SPI PowerNet Pty Ltd

Electricity Transmission Revenue Proposal 2014/15 – 2016/17

Appendix 4F: SKM Annual Material Cost Escalators 2014/15 to 16/17 Report November 2012 Report

Submitted: 28 February 2013

Annual Material Cost Escalators 2014/15-2016/17

MATERIAL COST ESCALATORS FOR SP AUSNET TRR 2014/15-2016/17

- Final Report (1.1)
- 19 November 2012

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Limitations Statement

Forecasts are by nature uncertain. SKM has prepared these projections as an indication of what it considers the most likely outcome in a range of possible outcomes. These forecasts represent the author's opinion on what is considered to be reasonable forecasts and outcomes, as at the time of production of the report and based on the information set out in this report.

SKM has used a number of publicly available sources, other forecasts it believes to be credible, and its own judgement and estimates as the basis for developing the cost escalators contained in this report. The actual outcomes will depend on complex interactions of policy, technology, international markets, an multiple suppliers and end users, all subject to uncertianty and beyond the control of SKM, and hence SKM cannot warrant the projections contained in this report.

Expert Witness Compliance Statement

In providing the materials cost escalators contained within this report, SKM has read and agreed to be bound by the guidelines for expert witnesses in proceedings in the Fedral Court of Australia, as published by Chief Justice M.E.J. Black on 5 May 2008[1].

In providing consultive service in other assignments, SKM acknowledges a pre-existing relationship with SP AusNet, but is confident such relationships do not compromise SKM's objectivity in defending its professional opinion based on specialised knowledge and capabilities held in the area of developing materials cost escalation rates for the Australian Energy Industry.

[1] Available to download from: http://www.fedcourt.gov.au/how/prac_direction.html#current

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Executive Summary

Sinclair Knight Merz (SKM) was engaged by SP AusNet Ltd (SPA) to forecast the real material cost escalation indices over the period 01 April 2014 to 31 March 2017 for SPA's forthcoming electricity Transmission Revenue Reset (TRR).

SKM understands the outputs from this report will form an input in the development of SPA's submission to the Australian Energy Regulator (AER) for the 2014/15–2016/17 regulatory control period.

In previous decisions for electricity network service providers, the AER has allowed for costs related to capital and operational expenditure provisions to be escalated in real terms. Prior to these decisions the Australian Consumer Price Index (CPI) was used by the AER to represent cost escalation in relation to network material costs.

The method accepted by the AER in these recent decisions sought to model the change in equipment prices and project costs through combining independent forecast movements in the price of input commodities, with weightings for relative contribution of each commodity to the final equipment and project cost. This in turn generated real cost forecasts for the regulatory control period under review.

In developing its forecast escalation indices for SPA's drivers of annual materials costs, SKM has maintained consistency with the method for modelling cost escalation as accepted by the AER in most of its recent decisions. The escalation indices presented in this report are specific to the operating environment faced by SPA, and are based on the most recent information available at the time of preparation.

The tables on the following pages present the results of SKM's analysis and modelling of future materials and project costs.

- Table 1 presents the real year-on-year or annual cost escalation % change forecast for the underlying drivers of electricity transmission network infrastructure plant and equipment. The year reference for material cost escalation runs from 1 April to 31 March in the following year. The Table provides results with and without any impact of a carbon price mechanism. The extent of impact of the carbon price mechanism for locally produced materials is provided in the Table, assuming that half the cost increase experienced by manufacturers in Australia can be passed through. SKM expects no Australian carbon price impact on materials and products which are imported.
- Table 2 presents real year-on-year or annual escalation indices forecast based on the movements in underlying cost drivers, but aggregated at the asset class/category level

prescribed by SPA and includes Australian carbon emissions costs with due consideration to SPA's asset supplier profile, market competition and international pricing pressure. These indices use an April 2012 base date and the same year reference as Table 1.

- **Table 1 Real year-on-year or annual cost escalation % change forecast of underlying network material cost drivers**

Cost Driver	Apr-12 to Mar-13	Apr-13 to Mar-14	Apr-14 to Mar-15	Apr-15 to Mar-16	Apr-16 to Mar-17
Without carbon price mechanism					
Manufacturing costs (CPI)	0.00%	0.00%	**0.00%**	**0.00%**	**0.00%**
Aluminium	-16.68%	6.41%	**9.11%**	**8.00%**	**8.45%**
Copper	-8.98%	1.83%	**3.62%**	**2.67%**	**0.84%**
Steel	-3.81%	6.41%	**3.56%**	**-0.06%**	**2.74%**
Oil	0.37%	5.57%	**13.70%**	**14.86%**	**7.60%**
Construction costs	-0.37%	0.00%	**-0.24%**	**0.05%**	**-0.03%**
General Labour	1.10%	1.45%	**1.50%**	**1.05%**	**1.12%**
Site Labour	1.27%	1.47%	**1.28%**	**1.09%**	**1.16%**
With carbon price mechanism on locally manufactured material and equipment					
Manufacturing costs (CPI)	0.00%	0.00%	**0.00%**	**0.00%**	**0.00%**
Aluminium	-16.39%	6.59%	**9.17%**	**7.94%**	**8.45%**
Copper	-8.97%	1.83%	**3.62%**	**2.67%**	**0.84%**
Steel	-3.68%	6.48%	**3.60%**	**-0.06%**	**2.76%**
Oil	0.37%	5.57%	**13.70%**	**14.86%**	**7.60%**
Construction costs	-0.37%	0.00%	**-0.24%**	**0.05%**	**-0.03%**
General Labour	1.10%	1.45%	**1.50%**	**1.05%**	**1.12%**
Site Labour	1.27%	1.47%	**1.28%**	**1.09%**	**1.16%**
Underlying CPI					
CPI	2.62%	2.50%	**2.50%**	**2.50%**	**2.50%**
Impact of carbon price mechanism					
Aluminium	0.36%	0.53%	**0.59%**	**0.53%**	**0.54%**
Copper	0.01%	0.02%	**0.02%**	**0.02%**	**0.02%**
Steel	0.13%	0.19%	**0.23%**	**0.22%**	**0.24%**

The above figures with carbon price mechanism exclude the impact for the SF_6 import levy. The value for the carbon price mechanism impact in the above table is the % difference between the price of the commodities with and without the carbon price mechanism in place. As can be seen from the table above, the estimated impact of the carbon price mechanism for directly affected materials is modest but material in the context of real price escalation.

- **Table 2 Real year-on-year or annual cost escalation indices forecast aggregated at SPA's standard asset class level**

SPA Asset Class	Apr-12 to Mar-13	Apr-13 to Mar-14	Apr-14 to Mar-15	Apr-15 to Mar-16	Apr-16 to Mar-17
Secondary	0.997	1.008	**1.016**	**1.016**	**1.009**
Switchgear	0.982	1.019	**1.025**	**1.020**	**1.016**
Transformers	0.965	1.030	**1.035**	**1.025**	**1.024**
Reactive	0.965	1.030	**1.035**	**1.025**	**1.024**
Overhead Lines	0.960	1.032	**1.030**	**1.018**	**1.025**
Underground Cables	0.969	1.014	**1.026**	**1.023**	**1.011**
Establishment	0.996	1.000	**0.998**	**1.000**	**1.000**
Communications (buildings, towers & site infrastructure)	1.000	1.000	**1.000**	**1.000**	**1.000**
Non System -Other	0.992	1.030	**1.043**	**1.037**	**1.026**
Vehicles	1.000	1.000	**1.000**	**1.000**	**1.000**
Premises	1.000	1.000	**1.000**	**1.000**	**1.000**
Network Switching Centre	1.000	1.000	**1.000**	**1.000**	**1.000**
IT	1.000	1.000	**1.000**	**1.000**	**1.000**

The impact and therefore the inclusion of the Australian carbon price on the above listed transmission electricity asset class is dependent on the asset component make-up profile, SPA's asset supplier portfolio, market competition and international pricing pressure. It is noted that not all SPA's asset classes are impacted by the introduction of Australian carbon price mechanism. SKM have assumed in Table 2 that only assets which are locally manufactured will experience and be able to pass through some portion of the local carbon price impact, as the Australian carbon price is expected to have a negligible impact on imported materials and assets.

