APPENDIX 35

Cost escalation rates and application

Cost escalation rates and application

1.1 Overview

Clause 18.2(c) of Schedule 1 of the reset Regulatory Information Notice (RIN) requires that Energex provide:[1]

evidence that the forecast price changes accurately explain the change in price of goods and services purchased by Energex, including evidence that any materials price forecasting method explains the price of materials purchased by Energex.

In accordance with the above RIN requirement, this appendix provides information on the method used to develop Energex's proposed cost escalation rates and explains their application to its forecast capital and operating expenditure for the 2015-20 regulatory control period.

This appendix includes the following sections:

- Section 1.3 – provides an overview of the economic environment in which Energex's 2015-20 regulatory control period is set and its impact on the forecast escalation rates.
- Section 1.4 – provides details on the forecast inflation rates.
- Section 1.5 – provides details on the cost escalation rates for program of work materials expenditure such as overhead and underground sub-transmission and distribution lines and cables, distribution equipment, zone and distribution transformers, and metering equipment.
- Section 1.6 – details the escalation rates for labour and fixed term contractors, contractors (service delivery), minor system and non-system materials, non-system assets (land, building and motor vehicles), occupancy expenditures (rent, leases, utilities and maintenance), transport costs (vehicle maintenance, fuels and oils, insurance and registration), and land and land tax.
- Section 1.7 - provides details on the application of cost escalation rates to Energex's forecast expenditure.

1.2 Introduction

Escalation rates are an integral step to developing the forecast annual capital and operating expenditures for submission to the AER as part of Energex's regulatory determination process.

[1] AER, Regulatory Information Notice, Schedule 1, 25 August 2014.

In late 2013, Energex engaged Jacobs Sinclair Knight Mertz (Jacobs SKM) and PricewaterhouseCoopers (PwC) to provide an independent assessment of the escalation rates to be applied in the development of its proposed operating and capital expenditure for the 2015-20 regulatory control period. To ensure that Energex's forthcoming regulatory proposal reflects the most recent data available, PwC and Jacobs SKM provided in August 2014 updated cost escalation rates.

1.3 Drivers underpinning future price changes

In its 2010-15 regulatory proposal, Energex noted the impact of the 2008 global financial crisis had on the escalation estimates. In contrast, moderate improvements in economic conditions around the world are expected over the forthcoming regulatory control period. Energex notes that, in the August 2014 Statement on Monetary Policy, the Reserve Bank of Australia (RBA) predicted that Australia's 'trading partner growth is forecast to be a little above its long-run average in 2014 and 2015. The slight strengthening in growth compared with recent years reflects the expectation of stronger growth in the advanced economies'.[2] The RBA also commented that commodity prices had declined in the past three months, the largest fall in prices being for iron ore due to oversupply, particularly in Australia. The global supply of bulk commodities was expected to grow broadly in line with demand over the next two years, without any increase in real prices.[3]

In determining the drivers underpinning Energex's cost escalation rates for the forthcoming regulatory period, Energex's advisors drew from a variety of information such as historical and forecast movements in commodity prices, Australian-wide and Queensland specific indices, and Energex's historical financial data and experience. The rationale and approaches underpinning the recommended escalation rates are detailed in the Jacobs SKM and PwC reports provided in Appendix 19 and 21.

The cost escalation rates included in this Appendix reflect the Australian Parliament's decision to repeal the carbon tax legislation on 17 July 2014.

1.4 Inflation rates

The CPI figures used for determining Energex's escalation rates are based on the RBA's forecast published in its August 2014 Statement on Monetary Policy in which the 2015-16 CPI value was forecast to be 3 per cent. For the period 2016 to 2020, the mid-point of the forecast inflation target range of 2.5 per cent was considered appropriate.

[2] Reserve Bank of Australia, Statement on Monetary Policy, August 2014, page 1.
[3] Ibid.

