# Submission to the AER on its Preliminary Determination

## Capex – Real labour and materials escalations

## Summary

**This document sets out Ergon Energy's response to the Australian Energy Regulator (AER) on real labour and materials escalations.**

**Ergon Energy rejects the AER's Preliminary Determination in relation to:**

- **real labour and construction cost escalations**
- **real materials escalation.**

**Ergon Energy has updated our forecasts of real labour, construction costs and materials escalations to reflect the most recent movements in futures markets and labour forecasts.**

## Outcomes

**In light of the above, Ergon Energy's revised proposal is based on forecasts that reflect a realistic expectation of real labour and materials costs in accordance with the National Electricity Rules (NER) criteria.**

# Contents

# 1. Introduction

On 30 April 2015, the Australian Energy Regulator (AER) released its Preliminary Determination on Ergon Energy's Regulatory Proposal for the regulatory control period commencing on 1 July 2015 and ending on 30 June 2020.

This document details our response to the AER's Preliminary Determination and stakeholder comments on real materials cost escalations.[1] We have made revisions to our Regulatory Proposal and its supporting documents to reflect these positions, where necessary. In addition, we have revised our forecasts in light of updated forecasts of real materials and labour escalations.

Ergon Energy has structured this document in the following manner:

- Chapter 2 summarises the AER's Preliminary Determination in relation to real materials escalations.
- Chapter 3 provides our response to the positions adopted by the AER.
- Chapter 4 sets out areas of our October Regulatory Proposal which have been revised due to new or updated information.

[1] AER (2015), *Preliminary Decision, Ergon Energy determination 2015−16 to 2019−20, Attachment 6 − Capital expenditure*, April 2015, D Real material cost escalation, pp119-133.

# 2. AER's Preliminary Determination

Attachment 6 of the AER's Preliminary Determination details its positions on real materials cost escalations. The following sections summarise these positions and the AER's rationale.

## 2.1. Position

The AER did not accept the real material cost escalators proposed by Ergon Energy. Instead, it applied a zero per cent real cost escalation. The AER stated:

- There is a degree of potential inaccuracy in commodity forecasts and a zero per cent real cost escalation is likely to provide a more reliable estimation for the price of input materials used to provide network services.
- There is little evidence provided by Ergon Energy to assess the accuracy and reliability of Ergon Energy's forecasts of materials as a predictor of the prices of assets used by Ergon Energy to provide network services.
- Ergon Energy did not provide any supporting evidence to demonstrate that we considered the impact of material exogenous factors that impact on the cost of physical inputs not captured by the material input cost models used by Ergon Energy.

The AER considered that its labour and construction cost escalations more reasonably reflect a realistic expectation of the cost inputs required to achieve the capital and operating expenditure objectives.

## 2.2. Reasons

The AER was not satisfied that Ergon Energy's forecast is based on a sound and robust methodology and therefore did not reasonably reflect the capital expenditure criteria. The AER was satisfied that zero per cent real cost escalation is reasonably likely to reflect the capital expenditure criteria.

### 2.2.1. Materials input costs

The AER stated that:

- Ergon Energy failed to demonstrate how and to what extent material inputs have affected the costs of inputs such as cables and transformers.
- Ergon Energy provided no supporting evidence to substantiate how accurately materials escalations reasonably reflected changes in prices we paid for assets in the past to assess the reliability of forecast materials prices.
- Ergon Energy did not provide supporting data or information which demonstrates movements or interlinkages between changes in the input prices of commodities and the prices paid for physical inputs.
- Ergon Energy did not explain the basis of the weightings between commodity inputs for each asset class.
- Ergon Energy did not provide information which demonstrates that the weightings produced an unbiased forecast of the costs of Ergon Energy's assets.

### 2.2.2. Materials input cost forecasting

The AER considered that Ergon Energy had hypothesised a relationship between commodity inputs and the physical assets purchased, but did not adequately explain or quantify this relationship, particularly in respect to movements in the prices between the commodity inputs and the physical assets and the derivation of the weightings for each asset class.

Further, it indicated that Ergon Energy had not provided any supporting information that indicated whether exogenous factors may impact on the reliability of material input costs. Exogenous factors may include technologies which affect the weighting of commodity inputs, suppliers changing their sources for commodity inputs and the general volatility of exchange rates.

### 2.2.3. Materials input cost mitigation

The AER considered there is potential for Ergon Energy to mitigate the magnitude of any overall input cost increases by:

- commodity input substitution by Ergon Energy and the supplier of the inputs
- substitution between operating expenditure and capital expenditure when the relative prices of operating expenditure and capital expenditure inputs change
- scale changes to Ergon Energy's business that may impact on our capital expenditure requirements, including capital efficiency
- increases in productivity that have not been taken into account in forecasting capital expenditure requirements.

### 2.2.4. Forecasting uncertainty

The AER considered that there is likely to be significant uncertainty in forecasting commodity input price movements based on:

- recent studies of crude oil spot prices based on futures prices
- evidence in economic literature on the usefulness of commodities futures prices in forecasting spot prices
- the difficulty in forecasting nominal exchange rates.

### 2.2.5. Strategic contracts with suppliers

The AER considered that Ergon Energy can mitigate its risks associated with changes in material inputs costs by including hedging strategies or price escalation provisions in contracts with suppliers (e.g. by including fixed prices in long term contracts). The AER also believed that there is potential for double counting where contract prices reflect this allocation of risk from Ergon Energy to the supplier and a real escalation is then factored into the forecast capital expenditure.

The AER notes that Ergon Energy could mitigate the risk of escalating contract prices by substitution between operating expenditure and capital expenditure. That is, transferring the risk to operating expenditure.

### 2.2.6. Cost based price increases

The AER consider material input cost escalation reflects a cost based approach, which if allowed reduces the incentives for Ergon Energy to manage our capital expenditure efficiently, and may incentivise Ergon Energy to over forecast our capital expenditure. The AER believes this would not be consistent with the National Electricity Law requirement to promote efficient investment.