The underlying cost drivers for some asset classes such as Communication, Vehicles, Premises, Network Switching Centre and IT closely reflect the CPI trend and as such no real material cost escalation is implied.

1. Terms of Reference

This section presents the terms of reference for this assignment.

1.1. Objective

The objective of this assignment is to provide assistance to SPA in the preparation of the Revenue Proposal for the upcoming TRR. SPA is proposing a three-year regulatory control period running from 1 April 2014 to 31 March 2017. This will be achieved through the production of a report to be used as supporting documentation in the Revenue Proposal which documents the process undertaken by SKM in:

- Identifying the relevant direct and indirect inputs to the capital and operating expenditure programmes over the upcoming regulatory period, for which there are credible forecasts.
- Describing the properties of each forecast (e.g. when it was made, who it was made by, for what purpose it was made), and selecting and explaining the choice of point estimate for each forecast.
- Identifying the drivers behind each of the aforementioned forecasts.
- Examining each of the main items of plant, equipment and services for the Victorian transmission network and establishing a percentage contribution of each of the individual direct and indirect input components of the item.
- Deriving the weighted average escalation factor, using the above information, for each main item of SPA's expenditure.
- Taking into account relevant recent AER decisions on material cost escalators.

1.2. Scope

The scope of the study prescribes that the assignment, and associated final report, will:

- Follow the approach adopted by the AER in recent electricity network decisions.
- Describe the annual escalation factor for relevant indirect and direct inputs into standard electric transmission network assets (e.g. copper, aluminium, steel, labour etc.) for the proposed regulatory period.
- Describe the annual material escalator factor for each standard distribution asset class.
- Describe the forecast method used by SKM including the key drivers likely to impact on material escalation of the next regulatory control period.
- Disclose any external information relied on by SKM in reaching its conclusions.

- Identify the impact of greenhouse (carbon) price mechanism on material costs.

1.3. Project outcomes and deliverables

The primary deliverable for this assignment is a clear and concise independent consultancy report, which is cogent and authoritatively supports the resulting escalation factors including:

- An explanation of the approach adopted in developing the escalators (and how this approach is consistent with recent electricity network decisions).
- A description of the annual material escalation factors for relevant indirect and direct inputs into standard electricity transmission assets (e.g. copper, aluminium, steel, labour etc.) for the next regulatory period.
- A description of the annual material escalation factor for each standard transmission asset class for the next regulatory period.
- A description of the forecasting method used including the key drivers likely to impact on material escalation over the next regulatory period.
- Disclosing any external information relied on in reaching its conclusions.
- Including consideration of the potential impacts of carbon pricing on materials costs resulting for the Clean Energy Future policy (excluding the impact for the SF_6 import levy).

2. Introduction

SKM was engaged by SPA to assist in developing an enhanced understanding of material price escalation to 2017.

SPA is preparing to submit its TRR proposal to the AER for the upcoming regulatory control period (2014/15 to 2016/17). An integral step to developing annual capital and operating expenditure forecasts is the production of a set of reasonable assumptions with respect to the likely rate of annual material cost escalation.

SKM has been actively researching the increasing cost of capital infrastructure works for some time, particularly in the energy industry, and has developed a cost escalation modelling process which captures the likely impact of expected movements of specific input cost drivers on future networks infrastructure pricing, providing robust cost escalation rates.

The escalation factors presented in this report represent SKM's calculated best estimate of likely cost escalation components to account for the predicted movement in underlying drivers affecting the cost of undertaking capital and operating expenditure work relative to Australian National CPI, being the base inflation factor used by the AER.

The escalation factors presented are specific to the operating environment faced by SPA, and are based on the most up-to-date information available at the time of compilation.

2.1. SKM's relevant experience

SKM has assisted many Australian energy networks businesses, both at the transmission and distribution level, in analysing the impact of movements in commodity prices and labour on the costs of network assets, as well as in providing independent validation of their capital and operating expenditure modelling processes.

A list of SKM's recent experience has been included in Appendix A.

3. Method

In past decisions for electricity network service providers, the AER has allowed the costs related to capital expenditure provisions to be escalated in real terms. Prior to these decisions, the CPI was generally used as a proxy to account for the escalation expected in relation to these network costs.

The methods accepted by the AER in these decisions sought to better characterise the likely escalation in price of equipment/project costs through combining independent forecast movements in the price of input components, with 'weightings' for the relative contribution of each of the components to final equipment/project costs. This in turn generates real cost forecasts for the regulatory control period under review.

In its final decision for the NSW Electricity Distribution Businesses, the AER stated:

In light of these external factors, it was considered that cost escalation at CPI no longer reasonably reflected a realistic expectation of the movement in some of the equipment and labour costs faced by electricity network service providers (NSPs). It was also communicated by the AER at the time of allowing real cost escalations that the regime should systematically allow for real cost decreases. This was to allow end users to receive the benefit of real cost reductions as well as facing the cost of real increases.[2]

SKM confirms that its method for modelling the forecast changes in the costs of materials used in SPA's capital and operating expenditure forecasts is consistent with the approach accepted by the AER in its recent decisions.

This section of the report provides a step-by-step description of the method employed by SKM in modelling forward capital and operational expenditure material cost escalation.

The opportunity to develop an enhanced understanding of the drivers of network asset costs originally presented itself to SKM during a 2006 multi-utility strategic procurement assignment. It was from this study that SKM was able to demonstrate that prices were increasing faster than CPI, and was able to develop and calibrate a model that described this escalation.

As part of the strategic procurement study a number of network asset equipment manufacturers and/or suppliers were surveyed to provide a greater understanding of the cost drivers underlying equipment pricing.

[2] AER 2009, NSW DNSP Final Decision P478. http://www.aer.gov.au/content/index.phtml/itemId/728076

SKM also drew on information within studies undertaken on contract cost information for a number of turnkey and contracted construction projects (including plant equipment, materials, construction, testing, and commissioning). SKM's knowledge base of network management operational and asset procurement experience was also drawn upon during this establishment of cost drivers.

The results of SKM's research indicated that there are a number of common factors driving the changes in networks' capital infrastructure costs.

The primary factors (in no particular order) influencing cost movements are considered to be changes in the market pricing position for:

- Metals – copper, aluminium and steel;
- Oil – as a material in itself, as a proxy for energy costs, and as a proxy for plastics (primarily High Density Polyethylene HDPE);
- Construction costs;
- Foreign exchange rates – primarily the USD to AUD relationship; and
- Labour costs.

Having identified these key cost drivers, SKM examined each of the main items of plant equipment and materials within its database, in order to establish a suitable percentage contribution, or weighting, by which each of these underlying cost drivers were considered to influence the total price of each completed item.

In its determination and application of final cost driver weightings for these network assets, SKM drew on a wide range of information such as its knowledge of commercial rise and fall clauses contained within confidential network procurement contracts sighted by SKM during market price surveys, information passed on during its interviews with equipment suppliers and manufacturers; as well as industry knowledge held within its large internal pool of professional estimators, procurement specialists, financiers, economists, engineers and operational personnel.

With appropriate weightings developed and assigned to each component, the key cost drivers thus provided a means by which changes in the forecast price of each underlying cost driver might be foreseen to affect the overall cost of the network asset itself.

While there are benefits in maintaining consistency, particularly with past precedents, SKM has incorporated improvements to its modelling method when there was a clear need, particularly in response to regulatory precedents and as improved cost information becomes available.

4. Movements in Key Cost Drivers

In order to remain current, forecast positions of the key cost drivers within the SKM model are updated for each assignment, to ensure the most practical recent/current date information is used as the basis of each assignment requiring the model's application.

The following sections present a discussion of the methods by which the forecast movements of each cost driver are updated.

4.1. Consumer Price Index

SKM has chosen to adopt the method of forecasting CPI used by the AER in recent electricity network decisions. This method uses the following process:

- Plot two years of forecasts from the most recent RBA Statement on Monetary Policy (the August 2012 Statement on Monetary Policy, with forecasts out to December 2014); and
- Thereafter plot the CPI as the RBA's inflation target midpoint of 2.5%.

The CPI figures used during SKM modelling are presented in Table 3.