Table 1 – Estimated inflation rate for the 2015-20 regulatory control period

Inflation rate	2015-16	2016-17	2017-18	2018-19	2019-20
CPI	3.00%	2.50%	2.50%	2.50%	2.50%

1.5 Program of work cost escalation rates

Jacobs SKM were engaged to develop price changes in Energex's forecast system asset categories, namely:

- Overhead sub-transmission lines – overhead 132/110kV and 33kV lines on towers, concrete, and wood poles
- Underground sub-transmission cables – underground 132/110kV and 33kV cables and terminations
- Overhead distribution lines – Overhead 22/11kV, SWER and low voltage (LV) lines on concrete and wood poles
- Underground distribution cables – 22/11kV and LV cables
- Distribution equipment – air break switches, reclosers, sectionalisers, regulators
- Substation bays – indoor and outdoor zone substation bays including circuit breakers, instrument transformers, isolators, earth switches, surge arrestors and capacitors
- Substation establishment – area and facilities associated with zone substations including indoor and/or outdoor bays, control room, earthing, earthing systems, fence, oil containment, all auxiliary circuits and wiring, AC and DC boards, fire protection/indication systems and security
- Distribution substation switchgear – circuit breakers and other switchgear associated with distribution substations
- Zone transformers – power transformers located in zone substations
- Distribution transformers – pole mounted, ground mounted and kiosk/pad mounted transformers
- Low voltage services – single phase and 3-phase low voltage service connections
- Metering – High voltage (HV) and LV metering
- Communications – Pilot Wires
- Street lighting – suburban and traffic lighting on wood and steel poles
- Control Centre SCADA – control centre SCADA equipment

- System buildings – substation buildings, mobile substations.

The approach used by Jacobs SKM has been accepted by the AER, as highlighted in recent electricity network decisions. The methodology used by Jacobs SKM is based on modelling the independent forecast movements in the price of key input components with weightings for the relative contribution of each component to the final costs of equipment. In line with the AER's preference, Jacobs SKM uses future contract markets as the basis for forecasting commodities prices. It can be noted that Jacobs SKM has also incorporated improvements to its modelling methods in response to regulatory precedents and availability of improved cost information.

The cost drivers and relevant economic indicators used in the Jacobs SKM model are presented in Table 9 below.

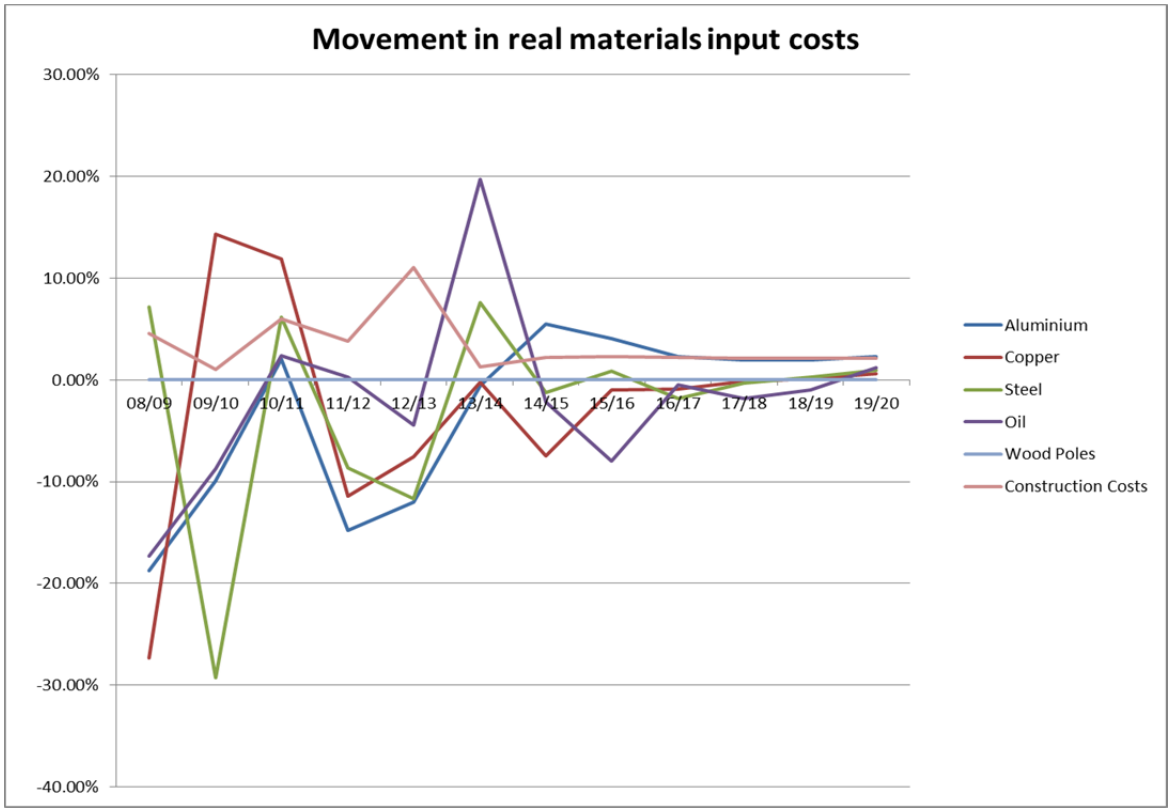
Table 9 – Cost drivers and economic indicators used to derive system escalation rates