A cost based approach would not result in a capital expenditure forecast that was consistent with the nature of the incentives applied under the Capital Expenditure Sharing Scheme and the Service Target Performance Incentive Scheme applied to Ergon Energy as part of the preliminary decision.

### 2.2.7. Selection of commodity inputs

The AER consider the limited number of material inputs included in Ergon Energy's material input escalation may not be representative of the full set of inputs or input choices. Therefore, Ergon Energy's material input costs may also be biased to the extent that they may include a selective subset of commodities that are forecast to increase in price during the regulatory control period 2015-20.

### 2.2.8. Commodities boom

The AER consider that the impact of the commodities boom has subsided and as a consequence the justification for incorporating material cost escalation in determining forecast capital expenditure has also diminished.

# 3. Our response

The following sections detail our response to the AER's Preliminary Determination.

## 3.1. Position

Ergon Energy notes the AER's position to apply different forecast real labour and construction indices than those contained in our October Regulatory Proposal.

Ergon Energy does not agree with the AER's decision to apply a zero per cent real materials escalation index.

For this reason, we have updated our forecasts of real labour and construction indices and materials costs escalations. Our forecasts are provided by an independent engineering and economic forecaster using their forecasting model and the latest information and analysis available to them. They provide forecasts consistent with complete asset class escalations for input to the Post Tax Revenue Model (PTRM). We have therefore made revisions to our Regulatory Proposal.

The changes to the real materials escalation component of the asset classes are summarised in Table 1 below. This table illustrates the real material cost escalation factors proposed in our October Regulatory Proposal[2] (as set out in Table D.2 of the AER's Preliminary Determination) and our revised real material cost escalator factors.[3]

Note that the shaded rows were not reported in Table D.2. The shaded asset classes had and continue to have a zero per cent real materials escalation. As a result of this updated forecast Ergon Energy has revised down the amount of forecast materials costs over the regulatory control period 2015-20. A number of asset classes are now forecast to have lower than Consumer Price Index (CPI) escalation of materials over the regulatory control period.

**Table 1: Revised annual real materials cost escalation factors**

| Ergon Energy Asset Class | 2015-16 | 2016-17 | 2017-18 | 2018-19 | 2019-20 |
|---|---|---|---|---|---|
| Overhead Subtransmission Lines | 1.000<br>~~1.014~~ | 0.979<br>~~1.005~~ | 0.996<br>~~1.008~~ | 1.006<br>~~1.010~~ | 1.015<br>~~1.014~~ |
| Underground Subtransmission Cables | 0.976<br>~~0.993~~ | 0.988<br>~~1.000~~ | 0.997<br>~~1.002~~ | 1.012<br>~~1.003~~ | 1.014<br>~~1.007~~ |
| Overhead Distribution Lines | 1.022<br>~~1.000~~ | 1.020<br>~~0.998~~ | 1.010<br>~~1.000~~ | 1.005<br>~~1.003~~ | 1.002<br>~~1.008~~ |
| Underground Distribution Cables | 1.003<br>~~1.000~~ | 1.008<br>~~1.006~~ | 1.007<br>~~1.004~~ | 1.006<br>~~1.005~~ | 1.004<br>~~1.009~~ |
| Distribution Equipment | 0.993<br>~~0.995~~ | 1.000<br>~~0.998~~ | 0.995<br>~~0.999~~ | 0.991<br>~~1.000~~ | 0.989<br>~~1.004~~ |

[2] *06.02.02 – Jacobs: Cost Escalation Factors 2015-20*, Table 22A.
[3] *06.02.07 – Jacobs: Addendum Cost Escalation Factors 2015-20.*

| Ergon Energy Asset Class | 2015-16 | 2016-17 | 2017-18 | 2018-19 | 2019-20 |
|---|---|---|---|---|---|
| Substation Bays | 0.972<br>~~1.001~~ | 0.976<br>~~1.004~~ | 0.989<br>~~1.004~~ | 0.994<br>~~1.005~~ | 0.998<br>~~1.008~~ |
| Substation Establishment | 0.913<br>~~1.022~~ | 0.902<br>~~1.022~~ | 0.971<br>~~1.021~~ | 1.004<br>~~1.021~~ | 1.032<br>~~1.021~~ |
| Distribution Substation Switchgear | 0.993<br>~~0.995~~ | 1.000<br>~~0.998~~ | 0.995<br>~~0.999~~ | 0.991<br>~~1.000~~ | 0.989<br>~~1.004~~ |
| Zone Transformers | 1.015<br>~~0.997~~ | 1.015<br>~~0.996~~ | 1.008<br>~~0.999~~ | 1.007<br>~~1.002~~ | 1.005<br>~~1.007~~ |
| Distribution Transformers | 1.002<br>~~1.000~~ | 1.000 | 1.003<br>~~1.002~~ | 1.006<br>~~1.004~~ | 1.008<br>~~1.008~~ |
| Low Voltage Services | 1.041<br>~~1.021~~ | 1.005<br>~~1.010~~ | 1.003<br>~~1.009~~ | 1.011<br>~~1.010~~ | 1.012<br>~~1.013~~ |
| Metering | 0.982<br>~~0.992~~ | 0.997<br>~~0.999~~ | 0.993<br>~~0.998~~ | 0.988<br>~~0.999~~ | 0.985<br>~~1.002~~ |
| Communications - Pilot Wires | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Generation Assets | 0.997<br>~~0.994~~ | 1.003<br>~~0.995~~ | 0.997 | 0.992<br>~~1.000~~ | 0.990<br>~~1.004~~ |
| Street Lighting | 1.004<br>~~0.998~~ | 1.005<br>~~0.998~~ | 1.003<br>~~0.999~~ | 1.001<br>1.000 | 1.000<br>1.001 |
| Other Equipment | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Control Centre – SCADA | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Land & Easements | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Communications | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| IT Systems | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Office Equipment & Furniture | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Motor Vehicles | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Plant & Equipment | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Buildings | 0.913<br>~~1.022~~ | 0.902<br>~~1.022~~ | 0.971<br>~~1.021~~ | 1.004<br>~~1.021~~ | 1.032<br>~~1.021~~ |

Update to AER Table D.2 Real material cost escalation factors for Ergon Energy's asset categories

The shaded rows were not reported in Table D.2

Table 2 shows a comparison between Ergon Energy's original and revised proposal of the movement in materials escalation over the forecast period of 2013-20 and over the forecast regulatory control period 2015-20. Only six asset classes are now expected to have above CPI increases in materials costs during the regulatory control period compared to 12 asset classes in our original proposal.