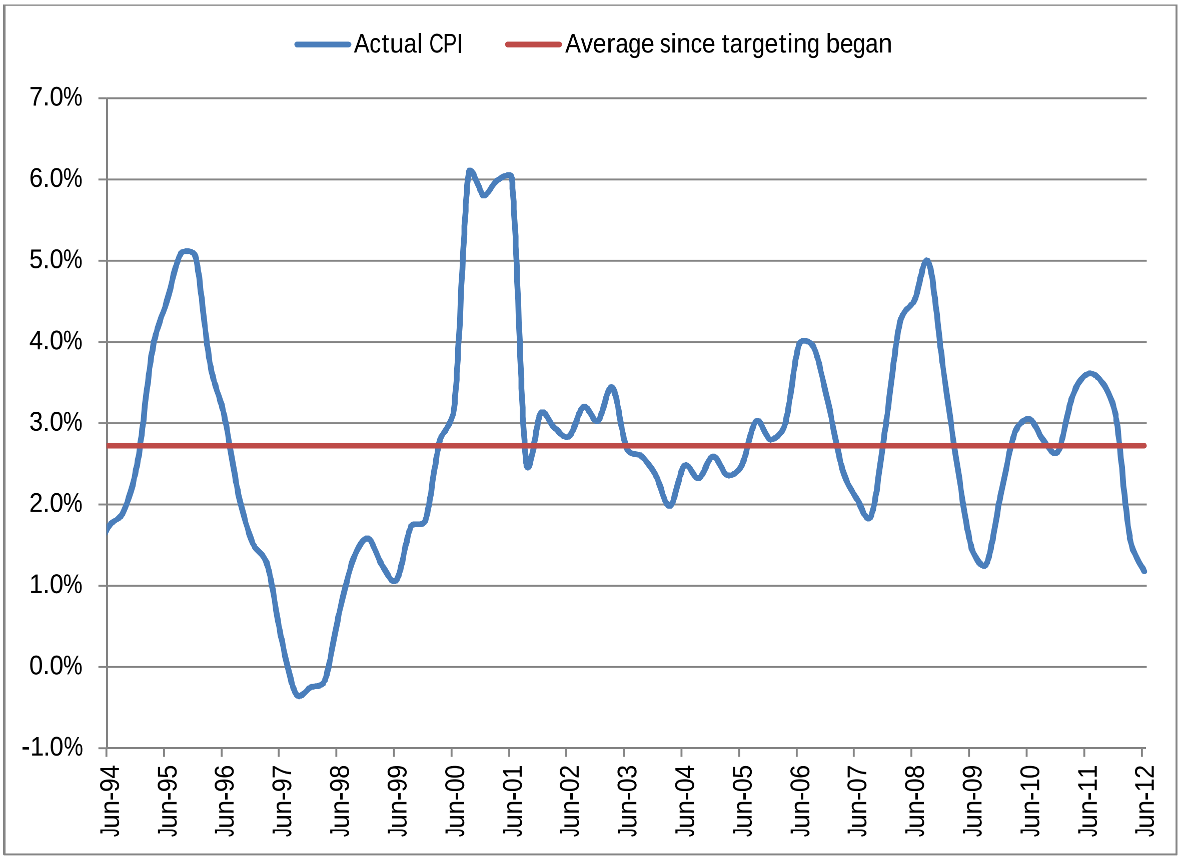
- **Table 3 Forecast annual CPI figures**

Regulatory Year	Apr-12 to Mar-13	Apr-13 to Mar-14	Apr-14 to Mar-15	Apr-15 to Mar-16	Apr-16 to Mar-17
CPI Forecast	2.62%	2.50%	**2.50%**	**2.50%**	**2.50%**

In seeking to understand the overall reasonableness of such a CPI forecast, SKM established that since first targeting its current range of 2-3% in 1993, the RBA has historically achieved an actual average Calendar Year CPI of 2.7% and over the most recent five years the actual CPI achieved during this targeting regime has resulted in an average Calendar Year CPI of 3%, both of which are higher than the expected midpoint of the target range of 2.5%.

This "above the midpoint of the RBA's targeting range" historic CPI result is illustrated through Figure 1 below.

Figure 1 RBA historic CPI targeting results



SKM therefore considers that this methodology of including both the midpoint of the RBA target range, and short term forecasts provides a conservative estimate of the likely position of this network cost pressure that can reasonably be expected to materialise over the upcoming access arrangement period.

4.2. Australian Dollar to US Dollar exchange rate

The SKM Cost Escalations modelling process uses average monthly USD/AUD exchange rates, to restate USD based market prices of commodities, namely copper, aluminium, steel and oil, into their comparable AUD pricing movements. This is undertaken in order to account for any potential movements of base currency commodity market price movements through a strengthening or weakening of the AUD.

The most recent approach adopted by the AER[3] for the AUD/USD exchange rate was to use futures market prices as a predictor of future exchange rates. SKM has adopted the USD/AUD exchange

[3] AER 2012, Powerlink - Final decision P62 *Foreign exchange rate forecasts*

rate based on futures used by the AER in the April 2012 Powerlink Revenue Determination - Final Decision running from FY2012 to FY2017 (converted to years commencing on 1 April). This can be seen in Table 4. This is also consistent with the recent exchange rate forecast from the NAB Research[4] dated 24 September 2012.

Table 4 Forecast annual AUD to USD exchange rates

Regulatory Year	Apr-12 to Mar-13	Apr-13 to Mar-14	Apr-14 to Mar-15	Apr-15 to Mar-16	Apr-16 to Mar-17
USD/AUD	1.04	1.02	**0.98**	**0.95**	**0.92**

In recent regulatory submissions to the AER, there has been commentary surrounding the timing of foreign exchange forecasts and commodity price forecasts due to the demand for the AUD being related to the demand for commodities[5]. This traditionally may have been the case, however recent movements in the AUD/USD rate indicate that despite the worsening global economic outlook and reduction in demand for commodities the AUD has appreciated against the USD in the last six months. The recent RBA Statement on Monetary Policy (August 2012) attributes strong foreign demand for Commonwealth Government securities to be a supporting factor in the AUD/USD exchange rate. This has been reflected in the USD/AUD forecast with the exchange rate maintaining parity through to late 2013 as opposed to the rate following the recent downward movement in commodity prices.

4.3. Construction costs

Construction costs are included in the model as a key driver underlying network project costs, in order to account for increases in both the labour and materials elements of the civil works or "supporting infrastructure" components of electricity network capital expenditure projects.

SKM's initial modelling of network capital expenditure costs sought to account for the industry understanding that construction costs were escalating far in excess of CPI. The Australian Construction Industry Forum (ACIF)[6] is the peak consultative organisation of the building and construction sectors in Australia. The ACIF has established the Construction Forecasting Council (CFC)[7] through which it provides a tool kit of analysis and information.

[4] The published forex rate forecast by the National Australia Bank Research in its "Australian Markets Weekly" goes out until Dec 2013; however, the forecast in the underlying spreadsheet data goes out until Dec 2016.

[5] AER 2012, SP AusNet 2013-17 Gas Access Arrangement – Draft decision P85 *Foreign exchange*

[6] http://www.acif.com.au

[7] http://www.cfc.acif.com.au/cfcinfo.asp

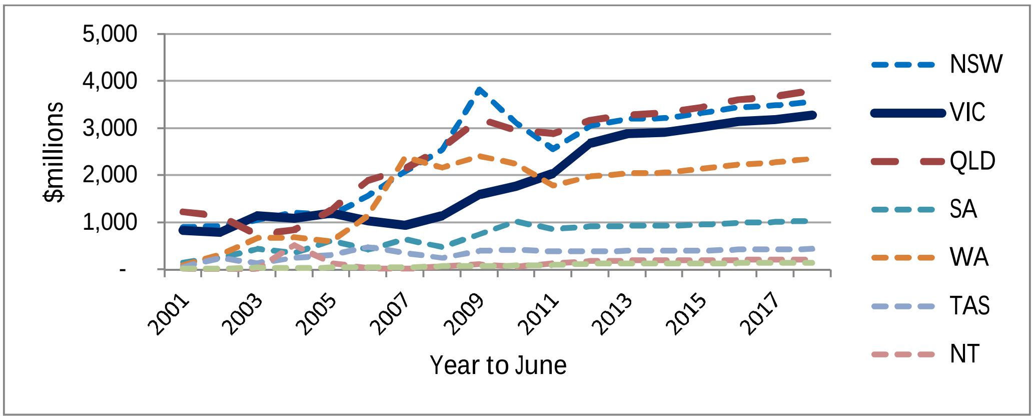
In commenting on activity in construction related to the utilities industry, the Construction Forecasting Council (CFC) notes that for this sector,

"*Electricity and pipelines are a large and growing category. A significant driver of the long term trend in this category is investment in infrastructure required to upgrade and increase the capacity of networks. Further, we see the impact of policy levers on this class, such as the CPM and the RET and these are driving expenditure on large renewables projects, such as $2bn on a wind farm in Silverton and $2bn on the Solar Dawn project.*"[8].

