Annual Material Cost Escalation Factors 2013-17

DECEMBER 2011 UPDATE

- Document No: QH10377-0000-OSR-RP-E4-0001
- Rev 1
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Sinclair Knight Merz
ABN 37 001 024 095
Cnr of Cordelia and Russell Street
South Brisbane QLD 4101 Australia
PO Box 3848
South Brisbane QLD 4101 Australia
Tel: +61 7 3026 7100
Fax: +61 7 3026 7300
Web: www.globalskm.com

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Document history and status

Revision	Date issued	Reviewed by	Approved by	Date approved	Revision type
A	15/12/2011	J Reddel	J Butler	16.12.2011	Draft for comment
0	19/12/2011	J Reddel	J Butler	20.12.2011	Final Issue
1	10/01/2012	J Reddel	J Butler	10.01.2012	Change escalators from cumulative to year on year

Distribution of copies

Revision	Copy no	Quantity	Issued to
A	Electronic	1	Aurora Energy
0	Electronic	1	Aurora Energy
1	Electronic	1	Aurora Energy

Printed:	10 January 2012
Last saved:	10 January 2012 08:17 AM
File name:	I:\QHIN\Projects\QH10377\Deliverables\Reports\QH10377-0000-OSR-RP-E4-0001_1.docx
Author:	J Reddel
Project manager:	J Butler
Name of organisation:	Aurora Energy
Name of project:	Annual Material Cost Escalation Factors 2013-17
Name of document:	December 2011 Update
Document version:	Rev 1
Project number:	QH10377

Limitation Statements

Limitation Statement

Forecasts are by nature uncertain. SKM has prepared these projections as an indication of one possible outcome it considers likely in a range of possible outcomes. SKM does not warrant or represent the selected outcome to be more likely than other possible outcomes and does not warrant or represent the forecasts to be more accurate than other forecasts. These forecasts represent the authors' opinion regarding the outcomes considered possible at the time of production, and are subject to change without notice

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, and multiple suppliers and end users, all subject to uncertainty.

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 Federal Court of Australia, as published by Chief Justice M.E.J. Black on 5th May 2008[1]

In providing consultative services in other assignments, SKM acknowledges a pre-existing relationship with Aurora Energy, 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 electricity industry.

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

1. Introduction

In November 2010, Sinclair Knight Merz (SKM) was engaged by Aurora Energy (Aurora) to review factors likely to affect price escalation in their material costs over the year to June periods between 2009/10 to 2016/17 (with June 2010 being the base year for Aurora) and propose suitable materials cost escalation rates.

The results of the assignment were captured in an SKM report entitled; "*Aurora Energy annual material cost escalators 2013-17*"

In March 2011, SKM was engaged by Aurora to provide a set of updated cost escalation rates, bringing into account additional market pricing information that had become available since the previous report was compiled. This report was appended to Aurora's regulatory submission to the Australian Energy Regulator (AER) in May 2011.

In November 2011, the AER released the draft determination for Aurora's submission. SKM was engaged by Aurora to provide a further set of updated cost escalation rates, bringing into account additional market pricing information that had become available since the previous March 2011 report was compiled.

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 operational expenditure work over the period June 2009/10 to June 2016/17, 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 Aurora, and based on the most up-to-date information available at the time of compilation. Escalation rates were also established for various asset categories existing within the SKM cost escalation model.

Table 4 in section 3of this report presents the updated forecast escalation rates for the underlying drivers of network infrastructure plant and equipment costs.

Table 5 in section 3 provides forecasts for escalation rates based on the movements in underlying cost drivers, but at the asset category level.

2. Method

The methodology employed in updating the cost escalation rates was identical to that described in the original December 2010 SKM report to Aurora, but for two exceptions of oil price and foreign exchange.

In the first case of oil price forecasting, SKM has typically found that World Oil markets provide future contracts with settlement dates sufficiently far forward to accommodate their use in updating this specific cost driver, without the need to refer to the quarterly forecasts for oil market prices presented in the Consensus Economics survey.

However, in this particular instance the last forward price was a December 2015 position. Therefore, in developing the updated cost escalation rates contained in this report, SKM interpolated between this December 2015 forward contract price and the Consensus Economics' October survey long-term nominal price of US$102.65 in order to complete the set of oil escalation rates to June 2017.

In the second case of foreign exchange forecasting, the AER's draft determination challenged the proposed US dollar foreign exchange rates used in the December 2010 and April 2011 SKM reports. The rates used by SKM were sourced from the RBA for historical data and from the KPMG Econtech forecasts from the AER's May 2010 final decision for Ergon and Energex for future forecast data. The AER states in the current Aurora draft determination "*Given the difficulty in forecasting exchange rates, the AER considers the use of forward exchange rates is reasonable*[2]".