**Table 2: Comparison of October Regulatory Proposal to revised Regulatory Proposal cumulative real materials cost escalation factors over the forecast and control periods**

| | October Proposal | | Revised Proposal | |
|---|---|---|---|---|
| **Ergon Energy Asset Class** | **2013-20** | **2016-20** | **2013-20** | **2016-20** |
| Overhead Subtransmission Lines | 1.099 | 1.037 | 1.000 | 0.995 |
| Underground Subtransmission Cables | 1.004 | 1.012 | 0.988 | 1.012 |
| Overhead Distribution Lines | 1.057 | 1.009 | 1.061 | 1.038 |
| Underground Distribution Cables | 1.068 | 1.024 | 1.029 | 1.026 |
| Distribution Equipment | 1.020 | 1.001 | 0.969 | 0.976 |
| Substation Bays | 1.048 | 1.021 | 0.930 | 0.957 |
| Substation Establishment | 1.151 | 1.088 | 0.829 | 0.908 |
| Distribution Substation Switchgear | 1.020 | 1.001 | 0.969 | 0.976 |
| Zone Transformers | 1.032 | 1.004 | 1.050 | 1.035 |
| Distribution Transformers | 1.045 | 1.014 | 1.020 | 1.018 |
| Low Voltage Services | 1.099 | 1.043 | 1.073 | 1.031 |
| Metering | 1.005 | 0.998 | 0.946 | 0.963 |
| Communications - Pilot Wires | 1.000 | 1.000 | 1.000 | 1.000 |
| Generation Assets | 1.018 | 0.996 | 0.978 | 0.981 |
| Street Lighting | 1.007 | 0.998 | 1.014 | 1.009 |
| Other Equipment | 1.000 | 1.000 | 1.000 | 1.000 |
| Control Centre - SCADA | 1.000 | 1.000 | 1.000 | 1.000 |
| Land & Easements | 1.000 | 1.000 | 1.000 | 1.000 |
| Communications | 1.000 | 1.000 | 1.000 | 1.000 |
| IT Systems | 1.000 | 1.000 | 1.000 | 1.000 |
| Office Equipment & Furniture | 1.000 | 1.000 | 1.000 | 1.000 |
| Motor Vehicles | 1.000 | 1.000 | 1.000 | 1.000 |
| Plant & Equipment | 1.000 | 1.000 | 1.000 | 1.000 |
| Buildings | 1.151 | 1.088 | 0.829 | 0.908 |

Ergon Energy has a responsibility to our customers and shareholders to forecast future changes to input costs in preparing our capital and operating expenditure forecasts. This responsibility arises for two reasons that are a balance between customer interests and shareholder interests:

1. to forecast future prices for customers
2. to forecast returns to shareholders.

The NER reinforces this responsibility by including, as one of the three criteria for achieving the capital and operating objectives, a realistic expectation of the cost of inputs.[4] Ergon Energy believes that the AER has given no weight to this criterion, in part because it considers that recognition of actual cost inputs faced by a Distribution Network Service Provider (DNSP) does not sit comfortably in incentive based regulation. Ergon Energy disagrees. The third expenditure criterion recognises that the cost inputs faced by a DNSP are, for the most part, exogenous, and can vary from one region to another. How a DNSP acquires and utilises those inputs may well be matters of prudency and efficiency, and the NER aim to produce incentives for a DNSP to continually improve these areas. But to apply notions of 'efficiency' in relation to cost inputs implies that the DNSP can control costs that are, in truth, outside of the DNSP's control.

The AER also argues, based on a review of economic literature, that a 'random walk' forecast is as accurate or inaccurate as a forecast based on commodity futures. However, the literature is not conclusive. The AER justifies its position of a zero per cent real materials escalation based on a misconstruction of the concept of a 'random walk' forecast, opting for the conservative approach of not allowing any real materials escalation. This is despite the AER's acknowledgment that under certain conditions input costs can rise or fall significantly, as evidenced in the commodities boom of the 1990s. Prior to that time the industry experienced significant price rises due to exchange rates variations when the dollar was floated in the 1980s and reductions in prices as imported goods displaced local manufacturing of the goods. While the current conditions suggest that commodity prices will remain flat or even contract slightly, Ergon Energy is concerned that the AER has incorrectly and completely discounted the effect of commodity prices and exchange rate variations may have in future regulatory control periods by arguing that the NER criteria is in conflict with capital and operating incentive schemes and the concept of incentive regulation. This is discussed further in Section 3.2.4 below.

While it is extremely difficult in practice to fully track the effects of input costs at a consolidated level of the PTRM asset class forecasts, we can provide examples of how our cost of materials and finished goods used in the asset classes have varied historically. This is further discussed in Sections 3.2.1 and 3.2.2 below. Further, the AER assumes that we have selectively chosen the weightings of the materials in our composition of materials for asset classes (see Section 3.2.7) and has a default view that Ergon Energy is inefficient in our procurement practices (see Sections 3.2.3 and 3.2.5).

Ergon Energy maintains our position put forward in our October Regulatory Proposal as we have used a realistic forecast of our input costs, sourced from an independent industry and econometric forecaster.

[4] NER, clauses 6.5.6(c)(3) and 6.5.7(c)(3).