This outlook is likely to sustain the market demand for related construction materials, and thus the resultant market prices. As there is now further clarity in climate change policy, additional work is now expected with a move towards gas as a fuel due to its lower greenhouse intensity.

Figure 2 illustrates the CFC's outlook for electricity and pipeline construction demand out to 2017-18. This illustrates how Victoria is expected to experience a comparatively larger forward program of construction in this sector, particularly from 2012 when it is virtually on par with the largest state capital programs.

Figure 2 CFC Electricity and pipeline construction outlook [9]



The CFC also provides a forecast of related construction costs going forward, through which annual growth rates in the cost of construction are able to be developed. These figures are provided through KPMG Econtech forecasts.

As the CFC considers electricity and pipeline construction to fall within the sector it presently entitles as "Engineering", SKM has adopted these movements presented as Australian National

[8] http://www.cfc.acif.com.au/summary.asp
[9] http://www.cfc.acif.com.au/forecast_results.asp Downloaded 6/12/2010

"Engineering" construction cost forecasts as the likely movements in the Construction cost component of relevance to SPA within cost escalation modelling.

Table 5 provides the relative excerpt of the CFC engineering construction price index, based on the most recent data available at 24 August 2012.

- **Table 5 CFC annual Forecast of Engineering construction costs**

Regulatory Year	Apr-12 to Mar-13	Apr-13 to Mar-14	Apr-14 to Mar-15	Apr-15 to Mar-16	Apr-16 to Mar-17
Real price index (SKM calculation)	1.0031	1.0030	**1.0007**	**1.0011**	**1.0009**
% change	-0.37%	0.00%	**-0.24%**	**0.05%**	**-0.03%**

4.4. Commodity prices

This section of the report presents the methodology employed by SKM in updating the commodity price inputs to its cost escalation model.

Commodity prices have been known to be volatile in recent times as they are influenced by several economic factors, such as overall levels of demand and supply as well as hedging and investment activity, each of which was effected by the 2008 Global Financial Crisis (GFC). Even outside of the period now known as the GFC, prices over a lengthy forward period such as the five year regulatory cycle can be difficult to pin down. It is therefore imperative to model these aspects of cost escalation using recent and credible data.

In seeking to develop appropriate cost escalation rates that effectively characterize the underlying infrastructure asset cost pressures faced by network service providers within Australia, the SKM modelling methodology incorporates the use of commodity futures contract prices into cost escalation rate computations.

4.4.1. Commodities and the use of futures contract pricing

The inclusion of Forward contracts pricing, as a means to predict likely market pricing positions of the various commodities going forward, is generally considered suitable, as these contracts represent the firm position of market participants who have actively placed money behind their predictions.

The AER has a strong preference for the forward contract market as the basis for forecasts as they are considered to provide greater and more immediate financial risk than the various economic forecasts that do not involve any direct financial risk to the forecasters.

SKM has thus adopted available futures prices into its forecast method, except where expressly noted. This is discussed in further detail in Section 4.4.3.

4.4.2. Credible views of a range of professional forecasters

Commodity market oil futures contracts are available for the time period covered by the TRR revenue control period. However in the case of other inputs such as copper and aluminium, London Metals Exchange (LME) futures contracts are only available for three years out to December 2015 (prompt dates).

In order to estimate prices beyond this latest prompt date point, it is necessary to revert to economic forecasts as the most robust source of future price expectations. SKM considers this to be superior to "trend" based analysis approaches. This is because economic forecasts consider the changes in global market supply (additional production capacity and/or retirement of excess/old infrastructure) as well as changes in global demand.

SKM's methodology reflects the approach accepted by the AER in the most recent Powerlink Revenue Determination in utilising Consensus Economics'[10] quarterly publication "Energy and Metals Consensus Forecasts" as the source from which the long-term position of the copper and aluminium market prices are sourced.

These quarterly reports provide details of the price forecasts, of each professional analyst surveyed, for the next 10 quarters. "Energy & Metals Consensus Forecasts" also provides the "mean" or "consensus" of these various individual market predictions. In doing so, the publication allows the user to gather an overall market perception, without the need to apply a weighting to individual predictions in terms of gauging the organisation's perceived strength in forecasting, historical accuracy or such.

In developing annual price movements for copper and aluminium, SKM uses a method of linear interpolation between the relevant December prompt date LME contract prices and the Consensus Economics long term predictions of price movements, as described in Section 4.4.3.

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[10] Consensus Economics Inc. is a leading international economic survey organization based in the United Kingdom. Its publication "Energy & Metals Consensus Forecasts" is a subscription based comprehensive quarterly survey of over 30 of the world's most prominent commodity forecasters.

4.4.3. SKM's application of futures contracts and long-term forecasts

When updating the position of the key cost drivers, SKM employs various combinations of futures contract prices and a range of views from credible forecasting professionals to develop likely Year to December price positions of specific key cost components.

In order to estimate the impact of the Australian carbon price mechanism on the cost of materials and assets, SKM has assumed that there is no price impact on material or items of equipment which are imported, but that producers of locally manufactured materials and items of equipment can pass through half of the costs that they incur as a result of the mechanism (see discussion in Section 5).

4.4.3.1. Aluminium and Copper

When updating the position of the key cost drivers of aluminium and copper within its model, SKM undertakes an eight step approach to produce specific data points between which linear interpolation is applied in order to arrive at the implied 1 April future pricing positions.

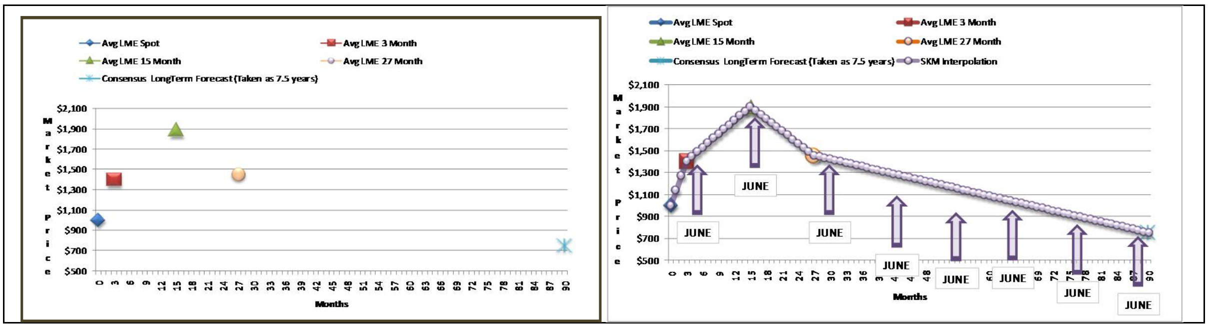
Because of the volatility in daily spot and futures market prices, SKM uses monthly averages of prices within its modelling process. The steps involved are:

1) Plot the average of the last month of LME spot prices
2) Plot the average of the last month of LME 3 month prices
3) Plot the average of the last month of December 1 prices
4) Plot the average of the last month of December 2 prices
5) Plot the average of the last month of December 3 prices
6) Plot the Consensus Long Term forecast position (taken as 7.5 years from the survey date)[11]
7) Apply linear interpolation between the plot points
8) Identify the corresponding April points in the interpolated results and feed the prices into the model.

This method is illustrated in Figure 3 (*note that the figures are illustrative only and do not refer to the actual position/price of any particular commodity*).

[11] The Consensus Long-term forecast is listed in the publication as a 5 – 10 year position. In an attempt to apply this in a reasonable manner, SKM consider the position to refer to the mid-point of this range, being 7.5 years, or 90 months hence.