Cost drivers / Economic indicators	Application (mostly used for)	Sources
Aluminium, steel, copper and oil prices	Primary equipment, structures, overhead conductors, cables etc.	London Metal Exchange, Consensus Economics, MEPS, Bloomberg, US-Energy Information Administration and NYMEX
Wood	Softwood pole raw material	KPMG Australian Pine Log Price Index
Construction index	Civil, foundation, building, establishment etc.	Australian Construction Industry Forum
Foreign exchange rates and Australian TWI	Imported goods in Australian currency (e.g. secondary, switchgear, insulators, etc.) and for non-metallic and non-oil based items	Bloomberg future contracts and Reserve Bank of Australia
Australian CPI	All (to convert nominal to real terms) and manufacturing	Australian Bureau of Statistics and Reserve Bank of Australia
US CPI	All imports (to convert nominal to real terms quoted in USD)	US Bureau of Labor Statistics and US Congressional Budget Office

In order to estimate real cost escalators for network program of work asset categories, SKM have applied specific weightings to the materials input cost to account for their relative contribution towards the overall cost of the asset type.

Jacobs SKM has forecast de-escalation (i.e. a real price decrease) in the materials input costs of a number of asset categories over the 2015-20 regulatory control period due to a number of economic factors such as overall levels of supply and demand, the aftermaths of the 2008 Global Financial Crisis and uncertainty in current economic conditions. As shown in Figure 1 below, input cost drivers are expected to experience a moderate recovery and converge towards CPI by the end of the 2015-20 regulatory period.

Figure 1 – Movement in real input cost drivers from 2008-09 to 2019-20



The escalation rates for Energex's program of work asset categories for the 2015-20 regulatory control period are set out in Table 10 below.

Table 10 – Real escalation rates for Energex's system asset prices for the 2015-20 regulatory control period (capital expenditure)

Real escalation rates	2015-16	2016-17	2017-18	2018-19	2019-20
Overhead subtransmission lines	1.40%	0.50%	0.80%	1.00%	1.40%
Underground subtransmission cables	-0.70%	0.00%	0.20%	0.30%	0.70%
Overhead distribution lines	0.00%	-0.20%	0.00%	0.30%	0.80%
Underground distribution cables	0.00%	0.60%	0.40%	0.50%	0.90%
Distribution equipment	-0.50%	-0.20%	-0.10%	0.00%	0.40%
Substation bays	0.10%	0.40%	0.40%	0.50%	0.80%
Substation establishment	2.20%	2.20%	2.10%	2.10%	2.10%
Distribution substation switchgear	-0.50%	-0.20%	-0.10%	0.00%	0.40%
Zone transformers	-0.30%	-0.40%	-0.10%	0.20%	0.70%
Distribution transformers	0.00%	0.00%	0.20%	0.40%	0.80%
Low voltage services	2.10%	1.00%	0.90%	1.00%	1.30%
Metering	-0.80%	-0.10%	-0.20%	-0.10%	0.20%
Communications – Pilot wires	0.00%	0.00%	0.00%	0.00%	0.00%
Street lighting	-0.20%	-0.20%	-0.10%	0.00%	0.10%
Control centre – SCADA	0.00%	0.00%	0.00%	0.00%	0.00%
System buildings	2.20%	2.20%	2.10%	2.10%	2.10%

The system asset categories are expected to be initially impacted by the decrease in input costs, and then experience a slight increase in price towards the end of the 2015-20 regulatory control period.