## 3.2. Reasons

### 3.2.1. Materials input costs

Table 3 below shows some examples of current contract price movements for distribution transformers and conductors used by Ergon Energy. Over the current purchase contracts we have observed that prices for our more commonly used goods are stable (e.g. Pole Mount, 11kV, 25kVA, single and three phase distribution transformers). However, our less frequently used items have shown some increases in price (e.g. Padmount, 11kV, 750kVA, three phase distribution transformer). Conductors and cables show the least amount of movement between the commencement of the contract and the current price. Although, there have been some very large fluctuations during the contract period.

**Table 3: Contract prices for selected stock items used in PTRM asset classes**

| Item | Start Date | Price Review | Unit | Start Price | Current Price | Max. Price | Min. price | Comment |
|---|---|---|---|---|---|---|---|---|
| Pole Mount, 11kV, 25kVA, 1 Ph | 1/02/2011 | Qtr. | $/each | 1,952* | 1,910 | 1,918 | 1,821 | Single rural customer |
| Pole Mount, 11kV, 25kVA, 3 Ph | 1/02/2011 | Qtr. | $/each | 2,405* | 2,454 | 2,459 | 2,280 | |
| Pole Mount, 11kV, 315kVA, 3 Ph | 1/02/2011 | Qtr. | $/each | 8,940* | 9,036 | 9,036 | 8,350 | Overhead urban areas |
| Pole Mount, 12.7kV, 25kVA | 1/02/2011 | Qtr. | $/each | 1,851* | 2,022 | 2,022 | 1,851 | Single rural customer on SWER |
| SWER Pole Mount, 19.1kV, 25kVA | 1/02/2011 | Qtr. | $/each | 2,139* | 2,327 | 2,329 | 2,139 | |
| 30/7/3.5 ACSR/GZ | 31/12/2009 | Qtr. | $/m | 5.11 | 5.11 | 6.28 | 4.09 | Overhead Trans. |
| 7/4.75 AAC | 31/12/2009 | Qtr. | $/m | 1.31 | 1.33 | 1.58 | 1.24 | Overhead urban LV and MV |
| 7/4.75 AAAC/1120 | 31/12/2009 | Qtr. | $/m | 1.40 | 1.42 | 1.67 | 1.33 | Overhead urban/rural LV and MV |
| 6/4.75+7/1.60 ACSR/GZ | 31/12/2009 | Qtr. | $/m | 1.59 | 1.62 | 1.95 | 1.54 | Overhead rural MV |
| 3/2.75 SC/GZ, (GradeG1320), 3/12Steel | 31/12/2009 | Qtr. | $/m | 0.46 | 0.46 | 0.58 | 0.45 | SWER |
| 0.6/1kV, 2 x 95mm2 Al ABC, XLPE Insulated | 31/3/2010 | Qtr. | $/m | 3.78 | 3.88 | 3.88 | 3.26 | LV overhead urban |
| 0.6/1kV, 4 x 95mm2 Al ABC, XLPE Insulated | 31/3/2010 | Qtr. | $/m | 6.77 | 6.39 | 6.97 | 5.73 | |

| Item | Start Date | Price Review | Unit | Start Price | Current Price | Max. Price | Min. price | Comment |
|---|---|---|---|---|---|---|---|---|
| 6.35/11kV, 3 x 1 Core, 185mm2 Al Triplex, XLPE Insulated 48/1.35mm Copper Wire Screen, Water Blocking Tape PVC/Insect Protected/HDPE Sheathed | 31/12/2011 | Qtr. | $/m | 48.10 | 48.86 | 48.86 | 43.36 | Underground urban in termite areas |
| 6.35/11kV, 3 x 1 Core, 185mm2 Al Triplex, XLPE Insulated 48/1.35mm Copper Wire Screen, Water Blocking Tape PVC/HDPE Sheathed | 31/12/2011 | Qtr. | $/m | 39.66 | 39.41 | 39.66 | 34.75 | Underground urban |

*Price starts at 1/03/2011

Table 4 shows the relative movement in the commodity prices for transformers that are included in the rise and fall clauses of procurement contracts over the same period as the transformers shown in Table 3 above. Examples of the rise and fall terms are provided in Appendix A.

**Table 4: Commodity and other indices used in contracts for distribution transformers**

| Index | Company | Source - Appendix 5.1.3. | Reference Rate 15/09/2009 - Extracted from Appendix 5.1.3 signed agreement | Revised Reference Rates (ABS) or revised to T & D index (row 12 & 25) | Latest Rate (Mar - Jun 15) | Percentage Increase in Index/rate from signing of agreement |
|---|---|---|---|---|---|---|
| Forex AUD / USD | Supplier A | Reserve Bank of Australia | 0.8621 | | 0.8049 | -6.63% |
| | Supplier B | Reserve Bank of Australia | 0.8621 | | 0.8 | -7.20% |
| | Supplier C | Reserve Bank of Australia | 0.8621 | | 0.8049 | -6.63% |
| | Supplier D | Reserve Bank of Australia | 0.8621 | | 0.8049 | -6.63% |
| Steel USD / Tonne | Supplier A | Based on core steel supplier documents – independent audit to verify reference data to be arranged with successful tenderer. | 4,980.00 | | 2660 | -46.59% |
| | Supplier B | Based on core steel supplier documents – independent audit to verify reference data to be arranged with successful tenderer. | 2,784.00 | | 2570 | -7.69% |