Based on the AER draft determination, SKM has updated the foreign exchange forecast method to reflect the method already employed to forecast commodity price movements. Linear interpolation between available forward exchange rates and the long term average exchange rate are used to develop a forecast US dollar and Australian dollar exchange rate for the upcoming regulatory period.

[2] AER, *Aurora 2012-17 draft distribution determination,* November 2011, p 103

3. Movements in key cost drivers

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

The key cost drivers used are identical to those used in the December 2010 report, and their values have been updated to reflect current market forecasting advice[3] dated October 2011.

3.1. Consumer Price Index

In updating the forecast values for Consumer Price Index (CPI), SKM has referred to the RBA Monetary Policy Statement of November 2011. The revised forecast figures are shown in Table 1 below and include the RBA's forecast impact of the Carbon Tax to CPI.

Table 1 Forecast CPI figures

Year to June	2010	2011	2012	2013	2014	2015	2016	2017
RBA	3.05%	3.60%	2.00%	3.25%	2.50%	2.50%	2.50%	2.50%

In updating the cost escalation factors, SKM has continued to apply the methodology used by the AER in their Final Decision for NSW distribution businesses of including both the *midpoint* of the RBA target range, and short term forecasts to provide a conservative estimate of the likely position of this network cost pressure that can reasonably be expected to materialise over the periods 2012/13 to 2016/17.

3.2. Foreign exchange

The following table was produced by the AER comparing their own foreign exchange rate forecasts to the SKM rates included in the initial Aurora regulatory submission.

Table 2 AER's comparison of USD/AUD foreign exchange forecasts

Year to June	2011	2012	2013	2014	2015	2016	2017
AER forecast	1.00	1.04	1.00	0.96	0.93	0.90	0.88
Aurora's proposal	0.81	0.73	0.73	0.73	0.73	0.74	0.74

Based on the AER draft determination, SKM has used the updated method discussed in Section 2 to provide an updated foreign exchange forecast for the upcoming regulatory period. Forward

[3] Consensus Economics, *Energy & Materials Consensus Forecasts*, survey date 25 October 2011

prices are taken from the latest Chicago Mercantile Exchange forward USD/AUD futures contract information available on 15 December 2011. The updated foreign exchange forecast is shown in Table 3.

Table 3 Updated USD/AUD foreign exchange forecast

Year to June	2011	2012	2013	2014	2015	2016	2017
SKM forecast	0.994	0.972	0.944	0.915	0.887	0.858	0.838

4. Model output and recommendations

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

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

These escalation rates therefore constitute SKM's calculated opinion of appropriate materials cost escalation rates that can reasonably be expected to affect Aurora Energy over the year to June periods 2012/13 to 2016/17 inclusive.

The results of SKM's modelling during this assignment are presented in Table 4 below.

- **Table 4 Average year on year *real* Australian dollar change in underlying network materials cost drivers**

Cost Driver	Jun-10	Jun-11	Jun-12	Jun-13	Jun-14	Jun-15	Jun-16	Jun-17
Aluminium	-9.82%	2.03%	-12.39%	2.12%	4.48%	3.91%	3.71%	3.17%
Copper	14.40%	11.89%	-12.59%	-1.76%	-0.11%	-1.57%	-1.99%	-2.50%
Steel Avg	-29.14%	6.14%	2.64%	4.33%	1.04%	0.88%	1.33%	0.88%
Oil	-8.63%	2.36%	1.94%	1.88%	-2.76%	-1.62%	0.72%	4.46%
Construction Costs	-8.53%	0.59%	-0.17%	-1.18%	-1.54%	-0.61%	-0.19%	0.35%
CPI	3.05%	3.60%	2.00%	3.25%	2.50%	2.50%	2.50%	2.50%

In exerting expected cost pressures on Aurora Energy, SKM concluded that these updated escalation rates form a component of the "*capital expenditure that would be incurred by an efficient TNSP over the regulatory control period*"[4]

SKM therefore recommends that Aurora take account of these updated materials cost escalation rates within their forward capital and operational expenditure programs.

To assist in accounting for these forecast movements in the underlying cost driver of network materials, plant & equipment pricing, SKM has also provided a set of escalation rates at the asset category level. These asset level cost escalation rates appear in Table 5 below.