1.6 Other cost escalation rates

PwC was engaged to develop escalation factors for a range of expenditure items, namely:

- Labour and fixed term contractors

- Contractors (service delivery)
- Minor system and non-system materials, including ancillary consumables used in the performance of maintenance and operating activities
- Non-system assets (land, building and motor vehicles)
- Occupancy expenditures (rent, leases, utilities and maintenance)
- Motor vehicle expenditure
- Transport costs (vehicle maintenance, fuels and oils, insurance and registration)
- Land and land tax.

The approach developed by PwC to determine escalation rates for the above expenditure is based on:

- Assessing the appropriateness of specific national economic indices by comparing them with historical movements in Energex's expenditure; and
- Drawing from relevant national regulatory precedents and broader industry best-practices.

1.6.1 Employee, fixed term contractors costs and contractors (service delivery) escalation rates

It is proposed that escalation rates for:

- Employees and fixed term contractors costs be based on the wage price index (WPI) published by the Bureau of Statistics (ABS), subject to wage movement guidance set out in the relevant Queensland Government policies or legislation.
- Contractors (service delivery) be based on weighted average comprising CPI, WPI and fixed component.

In considering escalation rates for Energex's employee and fixed term contractor costs for the 2015-20 regulatory period, PwC considered the following factors:

- The economic conditions and market trends.
- Energex's commitment to the Union Collective Agreement (EUCA) which governs a number of work conditions including working hours, allowances, non-salary benefits, and annual wage increases.
- The Queensland Government Owned Corporation Wages Policy with which the EUCA is required to comply.

Energex notes that the AER has recently stated its preference for the use of WPI when assessing labour price changes over the forecast period.[4] It can also be noted that the AER does not automatically endorse the wage inflation rates negotiated in the Union Collective Agreements as, in the AER's opinion, they do not reflect the actual economic circumstances and do not necessarily reflect efficient labour costs for the industry.[5]

Energex has commenced formal negotiations with stakeholders to develop a new EUCA for the period 2015 to 2018. In undertaking this negotiating process, Energex is mindful of the AER's position as well as that of the Queensland Government. Energex is of the view that the proposed employee and fixed term contractor costs aligns with these expectations.

As Energex proposes the use of the WPI where the quantity and quality of labour inputs are held constant, wage movements driven by productivity are excluded.

In considering contractors (service delivery) costs, PwC reviewed a large sample of individual contracts, representing about 50 per cent of total 2012-13 services contract expenditure. Based on the clauses contained in these contracts, PwC calculated weights relating to the proportion each cost component (labour, general costs and fixed components) contributed to total contract prices. WPI was then applied to the labour cost component, CPI to the general cost component, and no escalation to the fixed cost component.

The proposed escalation rates for employees and fixed term contractors, and contractors (service delivery) are summarised in Table 2 below.

Table 2 – Real escalation rates for labour and fix term contractors, and contractors (service delivery) for the 2015-20 regulatory control period

Escalation rates	2015-16	2016-17	2017-18	2018-19	2019-20
Labour and fix term contractors	0.24%	0.98%	0.98%	0.98%	0.98%
Contractors - service delivery	(0.26%)	(0.11%)	0.00%	0.00%	0.00%

1.6.2 General materials

It is proposed that CPI be used to escalate Energex's general material expenditure.

General material expenditure includes work store-issued material comprising work wear, tools and equipment and ancillaries (e.g. radios, cloths, filters, signs, etc). PwC found that due to the heterogeneous nature of the goods under this expenditure category, CPI was considered the most appropriate escalation factor.

[4] Australian Energy Regulator, Better Regulation Expenditure Forecast Assessment Guideline for Electricity Distribution, November 2013, p. 10.
[5] Australian Energy Regulator, Queensland Distribution Determination 2010-11 to 2014-15, Final Decision, May 2010, p.191

The proposed escalation rates for general materials are summarised in Table 3 below.