Figure 3 Diagram of method (illustrative only). Steps 1-6 (left) and steps 7-8 (right)



The average year from April to March input numbers used during SKM's modelling of the aluminium and copper market prices are presented in Table 6 and Table 7 respectively.

Table 6 Real 2012 AUD based price of Aluminium

Regulatory Year	Apr-12 to Mar-13	Apr-13 to Mar-14	Apr-14 to Mar-15	Apr-15 to Mar-16	Apr-16 to Mar-17
Aluminium	2,198	2,339	**2,552**	**2,756**	**2,989**
Annual % Change	-16.68%	6.41%	**9.11%**	**8.00%**	**8.45%**
With carbon price	2,206	2,351	**2,567**	**2,770**	**3,005**
% Change	-16.39%	6.59%	**9.17%**	**7.94%**	**8.45%**
Impact of carbon price (difference)	0.36%	0.53%	**0.59%**	**0.53%**	**0.54%**

Table 7 Real 2012 AUD based price of Copper

Regulatory Year	Apr-12 to Mar-13	Apr-13 to Mar-14	Apr-14 to Mar-15	Apr-15 to Mar-16	Apr-16 to Mar-17
Copper	8,790	8,951	**9,274**	**9,522**	**9,602**
Annual % Change	-8.98%	1.83%	**3.62%**	**2.67%**	**0.84%**
With carbon price	8,791	8,952	**9,276**	**9,524**	**9,604**
Annual % Change	-8.97%	1.83%	**3.62%**	**2.67%**	**0.84%**
Impact of carbon price (difference)	0.01%	0.02%	**0.02%**	**0.02%**	**0.02%**

4.4.3.2. Steel

Steel manufacturing is an energy intensive process of production, with energy representing approximately 20% of the final cost of production[12]. In addition, coal is used as an input to the steel making process.

An application of the methodology used for oil, copper and aluminium was not possible due to the lack of a liquid Steel futures market. SKM notes that the LME commenced trading in steel futures in February 2008; however, the LME steel futures are still not yet sufficiently liquid to provide a robust price outlook. The current global production of steel averages 1,400 million tonnes per annum and the LME steel billet futures have a traded volume of approximately six million tonnes per annum, less than 0.5% of the global market.

SKM has selected the Consensus Economics forecast to be the best currently available outlook for steel prices. Consensus provides quarterly forecast prices in the short term, and a "long term" (5-10 year) price. Steel prices for all historical periods are taken from an average of the Bloomberg US and EU steel prices.

The most recent Consensus Survey available at the time of compiling this report was the January 2012 Survey. This publication provided quarterly forecast market prices for steel for 2012-13, as well as a Long-term forecast pricing position.

Consensus Economics provides two separate forecasts for Steel, both being for the Hot Rolled Coil (HRC) variety, with the first being relative to the USA domestic market and the other the European domestic market.

The Consensus Economics US HRC price forecasts are presented US$ per *Short Ton*. As historical prices are all quoted in US$ per *Metric Tonne*, it is necessary to convert these prices into their Metric Tonne equivalent. This is a simple operation with the US HRC prices multiplied by a factor of 1.1023, being the standard conversion rate for the number of short tons per Metric Tonne. Once converted to their Metric Tonne pricing position, SKM uses the average of these two forecasts (US HRC and EU HRC) as its Steel price inputs to the cost escalation modelling process.

The figures used as inputs to SKM's modelling are presented in Table 8, and are consistent with the methodology accepted by the AER in recent electricity network decisions.

[12] American Iron and Steel institute, "*Saving one barrel of oil per ton*" October 2005.

- **Table 8 Relative Real 2012 AUD Pricing position of average HRC steel prices**

Regulatory Year	Apr-12 to Mar-13	Apr-13 to Mar-14	Apr-14 to Mar-15	Apr-15 to Mar-16	Apr-16 to Mar-17
Steel Ave	842	896	**928**	**927**	**953**
Annual % Change	-3.81%	6.41%	**3.56%**	**-0.06%**	**2.74%**
With carbon price	843	898	**930**	**929**	**955**
Annual % Change	-3.68%	6.48%	**3.60%**	**-0.06%**	**2.76%**
Impact of carbon price (difference)	0.13%	0.19%	**0.23%**	**0.22%**	**0.24%**

4.4.3.3. Oil

World oil markets provide future contracts with settlement dates sufficiently far forward to cover the duration of the upcoming regulatory control period, and this has been adopted by the AER as its preferred approach to forecasting future oil prices.

SKM has researched the reliability of oil futures as a predictor of actual oil prices, and has formed the view that futures markets are not a reliable predictor or robust foundation for future price forecasts. There is a body of literature devoted to analysing this issue[13] and the conclusion that futures do not accurately predict oil prices, and that other methods are more reliable, is well established.

For example, the US Federal Reserve[14] concluded that:

> *More commonly used methods of forecasting the nominal price of oil based on the price of oil futures or the spread of the oil futures price relative to the spot price cannot be recommended. There is no reliable evidence that oil futures prices significantly lower the MSPE relative to the no-change forecast at short horizons, and long-term futures prices often cited by policymakers are distinctly less accurate than the no-change forecast.*

Recent discussions with oil industry professionals have provided further insights into the oil futures market, and indicate that beyond 6-12 months the use of oil futures is principally not to hedge future oil prices, but rather to hedge other risks at a known price (regardless of whether it is likely

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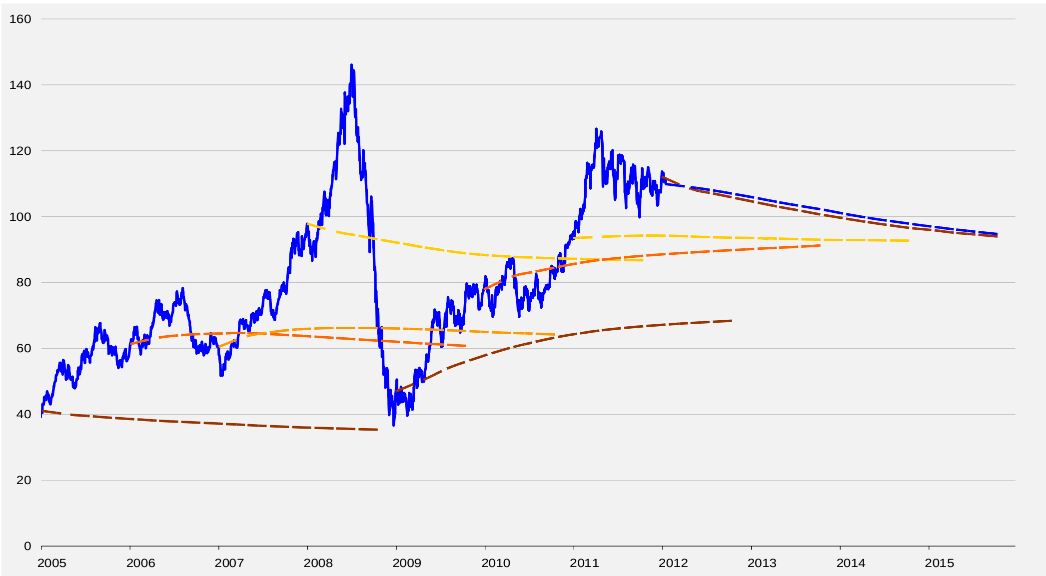
[13] Including *What do we learn from the price of crude oil futures?*, Alquist & Kilian, Journal of Applied Econometrics, February 2010.

[14] *Forecasting the Price of Oil*, Board of Governors of the Federal Reserve System, International Finance Discussion Papers, July 2011

to be the actual price on the settlement date). Futures contracts tend to follow the current spot price up and down, with a curve upwards or downwards reflecting *current* (short term) market sentiment.

This is illustrated in Figure 4 below, with the blue line showing the spot price, with 4 years of futures prices shown at annual intervals. The "flat" nature of the futures price curve is clearly seen, with only a small upward or downward trend in the early period, and with the *current* spot price clearly shown to be the primary determinant of futures prices as far as 4 years ahead.

- **Figure 4 Oil (Brent[15]) futures compared to spot (blue) 2005 – 2012**



Source: Morgan Stanley Commodities

Forward contract volumes beyond one year are low and the market is relatively illiquid, further highlighting the unsuitability of using futures prices as the basis of long term price expectations. As the chart in Figure 5 illustrates, beyond 3-6 months volumes and liquidity are very low.