[4] NER, transitional chapter 6 rules, clause 6.5.7 (e) (4)

Table 5 Average year on year real change in cost of individual asset categories

Asset Category	Jun-10	Jun-11	Jun-12	Jun-13	Jun-14	Jun-15	Jun-16	Jun-17
Overhead Sub transmission Lines	0.868	1.024	0.986	1.013	1.005	1.007	1.010	1.010
Underground Sub transmission Cables	0.985	1.034	0.950	1.005	1.008	1.005	1.005	1.006
Overhead Distribution Lines	0.889	1.024	0.990	1.018	1.007	1.007	1.011	1.013
Underground Distribution Cables	0.947	1.010	0.977	1.007	1.004	1.006	1.009	1.014
Distribution Equipment	0.950	1.019	0.993	1.009	1.001	1.001	1.004	1.006
Substation Bays	0.949	1.013	0.996	1.002	0.996	0.999	1.002	1.005
Substation Establishment	0.915	1.006	0.998	0.988	0.985	0.994	0.998	1.003
Distribution Substation Switchgear	0.950	1.019	0.993	1.009	1.001	1.001	1.004	1.006
Transformers (Zone + Distribution)	0.922	1.032	0.984	1.013	1.004	1.003	1.006	1.007
Distribution Substations	0.921	1.028	0.985	1.010	1.002	1.002	1.005	1.007
Low Voltage Services	0.921	1.016	0.941	1.015	1.023	1.020	1.020	1.017
Metering	0.987	1.008	0.999	1.003	0.998	0.998	1.001	1.004
Communications - Pilot Wires	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Generation Assets	0.925	1.024	1.002	1.012	1.000	1.000	1.003	1.005
Street Lighting	0.971	1.006	1.003	1.004	1.000	1.000	1.001	1.002
Other Equipment	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Control Centre - SCADA	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Communications	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
IT Systems	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Office Equipment & Furniture	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Motor Vehicles	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Plant & Equipment	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Buildings	0.915	1.006	0.998	0.988	0.985	0.994	0.998	1.003
Wood Poles	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Steel Poles	0.855	1.031	1.015	1.022	1.001	1.002	1.007	1.011
Concrete Poles	0.915	1.006	0.998	0.988	0.985	0.994	0.998	1.003
Switchgear	0.950	1.019	0.993	1.009	1.001	1.001	1.004	1.006
Transformers	0.922	1.032	0.984	1.013	1.004	1.003	1.006	1.007
Structure	0.915	1.006	0.998	0.988	0.985	0.994	0.998	1.003
Foundation	0.915	1.006	0.998	0.988	0.985	0.994	0.998	1.003
Civil	0.915	1.006	0.998	0.988	0.985	0.994	0.998	1.003
P&C	0.987	1.008	0.999	1.003	0.998	0.998	1.001	1.004
Erection + Commissioning - Subs	1.017	1.001	1.028	1.023	1.007	1.005	0.999	1.005
Design, Procure, OH	1.000	1.002	1.020	1.018	1.008	1.010	1.005	1.009
Conductor	0.921	1.016	0.941	1.015	1.023	1.020	1.020	1.017
Towers	0.811	1.034	1.012	1.016	0.997	1.001	1.006	1.006
Insulators	0.978	1.006	1.005	1.005	0.993	0.996	1.002	1.011

Asset Category	Jun-10	Jun-11	Jun-12	Jun-13	Jun-14	Jun-15	Jun-16	Jun-17
Fittings	0.924	1.017	0.996	1.013	0.999	1.001	1.007	1.016
Foundations	0.915	1.006	0.998	0.988	0.985	0.994	0.998	1.003
Erection + Commissioning - OH	1.017	1.001	1.028	1.023	1.007	1.005	0.999	1.005
Wood Poles	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Steel Poles	0.855	1.031	1.015	1.022	1.001	1.002	1.007	1.011
Cable Al	0.942	1.013	0.960	1.011	1.013	1.012	1.014	1.016
Cable Cu	1.059	1.070	0.933	0.993	0.999	0.991	0.990	0.989
Erection + Commissioning - UG	0.966	1.003	1.013	1.006	0.996	0.999	0.999	1.004
PVC Conduit	0.974	1.007	1.006	1.006	0.992	0.995	1.002	1.013
Pit	0.915	1.006	0.998	0.988	0.985	0.994	0.998	1.003
Cable Protection	0.915	1.006	0.998	0.988	0.985	0.994	0.998	1.003
Re-instatement	0.915	1.006	0.998	0.988	0.985	0.994	0.998	1.003
Misc Material	0.905	1.021	1.011	1.016	0.996	0.998	1.005	1.013
Standby Generators	0.925	1.024	1.002	1.012	1.000	1.000	1.003	1.005