| Index | Company | Source - Appendix 5.1.3. | Reference Rate 15/09/2009 - Extracted from Appendix 5.1.3 signed agreement | Revised Reference Rates (ABS) or revised to T & D index (row 12 & 25) | Latest Rate (Mar - Jun 15) | Percentage Increase in Index/rate from signing of agreement |
|---|---|---|---|---|---|---|
| | Supplier C | Based on core steel supplier documents –- independent audit to verify reference data to be arranged with successful tenderer. Note: M & M Resources reference price for grade B23R080 Cold Rolled Grain Oriented Electrical Steel in Coil. In the event that Nippon core steel is used, the reference rate needs to be altered to $4620 (per Mitsui & Co invoice for Grade 23ZH90) | 4,200.00 | | 2646 | -37.00% |
| | Supplier D | Based on core steel T & D. On pricing review include the T&D values of the previous THREE published values and insert in below green cells. Sheet will calculate the average (Index changed to T & D after contract award) | 5,403.6428 | 131.80 | 86.2 | -34.60% |
| Copper USD / Tonne | Supplier A | LME Cash Seller & Settlement Rate | 6156 | | 5980.29 | -2.85% |
| | Supplier B | | 6156 | | 5984.77 | -2.78% |
| | Supplier C | | 6156 | | 5980.29 | -2.85% |
| | Supplier D | | 6156 | | 5980 | -2.86% |
| Aluminium USD / Tonne | Supplier A | LME Cash Seller & Settlement Rate | 1813 | | 1847.47 | 1.90% |
| | Supplier B | | 1813 | | 1847.9 | 1.92% |
| | Supplier C | | 1813 | | 1847.47 | 1.90% |
| | Supplier D | | 1813 | | 1847 | 1.88% |
| Transformer Oil A$ / Litre | Supplier A | Based on Transformer Oil supplier documents or other agreed method – independent audit to verify reference data to be arranged with successful tenderer. | 1.30 | | 1.41 | 8.46% |
| | Supplier B | Based on Transformer Oil supplier documents or other agreed method – independent audit to verify reference data to be arranged with successful tenderer. | 0.53 | | 0.441 | -16.79% |
| | Supplier C | Based on Transformer Oil supplier documents or other agreed method – independent audit to verify reference data to be arranged with successful tenderer. | 1.50 | | 1.33 | -11.33% |

| Index | Company | Source - Appendix 5.1.3. | Reference Rate 15/09/2009 - Extracted from Appendix 5.1.3 signed agreement | Revised Reference Rates (ABS) or revised to T & D index (row 12 & 25) | Latest Rate (Mar - Jun 15) | Percentage Increase in Index/rate from signing of agreement |
|---|---|---|---|---|---|---|
| | Supplier D | Based on oil T & D. On pricing review include the T&D values of the previous THREE published values and insert in below green cells. Sheet will calculate the average (Index changed to T & D after contract award) | 2.24 | 104.80 | 109.9 | 4.87% |
| PPI Manufacturing Industries | Supplier A | ABS Producer Prices Index, 274-276 Table 11 series 2221, Index 22 Fabricated Metal Products (ABS revised rates - new reference rate 101.4) | 171.4 | 101.4 | 103 | 1.58% |
| Freight Reference | Supplier B | Average Freight on Review Date Based on Freight & Storage index; ABS 6427.0 Table 19 - Series A2314058K | 139.3 | 91.3 | 107.9 | 18.18% |
| ABS 6401.0 CPI weighted average All Groups | Supplier C | ABS 6401.0 CPI weighted average, All Groups, All Cities Sept 2009 QTR (ABS Revised Reference rates) | 168.1 | 93.8 | 106.6 | 13.65% |
| PPI Manufacturing Industries | Supplier D | Australian Bureau of Statistics 6427.0 Table 28 Series A2312240V Iron & Steel - changed Index to Australian Bureau of Statistics 6427.0 Series A2312225W | 173.1 | 106.6 | 107.5 | 0.84% |
| PPI Manufacturing Industries | Supplier A | ABS 6401.0 : Capital Cities Comparison : weighted average of 8 capital cities - Sept 2009 QTR (ABS Revised rates to 93.8) | 168.6 | 93.8 | 106.6 | 13.65% |
| | Supplier B | Producers CPI Reference Rate Average producers CPI on Review Date. Based on Producers index; ABS 6427.0 Table 12&13, Manufacturing Series A2309054F (ABS Rates revised) | 169.5 | 89.9 | 99.6 | 10.79% |
| | Supplier C | Not Applicable | | | | |
| | Supplier D | Not Applicable | | | | |
| Customs Duty | Supplier A | Not Applicable | | | | |
| | Supplier B | 5% | 5% | | | |
| | Supplier C | 5% | 5% | | | |
| | Supplier D | 5% | 5% | | | |
| Labour Rate | Supplier A | Not Applicable | | | | |

| Index | Company | Source - Appendix 5.1.3. | Reference Rate 15/09/2009 - Extracted from Appendix 5.1.3 signed agreement | Revised Reference Rates (ABS) or revised to T & D index (row 12 & 25) | Latest Rate (Mar - Jun 15) | Percentage Increase in Index/rate from signing of agreement |
|---|---|---|---|---|---|---|
| (Index) | Supplier B | Labour Reference Rate Average Labour on Review Date Based on ABS 6345.0 Labour price Index & Table 1 Private Business- Series A2603039T | 101.8 | | 119.9 | 17.78% |
| | Supplier C | ABS 6345.0 Labour Price Index, Private Sector, Manufacturing, Sept 2009 QTR | 101.5 | | 119.8 | 18.03% |
| | Supplier D | Australian Bureau of Statistics 6302.0 Average Weekly Earnings Australia (May 2009) | 1197.5 | | 1476.3 | 23.28% |
| Stainless Steel Price Index | Supplier A | CRU Steel Prices - CRU SPI / Stainless Steel Price Index 137.57 (IMPORTANT: As of pricing review 12/2013 a new SSP index is used. Access to the original index is no longer possible, new index to be used is MEPS. Stainless Steel Reference Date has been updated to reflect this. | 166.5 | | 150.6 | -9.55% |
| | Supplier B | Not Applicable | | | | 0% |
| | Supplier C | Not Applicable | | | | |
| | Supplier D | Not Applicable | | | | |

Table 5 shows the relative movement in the commodity prices for cables from current suppliers that are included in the rise and fall clauses of procurement contracts over the contract periods set out in Table 3 above.