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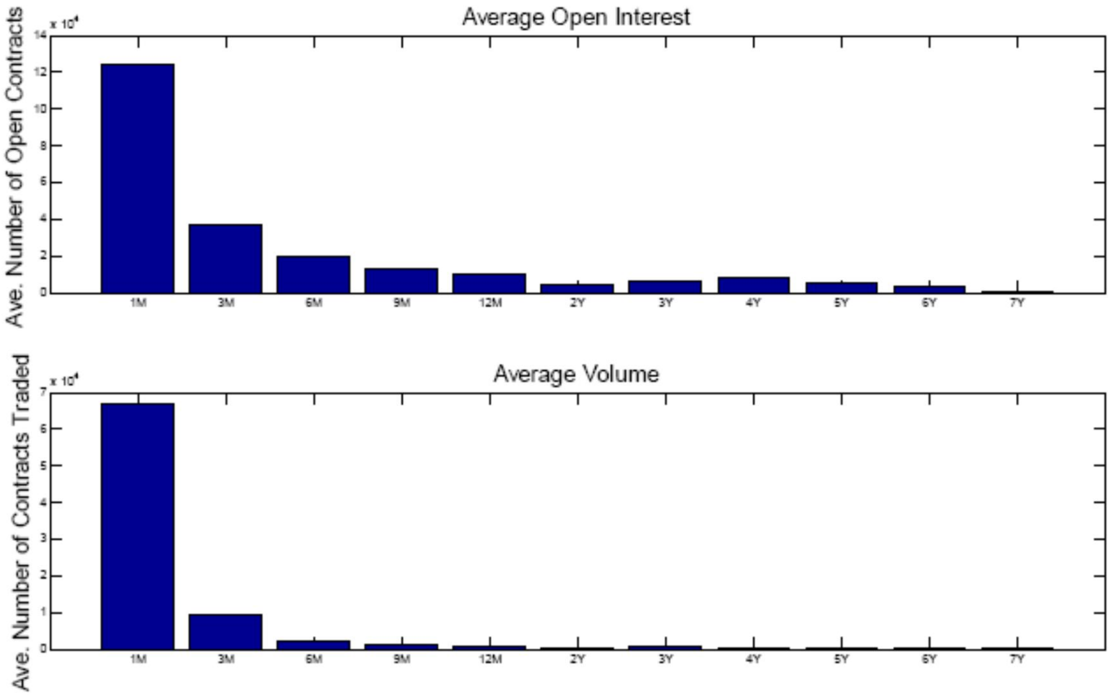
[15] While the chart refers to Brent futures, arbitrage opportunities ensure price disparities between West Texas Intermediate (WTI), Brent and other indices are low or with short term deviations related to specific supply constraints.

- **Figure 5 Forward market volumes showing open contracts and traded volumes**

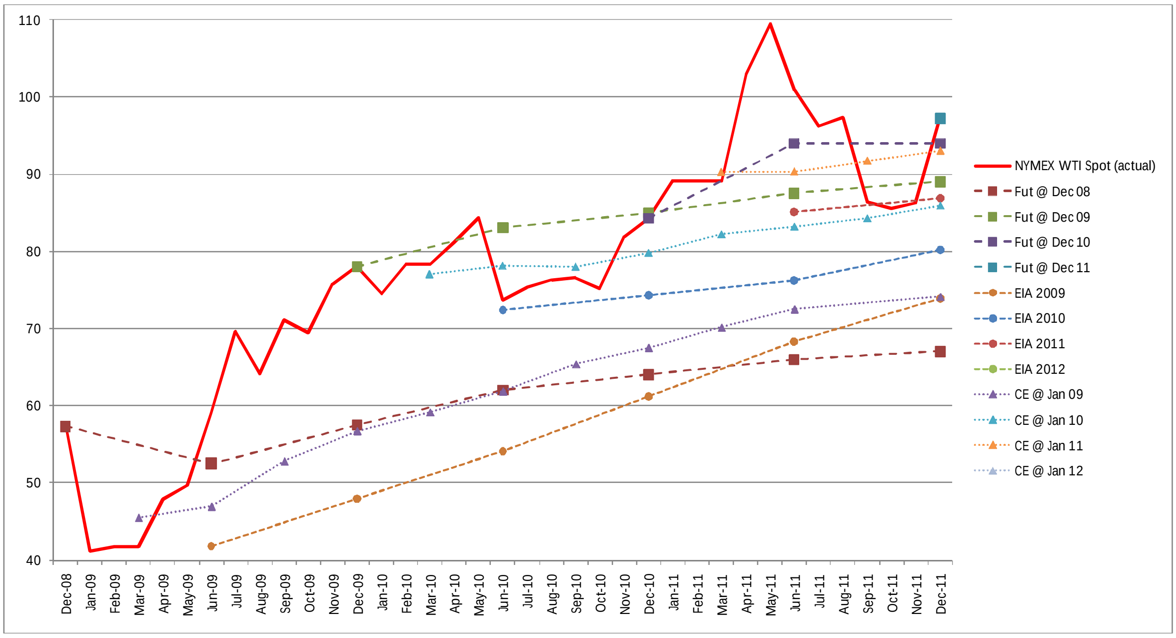


In order to find a more reliable and robust source of future oil prices, SKM has compared actual prices against historical predictions of WTI price using three sources:

- NYMEX futures contracts
- The US Energy Information Administration (EIA) Annual Energy Outlook
- Consensus Economics' "*Energy and Metals Consensus Forecasts*"

The results are shown in Figure 6 and Table 9.

Figure 6 Oil (NYMEX) spot (red) compared to futures prices, EIA and Consensus Economics forecasts 2008-2011



While none of these sources can claim to be wholly reliable, SKM has found that beyond a 1 year time horizon, these economic forecasts are more reliable than futures oil prices.

Table 9 Average error in predicting future spot price (2008-2010)

Time forward from base date	Futures	EIA	CE
1 year	10%	20%	12%
2 year	16%	22%	16%
3 year	31%	24%	24%

Based on these results, SKM has used a revised method to predict oil prices, similar to that used for aluminium[16] and copper. From the results above, SKM has used futures prices for the first year, an average of futures and consensus economics prices for the second year, and an average of EIA and consensus economics prices for the 3rd and subsequent years. The resultant forecast for oil prices used as the basis for calculating escalation is shown in Table 10 below.

[16] SKM notes the AER has previously accepted that long term (90 month) LME aluminium futures were not based on a future outlook for actual aluminium prices, and that this contract could be discarded and replaced with economic forecasts which are likely to be more reliable.

- **Table 10 Nominal USD oil price to 2017**

USD Nominal in	Jun-13	Jun-14	Jun-15	Jun-16	Jun-17
Futures	99.05	94.40			
EIA	110.10	121.69	133.07	141.84	151.14
CE	95.01	102.31	103.34	105.88	106.15
SKM Weighted	99.05	98.36	118.21	123.86	128.65

SKM's modelling has resulted in market prices and forecast escalation factors as presented below.

- **Table 11 Real 2012 AUD based oil price**

Regulatory Year	Apr-12 to Mar-13	Apr-13 to Mar-14	Apr-14 to Mar-15	Apr-15 to Mar-16	Apr-16 to Mar-17
Oil – WTI	111.1	117.3	**133.4**	**153.2**	**164.9**
% Change	0.37%	5.57%	**13.70%**	**14.86%**	**7.60%**

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SKM

5. Impact of Carbon Price Mechanism

Legislation passed in 2011 by the Australian Parliament introduced the Clean Energy Future (CEF) scheme (carbon price mechanism) that has imposed costs on emitters of greenhouse gases from July 2012. However, existing assistance for "emission intensive trade exposed (EITE)" industries will reduce the CEF impact on some emissions intensive industries such as aluminium during at least the early stages of operation of the scheme.

The elements of carbon price mechanism impact that were included in this modelling are:

- Projected Australian carbon permit prices based on Treasury modelling;
- The recent (28 August 2012) announcement that from July 2015 the Australian CEF scheme will be linked with the current European carbon pricing scheme allowing the trading of permits between the two schemes;
- Emissions intensity of emission intensive materials[17];
- Percentage of costs passed through to take account of EITE assistance levels which are assumed to reduce regularly over the foreseeable future;
- Analysis of SPA's transmission electricity asset classes, its component make-up profile, supplier's portfolio and available competitors, open market dynamics and international pricing pressure; and
- Assumption on the extent of the local manufacturers' ability to pass through the additional carbon cost to the customers.