Table 3 – Real escalation rates for general materials for the 2015-20 regulatory control period

Escalation rates	2015-16	2016-17	2017-18	2018-19	2019-20
General materials	0.00%	0.00%	0.00%	0.00%	0.00%

1.6.3 Buildings

It is proposed that building capital expenditure be escalated using the Construction Forecasting Council (CFC) engineering index developed by the Australian Construction Industry Forum (ACIF).

Energex notes that, for 2010-15 regulatory period, the AER expressed its preference for the use of the CFC index as a proxy for building cost escalator so long it is based on the most recent update.

The proposed escalation rates for buildings are summarised in Table 4 below.

Table 4 – Real escalation rates for buildings for the 2015-20 regulatory control period

Escalation rates	2015-16	2016-17	2017-18	2018-19	2019-20
Buildings	2.25%	2.20%	2.12%	2.10%	2.15%

1.6.4 Land and land tax

It is proposed that land costs and land tax expenditure be escalated at a rate equal to the long run average growth rate of the value of Queensland land as published by the ABS.

In considering Energex's land cost escalation rates, PwC reviewed Energex's land purchases for the period from 2009-10 to 2012-13. PwC considers it appropriate to use the ABS long-run growth rates for the following land categories: residential, commercial, rural and other. This is consistent with the AER's decision in other determinations when assessing escalation of land costs.

The proposed escalation rates for land and land tax are summarised in Table 5 below.

Table 5 – Real escalation rates for land and land tax for the 2015-20 regulatory control period

Escalation rates	2015-16	2016-17	2017-18	2018-19	2019-20
Residential	6.95%	7.47%	7.47%	7.47%	7.47%
Commercial	3.29%	3.29%	3.29%	3.29%	3.29%
Rural	1.29%	1.78%	1.78%	1.78%	1.78%
Other	4.49%	5.00%	5.00%	5.00%	5.00%

1.6.5 Occupancy expenditure

It is proposed that occupancy expenditure be escalated using a weighted index comprising forecast rent increases, the long-run average of the CPI –Utilities (Australia) series, and forecast CPI.

Occupancy expenditure reflects a range of cost sub-categories, namely:

- Rent and leases – costs associated with leasing all buildings and land for delivering network services
- Utilities – costs associated with water, gas, electricity and rate payments to local councils
- Land and building maintenance – repairs and maintenance, cleaning, security and building waste services.

PwC reviewed a number of relevant indices and proposed that a weighted index be developed using the following escalation factors:

- Rent and leases – A composite index based on an escalation factor for Energex's metropolitan leases (based on the factors specified in the four major rental agreements and weighted in accordance with total rental expenditure for each premise) and CPI for Energex's remaining rental expenditure
- Utilities – long-run 20-year average of the CPI – Utilities (Australia) series over the period 1992-93 to 2012-13
- Other occupancy expenditure – Use of CPI.

The proposed escalation rates for occupancy expenditure escalation factors are summarised in Table 6 below.

Table 6 – Real escalation rates for occupancy costs for the 2015-20 regulatory control period

Escalation rates	2015-16	2016-17	2017-18	2018-19	2019-20
Occupancy	0.75%	1.04%	1.04%	1.04%	1.03%

1.6.6 Motor vehicle expenditure

It is proposed that motor vehicle expenditure be escalated using CPI.

Motor vehicle expenditure includes the following sub-categories:

- Heavy vehicles – Earthmoving, forklifts, heavy and medium trucks (excluding elevated work platforms (EWP)) and trailers
- Light vehicles – Light vehicles 3.5 to 4.5T (excluding EWPs), and other light vehicles
- Plant – Lifter / borers and EWPs.

In considering escalation rates for motor vehicle expenditure, PwC reviewed movements in average prices for each motor vehicle category over the period between 2008/09 and 2012/13.

PwC reviewed a number of indices (CPI – All groups (Brisbane), CPI – Motor vehicles (Australia), PPI – Motor vehicle manufacturing (Australia), PPI – Motor vehicle body and trailer manufacturing (Australia)) but could not identify any strong relationship with Energex's actual motor vehicle expenditure. The nature of vehicle expenditure by Energex tends to be affected by one-off purchases of big and expensive heavy plant vehicles. It is therefore difficult to derive any meaningful trend out of price movements in the prices of these goods. As a result, it is proposed to escalate motor vehicle expenditure by CPI.