### Table 5: Summary of commodity and other index movements used in procurement contracts for conductors and cables

| | Reference Rate at Commencement | Latest Rate | Percentage Increase in Index over contract period |
|---|---|---|---|
| **Supplier E** | | | |
| LME Copper US$ | 7,050 | 5,863 | -16.84% |
| US FX (Westpac TT Sell) AUS $ to NZD | 1.0894 | 0.9907 | -9.06% |
| US FX (Westpac TT Sell) AUS $ to USD $ | 0.8964 | 0.7226 | -19.39% |
| LME Aluminium $US | 1,735 | 1,761 | 1.53% |
| Labour WPI (ABS) | 114 | 117 | 2.90% |
| Transport PPI (ABS) | 105 | 108 | 2.76% |

| | Reference Rate at Commencement | Latest Rate | Percentage Increase in Index over contract period |
|---|---|---|---|
| **Supplier F** | | | |
| LME Copper | 7,140 | 5,853 | -18.03% |
| FX | 0.9022 | 0.7226 | -19.91% |
| PVC PPI (ABS) | 103.30 | 106.90 | 3.48% |
| Labour WPI (ABS) | 114.80 | 119.80 | 4.36% |
| Transport PPI (ABS) | 105.00 | 107.90 | 2.76% |
| **Supplier G** | | | |
| Bi-annual Review CR/CNY FX (RBA) | 5.7591 | 4.8605 | -15.60% |
| **Supplier H** | | | |
| Quarterly US FX (RBA) | 0.9350 | 0.7714 | -17.50% |
| Annual Transport PPI (ABS) | 104.80 | 107.90 | 2.96% |

The inclusion of rise and fall of key commodities is an accepted risk mitigation practice that, over the long term minimises purchase costs. It is also normal practice to ensure a balance between fixed and variable components to the price adjustment. The AER's suggestion of moving to a more fixed price approach is, in fact, what we do (as can be seen in the sample procurement contract clauses provided). The amount fixed is designed to optimise the price variation risk and is reviewed regularly. The variable components of the contracts for goods and services are based on the movement in commodity and labour prices and exchange rates that are agreed between Ergon Energy and the supplier. This supports our contention that we do not cherry pick the commodities in our PTRM forecasts. Rather, there are agreed commodities (negotiated between seller and buyer) used to mitigate procurement price risks by allowing price rise and fall for elements outside the control of either party.

As discussed in the following section there is no direct relationship between a specific item procured under a purchase contract and a forecast of an asset class as specified in the PTRM. This is due to the differences that arise from the aggregation of materials, goods and services to support an existing and growing network, a broadly defined asset class and a forecast based on a modern equivalent asset definition. However, what we do know is that the price of purchased goods and materials will rise and fall in line with the terms of a contract's rise and fall. Further, the indices used to vary the purchase price over the term of the contract are the same indices (albeit forecast futures) used for forecasting real materials escalation in the broad asset classes in the PTRM. Attached are examples of the rise and fall clauses in current purchase contracts for a small sample of the more common stock items.

What this means is that it is logical that prices of goods that rise and fall over the term of a purchase contract will affect the delivered cost of a network augmentation and replacement and subsequently the value flowing into the Regulatory Asset Base (RAB). In forecasting future capital adjustments to the RAB in the PTRM, it is therefore common sense to incorporate forecast changes in the prices of inputs as required by the criteria in the NER. The forecast is therefore related to the way prices are forecast to move in future procurement contracts.

An asset class in the PTRM is not an aggregation of homogeneous units. In Ergon Energy's case, the asset class of Distribution Lines is made up of all distribution feeders across Ergon Energy. We have over 1,000 distribution feeders. Further, each distribution feeder is made up of feeder segments which are determined, generally, by key switching points, isolating transformers and so on.

This means that a typical feeder asset can consist of three phase, single phase and Single Wire Earth Return (SWER) lines and can be a mix of aluminium, copper and steel conductors on wood and concrete poles and insulated to 33,000, 22,000 and 11,000 volts. This is just one typical regional distribution feeder. Disaggregating forecasts of asset classes into commodity components would be akin to un-baking a cake.

Instead, Ergon Energy relies on an independent, experienced expert in the field of power distribution engineering and econometric modelling to model the expected future costs of an asset class under the assumptions of a modern standard and reasonable mix of materials and goods, in each asset class. That is, we do not ask them to model Ergon Energy's forecast program of work relating to either augmentation or replacement.

Essentially, our consultant provides a benchmark forecast of an efficient modern asset which includes the cost of labour, materials and other costs.

### 3.2.2. Materials input cost forecasting

As described above, an asset class is essentially a weighted average of many types of materials, items, goods, products, labour, construction and other costs and not a summation of unitised items. Further, the forecast of new or replacement assets in an asset class is based on an independent view of what would comprise a modern asset. This will lead to a bias that understates the future asset cost, as capital replacement of assets often involves like for like replacements due to inherent and inherited characteristics of the assets and design standards that applied at the time of the original asset construction. For example, a section of overhead copper conductor will most likely need to be replaced by a similar copper conductor section, due to design, operational or physical constraints and not an aluminium conductor which would be the modern equivalent standard conductor of choice for new assets.

Many of our purchased materials are imported. The suppliers carry the risk for the majority of exogenous events such as failures in the manufacturers supply chains etc. The only exogenous event where risk is shared with Ergon Energy is usually exchange rate and commodity price variations. Appendix A provides examples of rise and fall clauses included in supplier contracts.

### 3.2.3. Materials input cost mitigation

Commodity substitution is generally outworked in changes to standards of construction and procurement specifications and requires, at many cycles of an asset's life, to fully replace the entire asset. This is because the asset is actually many different assets that are augmented or replaced continuously. The construction, material and procurement standards are reviewed from time to time and there is trade-off between having every possible finished good, carrying costs of stock holdings and spares. Ergon Energy carries an economically optimised range of materials to minimise the purchase and carrying costs (including expected economic costs of electrical losses) over the expected life of the individual assets. Appendix B provides contract clauses regarding distribution transformer losses. The network consists of over 150,000km of lines and more than ten times that in terms of individual items. Ergon Energy has to carry materials to allow efficient and expedient repair and maintenance of these existing assets. Distribution, unlike transmission, relies on standardisation of materials and designs rather than bespoke designs. However, over time and as suppliers develop new products and make obsolete older products, the network evolves. The AER raises commodity substitution as a viable materials cost mitigation strategy, citing the move by distributors to a standard of aluminium conductor for overhead lines in place of the dominant copper conductor standard. However, no rational distributor ever contemplated substitution of its existing copper lines with an aluminium line. Rather, new lines and where allowed by other constraints replacement lines

are aluminium. We can never escape our past; inherent and inherited factors will always see a new standard take time to become the dominant standard in the network. In an asset that is measured in terms of many tens of years of life, it is unlikely a new standard will become dominant for many generations, let alone within a regulatory control period. As it is, Ergon Energy still has many copper feeder sections compared to aluminium feeders.