The effect of CEF on cost drivers is modelled through the assignment of greenhouse emission intensity to each of the cost drivers. The emission intensity or embodied emission is described in *Tonnes of* CO_2 *emitted per tonnes of produced commodity* and is prescribed by the CEF scheme. These factors are multiplied by projected emissions permit prices to derive an additional "carbon price" effect for each of the individual input drivers or commodities. The model allows for different treatment of EITE commodities (e.g. Aluminium), in line with proposed compensation measures included in the December 2008 CEF White Paper and subsequent policy announcements. The model also draws on the information provided by SPA on the origin of all listed asset categories (i.e. local vs. import vs. mix) to accurately consider the extent of influence of Australian carbon price in the production of such assets.

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[17] SKM has based its assessment of emissions intensity on the Commonwealth Government's assessment of emissions intensity of EITE industries, using actual Australian manufacturing data.

SKM considers that the impact of the Australian carbon price mechanism on imported material and components will be immaterial as the Australian carbon price is expected to have no or negligible impact on the international price of materials. While it is difficult to gauge the impact of the carbon price on locally manufactured materials and items of equipment, our methodology allows an estimate to be made of the additional carbon costs to local manufacturers which they might be able to pass through to customers. While SKM expects that local producers will attempt to pass through the additional costs to local consumers, it is not clear that such attempts will be successful. Depending on local market circumstances, actual outcomes might range between all or none of the incurred costs being passed through to customers. SKM considers it reasonable to assume that the ability of local manufacturers to pass through this additional carbon cost will be constrained to only half the cost incurred[18].

The calculations of carbon permit prices are summarised in Table 12. As the base price inputs to the escalation model are nominal, SKM has used nominal permit prices as the primary CEF input to the cost escalation model for July 2012 to June 2015. For the permit prices post July 2015 SKM has used a 50/50 split of the forecast Treasury permit prices out to June 2017 and the average August 2012 European Energy Exchange[19] future contract prices for carbon permits for July 2015 to June 2017. An exchange rate of AUD 1 = EUR 0.73[20] has been used to convert European permit prices to nominal Australian prices.

- **Table 12 Carbon permit prices**

Financial years	Jul-11 to Jun-12	Jul-12 to Jun-13	Jul-13 to Jun-14	Jul-14 to Jun-15	Jul-15 to Jun-16	Jul-16 to Jun-17
Treasury modelling (Real $FY2010)	$0	$21.00	$21.50	$22.10	$24.60	$25.60
Nominal Price	$0	$23.00	$24.15	$25.40	$28.60	$30.51
Euro Permits (nom)	-	-	-	-	$12.38	$13.05
50/50 split	$0	$23.00	$24.15	$25.40	$20.49	$21.78
Inflator	1.00	1.03	1.06	1.09	1.11	1.14
Real Price ($FY2012)	$0	$22.26	$22.80	$23.39	$18.41	$19.09

Source: SKM interpolation of CEF Treasury modelling permit projections (2010 and 2020), European Energy Exchange carbon permit futures.

Note: 2012-13 administered price starting at $23 and increasing at 2.5% real.

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[18] In the draft report dated 10 September 2012, SKM had assumed that the local manufacturers are able to pass through the full extent of the additional carbon cost to the customers, thereby setting the upper limit for local goods.

[19] European Energy Exchange http://www.eex.com

[20] Forecast value used by National Institute of Economic and Industry Research (NIEIR) in report to the Australian Energy Market Operator (AEMO) for the National Electricity Forecasting Report dated March 2013. This is a recent forecast by a credible economic consultancy whose economic forecasts have often been used by both AEMO and energy utilities.

Coupled with the CEF price, the emissions intensity of each input cost driver is required to determine the anticipated impact on input prices. SKM has sourced emissions intensity figures from Commonwealth Government assessments of emissions intensive industries as shown in Table 13.

Assistance for EITE industries is also part of current policy, with the percentage level of assistance sourced from Department of Climate Change documents relating to the operation of the EITE assistance scheme. The factors used in the CEF modelling are shown in Table 13 below. For EITE industries rated as "High" assistance starts at 94.5% in 2012-13 financial year and reduces by the carbon productivity contribution of 1.3% pa.

- **Table 13 Emissions Intensity and pass-through assistance**

Financial years	EITE Asst	Emiss Intens [t CO_2e/t]	Jul-12 to Jun-13	Jul-13 to Jun-14	Jul-14 to Jun-15	Jul-15 to Jun-16	Jul-16 to Jun-17
Aluminium	High	17.00	94.5%	93.3%	92.1%	90.9%	89.7%
Copper	High	1.95	94.5%	93.3%	92.1%	90.9%	89.7%
Steel Ave	High	2.37	94.5%	93.3%	92.1%	90.9%	89.7%

Source: Commonwealth Government

Pass-through coefficients for each of these price impacts have been developed based on expected EITE assistance levels.

SKM has calculated the expected price impact on each of these commodities by multiplying the carbon price by the emissions intensity, subtracting the percentage impact of EITE existing assistance, to determine a per unit (tonne) emissions cost for each commodity. This impact was then added to the base forecast to determine a future \price path including carbon price mechanism cost impacts. It was then assumed that, because of market constraints, local producers could only pass through half the additional costs incurred due the carbon price mechanism. Imported materials and items of equipment were assumed to be unaffected by the Australian carbon price mechanism. SKM has assumed that the carbon price mechanism and the EITE assistance scheme will continue to exist in the same form to 2017.

6. Conclusion

The SKM cost escalation modelling methodology provides a rigorous and transparent process through which reasonable and appropriate cost escalation indices are able to be developed in relation to the prices of electricity transmission network plant and equipment.

The real escalation factors established during this assignment were developed with specific consideration of the operating environment faced by SPA, and were based on the most up-to-date information available at the time of compilation.

These real indices therefore constitute SKM's calculated opinion of appropriate materials cost escalation rates that can reasonably be expected to affect SPA over the upcoming revenue regulation period. The results of SKM's modelling during this assignment are presented in Table 14 below.

- **Table 14 Real year-on-year or annual cost escalation % change forecast of underlying network material cost drivers**

Cost Driver	Apr-12 to Mar-13	Apr-13 to Mar-14	Apr-14 to Mar-15	Apr-15 to Mar-16	Apr-16 to Mar-17
Without carbon price mechanism					
Manufacturing costs (CPI)	0.00%	0.00%	**0.00%**	**0.00%**	**0.00%**
Aluminium	-16.68%	6.41%	**9.11%**	**8.00%**	**8.45%**
Copper	-8.98%	1.83%	**3.62%**	**2.67%**	**0.84%**
Steel	-3.81%	6.41%	**3.56%**	**-0.06%**	**2.74%**
Oil	0.37%	5.57%	**13.70%**	**14.86%**	**7.60%**
Construction costs	-0.37%	0.00%	**-0.24%**	**0.05%**	**-0.03%**
General Labour	1.10%	1.45%	**1.50%**	**1.05%**	**1.12%**
Site Labour	1.27%	1.47%	**1.28%**	**1.09%**	**1.16%**
With carbon price mechanism on locally manufactured material and equipment					
Manufacturing costs (CPI)	0.00%	0.00%	**0.00%**	**0.00%**	**0.00%**
Aluminium	-16.39%	6.59%	**9.17%**	**7.94%**	**8.45%**
Copper	-8.97%	1.83%	**3.62%**	**2.67%**	**0.84%**
Steel	-3.68%	6.48%	**3.60%**	**-0.06%**	**2.76%**
Oil	0.37%	5.57%	**13.70%**	**14.86%**	**7.60%**
Construction costs	-0.37%	0.00%	**-0.24%**	**0.05%**	**-0.03%**
General Labour	1.10%	1.45%	**1.50%**	**1.05%**	**1.12%**
Site Labour	1.27%	1.47%	**1.28%**	**1.09%**	**1.16%**
Underlying CPI					
CPI	2.62%	2.50%	**2.50%**	**2.50%**	**2.50%**
Impact of carbon price mechanism					
Aluminium	0.36%	0.53%	**0.59%**	**0.53%**	**0.54%**
Copper	0.01%	0.02%	**0.02%**	**0.02%**	**0.02%**
Steel	0.13%	0.19%	**0.23%**	**0.22%**	**0.24%**

The figures in Table 14 with carbon price mechanism exclude the impact for the SF_6 import levy. The value for the impact of carbon price mechanism reported in this table is the estimated % difference between the A$/tonne price of the respective commodities with and without the carbon price in place for locally manufactured materials and equipment. It shows that, for locally produced materials and assets where it is assumed that producers can pass through half the cost impact of the carbon price mechanism, carbon pricing will have a small but material impact on underlying material costs for electricity transmission networks, with the existing assistance for emissions intensive trade exposed industries limiting but not eliminating this impact.