The proposed escalation rates for motor vehicle expenditure are summarised in Table 7 below.

Table 7 – Real escalation rates for motor vehicles for the 2015-20 regulatory control period

Escalation rates	2015-16	2016-17	2017-18	2018-19	2019-20
Motor vehicle	0.00%	0.00%	0.00%	0.00%	0.00%

1.6.7 Transport costs

It is proposed that motor transport expenditure be escalated using a weighted index comprising WPI, the upper bound of the RBA's inflation forecast, the mid-point of expected registration cost increases and the long-run growth rate of the CPI – Insurance (Australia) series.

Transport expenditure comprises the following sub-categories:

- Vehicle maintenance

- Fuel and oils
- Vehicle registration
- Insurance costs.

PwC reviewed a number of relevant indices (CPI – All groups (Brisbane), CPI – Motor vehicles (Australia), PPI – Motor vehicle manufacturing (Australia)) but could not identify any strong relationship with Energex's historical fuel cost per litre, maintenance costs per vehicle and registration costs per vehicle. Instead, it was proposed that a weighted index be developed using the following escalation factors:

- Vehicle maintenance – Due to labour cost being a core component of vehicle maintenance costs (42 per cent), the WPI is considered an appropriate escalation factor.
- Fuel and oils – Due to the high degree of variability of the annual average fuel costs relative to general price inflation, the upper limit of the RBA's target CPI range is considered appropriate.
- Vehicle registration – The weighted average of the Queensland Government's indexation policy (GIP) comprising light vehicles (3.5 per cent) and heavy vehicles (2.5 per cent) is recommended.
- Insurance costs – Due to the high degree of volatility in Energex's damage and accident expenditure, it is very difficult to derive a trend for future insurance cost movements. As a result, it is proposed that the ten-year historical compound average nominal growth rate of CPI – Insurance (Australia) be used.

The proposed escalation rates for transport costs escalation factors are summarised in Table 8 below.

Table 8 – Real escalation rates for transport costs for the 2015-20 regulatory control period

Escalation rates	2015-16	2016-17	2017-18	2018-19	2019-20
Transport	0.39%	0.73%	0.73%	0.73%	0.73%

1.7 Application of cost escalation rates

To derive a more accurate impact of cost escalation to capital and operating expenditure over the 2015-20 regulatory control period, specific cost escalators have been allocated to labour, materials and contractor services.

The process whereby cost escalators are applied to Energex's expenditure is summarised as follows:

- Use Energex's capex and opex values in 2014-15 dollars for materials, labour and contractors for each year of the 2015-20 regulatory control period.

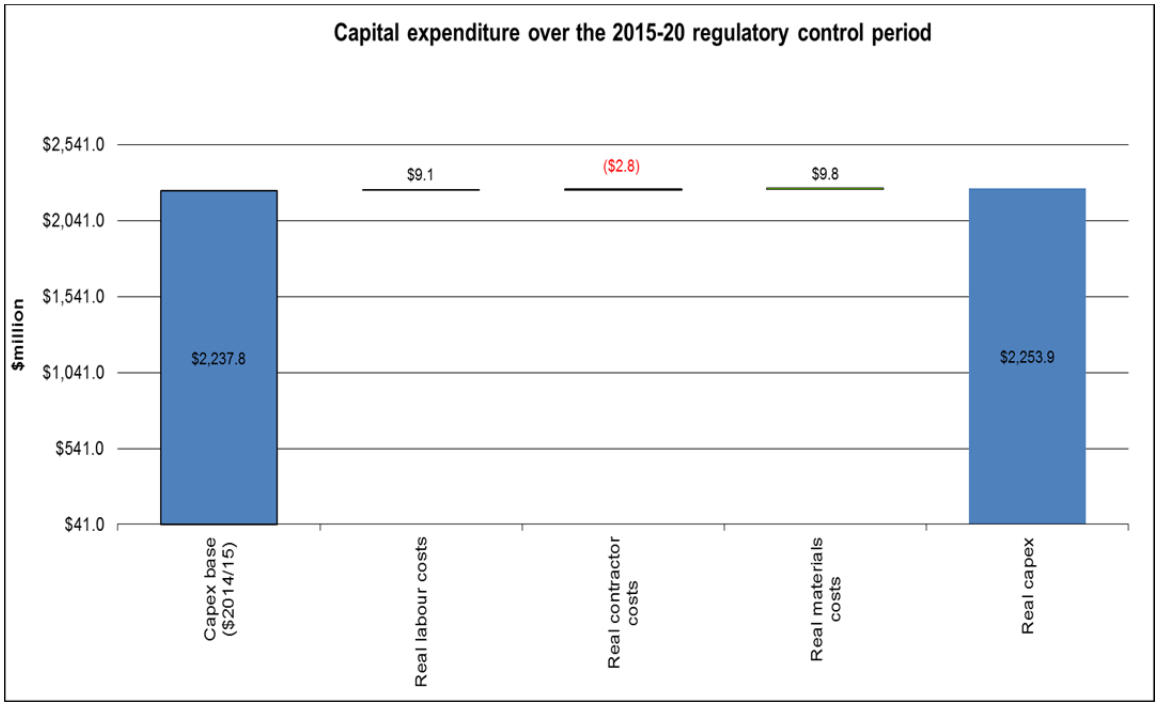
- Apply relevant cost escalators to each cost activity
- Apply inflation.