Operating expenditure and capital expenditure substitution is extremely limited – see previous comments regarding existing assets. But more specifically, operating expenditure costs are largely dominated by non-asset related activities such as vegetation management and customer services which do not have a high material component. In Ergon Energy's operating expenditure forecast, the materials forecast is zero real escalation. This is because our analysis showed the two main materials used are batteries and oil. The use of network materials is largely under forced maintenance and in total materials make up less than 9 per cent of the direct costs of operating expenditure. Jacobs forecast batteries (electronic related assets) to have zero real escalation and, while oil usually exhibits large variations in commodities futures it too was set to zero real material escalation. This is because Jacobs do not use the commodity futures due to their volatility. Instead, they rely on other economic forecasts (refer to section 3.6.6 of *06.02.02 – Jacobs: Cost Escalation Factors 2015-20*, where oil prices are not expected to change over the forecast period).

Scale is already factored into the capital forecasts. Over the forecast regulatory control period capital investment in the Ergon Energy network is expected to decline.

Jacobs' forecast of materials is based on an assumption of modern assets built with modern construction standards. This means productivity is inherent in its modelling.

### 3.2.4. Forecasting uncertainty

Oil futures are more volatile than most commodities, so it is not appropriate to take studies of oil futures as a proxy for all commodity futures. In fact, Jacobs do not use oil futures for this reason. Instead, they use a forecast from Consensus Economics.

The evidence in the literature examined by the AER suggests there is no clear result one way or another. However, as stated before, we need to the best of our ability forecast future input price movements to minimise price and return risks to customers and shareholders respectively.

The AER take a conservative approach to forecasting future materials cost despite acknowledging that there are periods where prices can be volatile. The AER adopts this approach because the economic literature is inconclusive on using futures as an indicator of future price or a 'random walk' forecast. Essentially, the literature attempts to compare the accuracy of forecasts from using futures prices versus a forecast based on the most recent historical price changes ('random walk') and opinion is divided that neither are particularly accurate when compared to outturn results. The AER is essentially saying that because there is no agreement on one method or another, it will adopt a zero per cent real materials forecast. A reading of the literature essentially draws one to a conclusion that neither method is preferred, but does not lessen the importance of future price forecasting. This would be particularly so when times are volatile or there are seismic shifts in technology costs, for instance the sustained rise in copper costs compared to aluminium, forcing a review of design standards for distribution networks.

### 3.2.5. Strategic contracts with suppliers

The AER suggests that Ergon Energy can mitigate our risks associated with changes in material inputs by including hedging strategies or price escalation provisions in contracts with suppliers. As discussed above and shown in Appendix A and B, we do undertake these strategies in our

procurement contracts. Also, as explained above, there is no direct correlation between actual prices paid and the basis of materials escalation in the asset classes in the PTRM.

Table 6 shows examples of pricing that are subject to fixed and subject to rise and fall.

In Appendix C we attach an extract from a letter from one of our suppliers in response to our enquiry about fixed pricing for cables. The supplier would need to increase their price as they now assume all the risk. The effect would be to raise the average price of the items.

As explained in the sections above there is little direct substitution between capital and operating expenditure with respect to network assets. The majority of the forecast operating expenditure is vegetation management, network operations and repair to make assets safe after fault incidents.

Replacements of items in an asset class are generally capitalised. Asset classes are large aggregations of many items. If we expensed these items under operating expenditure then it would cause a significant increase in customer prices.

**Table 6: Examples of fixed and variable components in distribution transformer procurement contracts**

| Item | Fixed component | Steel in USD/Tonne | Copper in USD/Tonne | Aluminium USD/Tonne | Oil AUD/litre | ABS Producer Prices Index, Index 22 Fabricated Metal Products | ABS 6401.0 : Capital Cities Comparison : weighted average of 8 capital cities | Stainless Steel (Index) |
|---|---|---|---|---|---|---|---|---|
| Pole Mount, 11kV, 25kVA, 1 Ph | 32% | 25% | 15% | | 3% | 25% | | |
| Pole Mount, 11kV, 25kVA, 3 Ph | 32% | 28% | | 10% | 5% | 25% | | |
| Pole Mount, 11kV, 315kVA, 3 Ph | 30.40% | 32% | 3% | 9% | 4% | 21.40% | | |
| **Item** | **Fixed component** | **ABS 6345.0 Labour price Index & Table 1 Private Business- Series A2603039T** | **Steel in USD/Tonne** | **Aluminium USD/Tonne** | **Oil AUD/litre** | **Freight & Storage index; ABS 6427.0 Table 21 - Series A2314058K** | **ABS 6427.0 Table 13, Manufacturing Series A2309054F** | **Customs Duty** |
| Pole Mount, 12.7kV, 25kVA | 20% | 20% | 15% | 3% | 3% | 9% | 25.50% | 4.50% |
| SWER Pole Mount, 19.1kV, 25kVA | 20% | 20% | 14% | 3% | 4% | 10.30% | 24.90% | 4.50% |

### 3.2.6. Cost based price increases

Ergon Energy does not understand the AER's argument. The AER has accepted that labour and construction costs have a real escalation impact on input prices.[5] If they believe that real materials cost escalation is a cost based approach then equally so is labour and construction real price escalation.