In exerting expected cost pressures on SPA, SKM concluded that these escalation forecast form a component of efficient prices for a Victorian electricity transmission business. SKM therefore recommends that SPA take account of these materials cost escalation forecast within their forward capital and operating expenditure forecasts. The modelled impacts on aggregated asset class level are presented in Table 15.

- **Table 15 Real year-on-year or annual cost escalation indices forecast aggregated at SPA's standard asset class level**

SPA Asset Class	Apr-12 to Mar-13	Apr-13 to Mar-14	Apr-14 to Mar-15	Apr-15 to Mar-16	Apr-16 to Mar-17
Secondary	0.997	1.008	**1.016**	**1.016**	**1.009**
Switchgear	0.982	1.019	**1.025**	**1.020**	**1.016**
Transformers	0.965	1.030	**1.035**	**1.025**	**1.024**
Reactive	0.965	1.030	**1.035**	**1.025**	**1.024**
Overhead Lines	0.960	1.032	**1.030**	**1.018**	**1.025**
Underground Cables	0.969	1.014	**1.026**	**1.023**	**1.011**
Establishment	0.996	1.000	**0.998**	**1.000**	**1.000**
Communications (buildings, towers & site infrastructure)	1.000	1.000	**1.000**	**1.000**	**1.000**
Non System -Other	0.992	1.030	**1.043**	**1.037**	**1.026**
Vehicles	1.000	1.000	**1.000**	**1.000**	**1.000**
Premises	1.000	1.000	**1.000**	**1.000**	
Network Switching Centre	1.000	1.000	**1.000**	**1.000**	**1.000**
IT	1.000	1.000	**1.000**	**1.000**	**1.000**

The impact and therefore the inclusion of the Australian carbon price on the above listed transmission electricity asset class is dependent on the asset component make-up profile, SPA's asset supplier portfolio, market dynamics, competition and international pricing pressure. It is noted that not all SPA's asset class is impacted by the introduction of Australian carbon price mechanism.

The above numbers are based on the assumption that the carbon cost impact will be partially (estimated at 50%) passed through for locally manufactured items of equipment, but not impact prices at all for fully imported items. This partial pass through assumption is considered prudent given that some locally manufactured items will be made from imported materials and that competition in the market may act to constrain the ability of local producers to pass through to customers the full cost impact.

The underlying cost drivers for some asset classes such as Communication, Vehicles, Premises, Network Switching Centre and IT closely reflects the CPI trend and as such no real material cost escalation is implied.

Appendix A SKM recent experience

SKM has assisted several electricity utilities, both at the transmission and distribution level, in analysing the impact of movements in commodity prices and labour on the costs of network assets, as well as in providing independent validation of their capex and opex modelling processes.

These projects have included:

SP AusNet Gas Network – 2012

SKM was engaged by the Victorian Gas Distribution Business' (VGDBs) to review factors likely to affect price escalation in their material costs over the period 2013-2017, using a 2011 base date for cost forecasts, and propose suitable materials cost escalation rates.

Joint VIC DNSPs (JEN, UED, SP AusNet, CP & PC) - 2010

SKM provided updates of cost escalation rates modelled for the Victorian Distribution companies. These updated rates were included in revised submissions to the AER.

Country Energy Gas Networks – 2010

SKM was engaged to provide a Due Diligence of the Country Energy regional Gas network in Wagga Wagga (NSW). A section of this study involved reviewing the modelling undertaken to develop cost escalation rates for plant and equipment within the Gas industry.

Ergon Energy – 2010

SKM was engaged to provide an update of cost escalation rates developed the previous year. The effect of rapid movements in a number of underlying cost drivers was required to be modelled in order to provide a more recent set of outputs.

ENERGEX – 2010

SKM was engaged to provide a set of suitable cost escalation rates for ENERGEX's capex and opex programs of work. ENERGEX had received an unsatisfactory response from the AER in relation to the cost escalation rate modelling proposed by its consultants during its initial regulatory submission, and engaged SKM to provide modelling for its revised submission. The SKM rates were received favourably by the AER.

CitiPower / PowerCor - 2009

In a separate engagement, SKM developed materials cost escalation rates for the CP / PAL opex programs.

Joint VIC DNSPs (JEN, UED, SP AusNet, CP & PC) - 2009

SKM was engaged by the Joint Victorian Distribution Network Service Providers to provide capex escalation rates for their regulatory submissions. The outputs were tailored to individual asset categories nominated by each of the participants.

ETSA Utilities – 2009(a)

SKM was engaged to provide an independent review of the cost escalation rates within the South Australian DNSP's Opex models. This project has been initiated as part of ETSA Utilities' preparation for the submission of its revenue proposal to the AER.

TRANSCO (Philippines) – 2009

SKM was engaged to apply its cost escalation modelling experience to escalate TransCo's internal asset unit rates to current pricing levels

ETSA Utilities – 2009(b)

In a separate assignment, SKM was engaged to provide inputs to the development of materials cost escalation rates within the South Australian DNSP's capex model, as part of ETSA Utilities' preparation for the submission of its revenue proposal to the AER.

Transend Networks – 2009

SKM was engaged to investigate the long-term average transmission network materials and labour cost escalation rates in Tasmania.

ElectraNet – 2009

SKM was engaged to apply its cost escalation modelling experience to escalate ElectraNet's internal opex model unit rates to current pricing levels.

Ergon Energy – 2009

SKM was engaged to provide an update of cost escalation rates developed the previous year. The effect of rapid movements in a number of underlying cost drivers was required to be modelled in order to provide a more recent set of outputs. The resulting cost escalation rates are to be included as part of Ergon Energy's official revenue proposal to the AER.

Ergon Energy – 2008

SKM was engaged to map key cost drivers within its model, to internal opex cost estimation unit rates within Ergon Energy models.

Ergon Energy – 2008

SKM undertook Stage 2 of the Ergon assignment relating to Electricity Industry Labour, Commodity and Asset Price & Cost Indices. During this period the SKM cost escalation model underwent extensive enhancements.

Transend – 2008

SKM were engaged to provide cost escalators factors in order to promote Transend's most recent asset valuation , having been based in June 2006 AUD$ terms, to June 2008 amounts as part of the TNSP's regulatory proposal.

TransGrid – 2008

During this assignment, SKM reviewed TransGrid's Capex model, corrected errors in their methodology, and provided an independent validation for use during TransGrid's revenue proposal to the AER.

ActewAGL - 2008

SKM to provided an independent assessment of the escalation factors that apply to ActewAGL's capital works programmes and projects going forward over the period 2007/8 to 2013/14. This was included in ActewAGL's submission to the AER.

Ergon – 2008

SKM undertook Stage 1 of the Ergon assignment relating to Electricity Industry Labour, Commodity and Asset Price & Cost Indices.

AER – 2007/2008

In July 2007, SKM was engaged by the Australian Energy Regulator (AER) to review the regulatory revenue proposal submitted by ElectraNet for their next regulatory reset period 2008 to 2013.

During this assignment the SKM model was both updated and enhanced through consideration of elements presented by ElectraNet. The AER again accepted the SKM view to cost escalation index design.

SP AusNet - 2007

SKM was engaged by SP AusNet to analyse the likely drivers of cost escalation on capital expenditure forecasts over the remaining two years of their current determination (2006/07 and 2007/08), and for the next regulatory reset period (2008/09 to 2012/13, commencing 1 April 2008).

The SKM SP AusNet assignment set the precedent for above CPI escalation of capex costs. The AER accepted the SKM methodology noting that it produced robust figures.