Domestic | 46.74% | 101,606,812 | 33.49% |
| | | | Non Domestic | 53.26% | 115,773,419 | 38.16% |
| Rural | 28.35% | 86,019,769 | Domestic | 26.60% | 57,816,041 | 19.06% |
| | | | Non Domestic | 12.97% | 28,203,728 | 9.30% |

By Connection

| | | | | | | |
|-------------------|--------|--------|--------------|--------|--------|---------|
| Total Connections | | 26,109 | | | | 100.00% |
| Urban | 55.74% | 14,553 | Domestic | 86.72% | 12,621 | 48.34% |
| | | | Non Domestic | 13.28% | 1,932 | 7.40% |
| Rural | 44.26% | 11,556 | Domestic | 66.84% | 7,724 | 29.58% |
| | | | Non Domestic | 33.16% | 3,832 | 14.68% |

11 Allocation of Revenue by Consumer Group

| Allocation of Revenues | Urban | | | Rural | | | Total |
|---------------------------|--------------------|--------------------|---------------------|--------------------|--------------------|--------------------|---------------------|
| | Domestic | Non-Dom. | Total | Domestic | Non-Dom. | Total | |
| Distribution Fixed | \$575,556 | \$397,008 | \$972,564 | \$814,068 | \$1,104,834 | \$1,918,902 | \$2,891,466 |
| Distribution Variable | \$4,903,221 | \$5,586,856 | \$10,490,077 | \$2,790,018 | \$1,361,022 | \$4,151,040 | \$14,641,117 |
| Distribution Discount | \$0 | -\$3,474,494 | -\$3,474,494 | \$0 | -\$481,973 | -\$481,973 | -\$3,956,467 |
| Total Distribution | \$5,478,777 | \$2,509,370 | \$7,988,147 | \$3,604,086 | \$1,983,883 | \$5,587,969 | \$13,576,116 |
| | 40.36% | 18.48% | 58.84% | 26.55% | 14.61% | 41.16% | |
| Transmission Fixed | \$0 | \$808,764 | \$808,764 | \$0 | \$958,566 | \$958,566 | \$1,767,330 |
| Transmission Variable | \$1,789,789 | \$2,039,332 | \$3,829,121 | \$1,018,421 | \$496,804 | \$1,515,225 | \$5,344,346 |
| Total Transmission | \$1,789,789 | \$2,848,096 | \$4,637,885 | \$1,018,421 | \$1,455,370 | \$2,473,791 | \$7,111,676 |
| | 25.17% | 40.05% | 65.22% | 14.32% | 20.46% | 34.78% | |
| Total Revenue | \$7,268,566 | \$5,357,466 | \$12,626,032 | \$4,622,507 | \$3,439,253 | \$8,061,760 | \$20,687,792 |
| | 35.13% | 25.90% | 61.03% | 22.34% | 16.62% | 38.97% | |
| Revenue per kWh | \$0.0715 | \$0.0463 | | \$0.0800 | \$0.1219 | | |

12 Change in Charges for the MoED Average Domestic Customer

Monthly Account for MoED average Domestic Customer

As at 31/3/2001

Gisborne and surrounding Areas

Distribution Fixed Charge \$23.25
Transmission Fixed Charge \$3.75

Dist Variable - Anytime 395 \$0.02630 \$10.38
Dist Variable - Controlled 263 \$0.02360 \$6.21

Trans Variable - Anytime 395 \$0.01880 \$7.42
Trans Variable - Controlled 263 \$0.01160 \$3.05

\$54.05

Wairoa and surrounding Areas

Network Services F/Charge \$20.93

Trans Variable - Anytime 658 \$0.02419 \$15.90
Dist Variable - Anytime 658
No Charge First 13 kWh per Day 390
268 \$0.06975 \$18.66

\$36.83

**Monthly Account for MoED average Domestic Customer
Gisborne and Wairoa Areas**

As at 1/4/2001

| TOU Periods | Evening Peak | Morning Peak | Off Peak | Night | |
|-------------------------|---------------------|---------------------|-----------------|--------------|-----------------------|
| Network Profile | 20.83% | 23.46% | 31.46% | 24.25% | |
| Distribution TOU Prices | \$0.074824 | \$0.063608 | \$0.056126 | \$0.024694 | |
| Transmission TOU Prices | \$0.027315 | \$0.023220 | \$0.020486 | \$0.009113 | |
| Distribution TOU Charge | \$10.25 | \$9.81 | \$11.61 | \$3.94 | \$35.61 |
| Transmission TOU Charge | \$3.74 | \$3.58 | \$4.24 | \$1.45 | \$13.01 |
| Fixed Charge | | | | | \$4.16 |
| Total | | | | | <u>\$52.78</u> |