### 3.2.7. Selection of commodity inputs

As explained above, the materials we purchase:

1. are imported goods
2. are purchased under supply contracts which include rise and fall clauses that are based on these commodities
3. need to reflect both future assets and current standards and existing assets and previous standards
4. need to balance purchase costs with carrying costs over the life of long lived assets (including electrical losses over the life of the assets).

The number and range of material commodities and other factors used in pricing of goods inputs reflect the terms in procurement contracts and the critical components in the whole of life costs reflected in energy losses in the copper and aluminium content of these goods and materials.

The commodities and indices used by Jacobs are limited to those that they consider significant in modern assets.

### 3.2.8. Commodities boom

Ergon Energy agrees with the AER that the commodities boom has subsided. However, cycles of commodity booms and busts are inevitable and while forecasts are not certain, it is still important for customers and shareholders that we forecast what is a major cost of providing network assets – the cost of materials and goods. Our approach to this is to base our forecasts of materials on a realistic view of the forecast of the underlying costs of those materials. This is also the basis of procurement contract pricing and risk management of the supplier pricing.

[5] AER (2015), *Preliminary Decision, Ergon Energy determination 2015−16 to 2019−20, Attachment 7 − Operating expenditure*, April 2015, p284 and p293.

# 4. Other revisions

We have revised our real complete asset escalations, which includes material escalations, for the regulatory control period 2015-20. Our revisions are based on updated escalations provided by Jacobs (see *06.02.07 – Jacobs: Addendum to Cost Escalation Factors 2015-20).*

# Definitions, acronyms, and abbreviations

| | |
|---|---|
| ABS | Australian Bureau of Statistics |
| AER | Australian Energy Regulator |
| CPI | Consumer Price Index |
| NER | National Electricity Rules |
| PTRM | Post Tax Revenue Model |
| RAB | Regulatory Asset Base |
| RBA | Reserve Bank of Australia |
| SWER | Single Wire Earth Return |

# Appendix A. Examples of rise and fall clauses

**Example 1:**

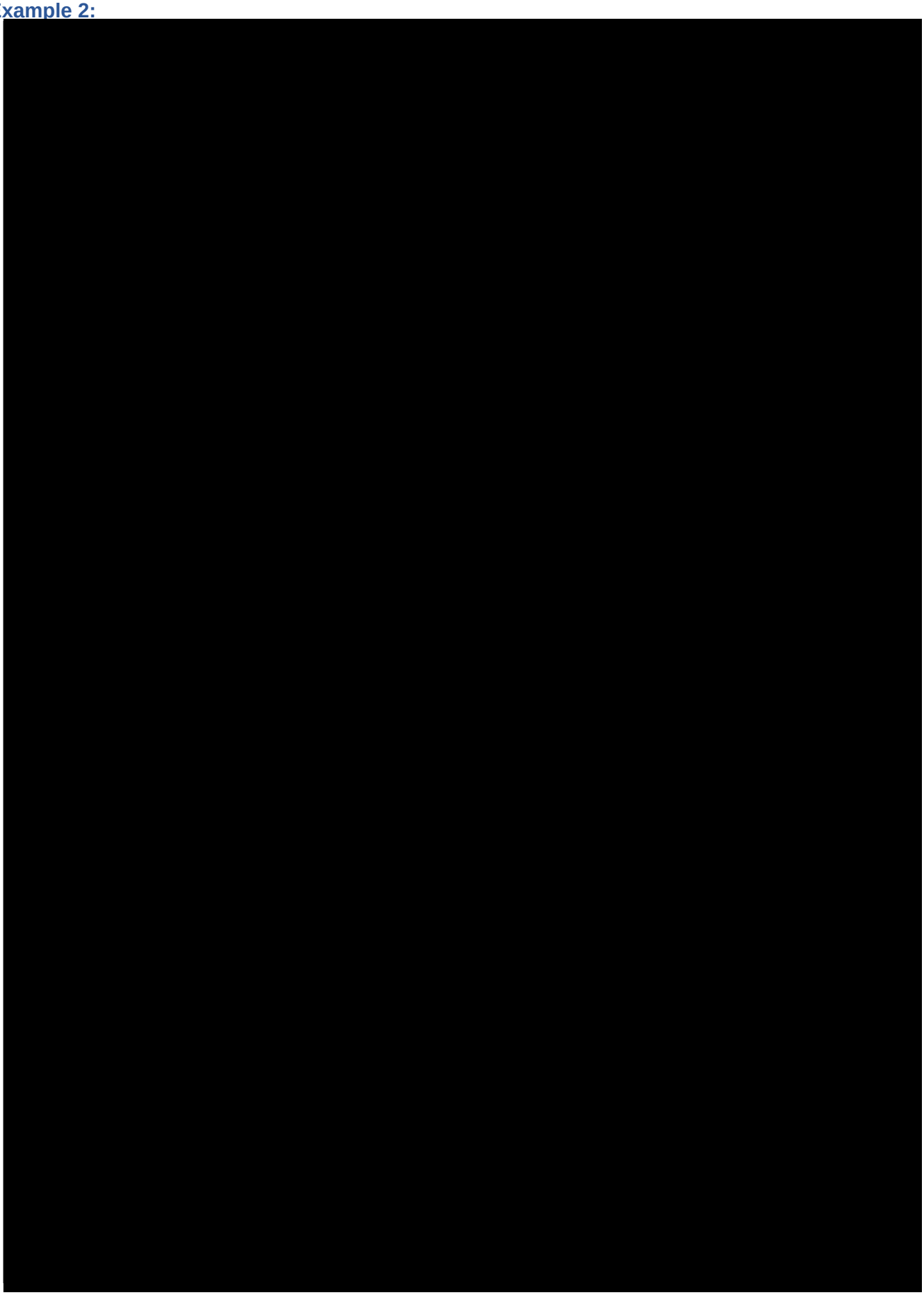
### Example 2:

Wilson Transformers Contract

# Appendix B. Example of economic cost of losses included in distribution transformer procurement specifications

**Example 1:**

**Example 2:**



# Appendix C. Extract of letter from supplier in response to fixed pricing