The following section explains the forecast cost escalation levels which have been derived for each cost element (labour, contractors, and materials) used as part of Energex's forecast capital and operating expenditure.

1.7.1 Impact of cost escalation on Energex's forecast capex

Over the 2015-20 regulatory control period, Energex expects that its forecast capital expenditure program will be impacted by increases in materials and labour costs, and a decrease in contracted services. The impact of the real cost components on Energex's forecast capital program (in 2014/15 dollar terms) is illustrated in Figure 2 below.

Figure 2: Impact of cost escalators on total capital expenditure ($2014-15)



The impact of cost escalation on Energex's forecast capital expenditure was estimated by applying specific materials, labour and contractors cost escalation rates to Energex's annual forecast capital expenditure, expressed in 2014-15 dollar terms. The capital expenditure is exclusive of overheads.

Table 12 below summarises the impact of cost changes on Energex's capex for each year of the forthcoming regulatory proposal.

Table 12: annual impact of cost changes on Energex's forecast capex

$m	2015/16	2016/17	2017/18	2018/19	2019/20	Total
Capex Base ($2014/15)	463.0	482.5	434.0	419.0	439.3	2,237.8
Real labour costs	0.2	1.1	1.8	2.6	3.4	9.1
Real contractors costs	(0.4)	(0.7)	(0.6)	(0.6)	(0.6)	(2.8)
Real materials costs	0.6	1.3	1.6	2.0	4.2	9.8
Total	**463.4**	**484.2**	**436.9**	**423.0**	**446.3**	**2,253.9**

In determining changes to material costs, Energex applied the program of work asset escalation rates developed by Jacobs SKM to the materials element of the forecast annual capex (expressed in 2014-15 terms). Using historical data, Energex applied specific weightings to the cost escalation rates to account for the assets' contribution towards the total cost of each program of work activity performed. Figure 3 below illustrates the process whereby escalators are applied to materials costs in Energex's forecast capital expenditure.

Figure 3: Application of cost escalators to materials

The application of labour and contractors escalation rates to Energex's annual forecast capital expenditure program follows a similar approach to that used for materials. Energex used the forecast labour and contractors rates derived by PwC to estimate the changes in labour and contractors costs for each of the five years during the forthcoming regulatory control period.

1.7.2 Impact of cost escalation on Energex's forecast indirect and operating expenditure

As part of the base-step-trend process used to derive Energex's forecast indirect and direct operating expenditure, cost escalators were applied to reflect changes in labour, materials, contractors, property (occupancy), fleet (transport), and other operating costs.

The forecast property (occupancy) and fleet (transport) costs derived by PwC are discussed in Sections 1.6.2, 1.6.5 and 1.6.7 in this Appendix. Energex did not apply any real price change to the materials used as part of the operating expenditure.

The impact of cost escalation on indirect expenditure over the forthcoming regulatory control period is illustrated in Figure 4 below.

Figure 4: annual impact of cost changes on Energex's indirect expenditure

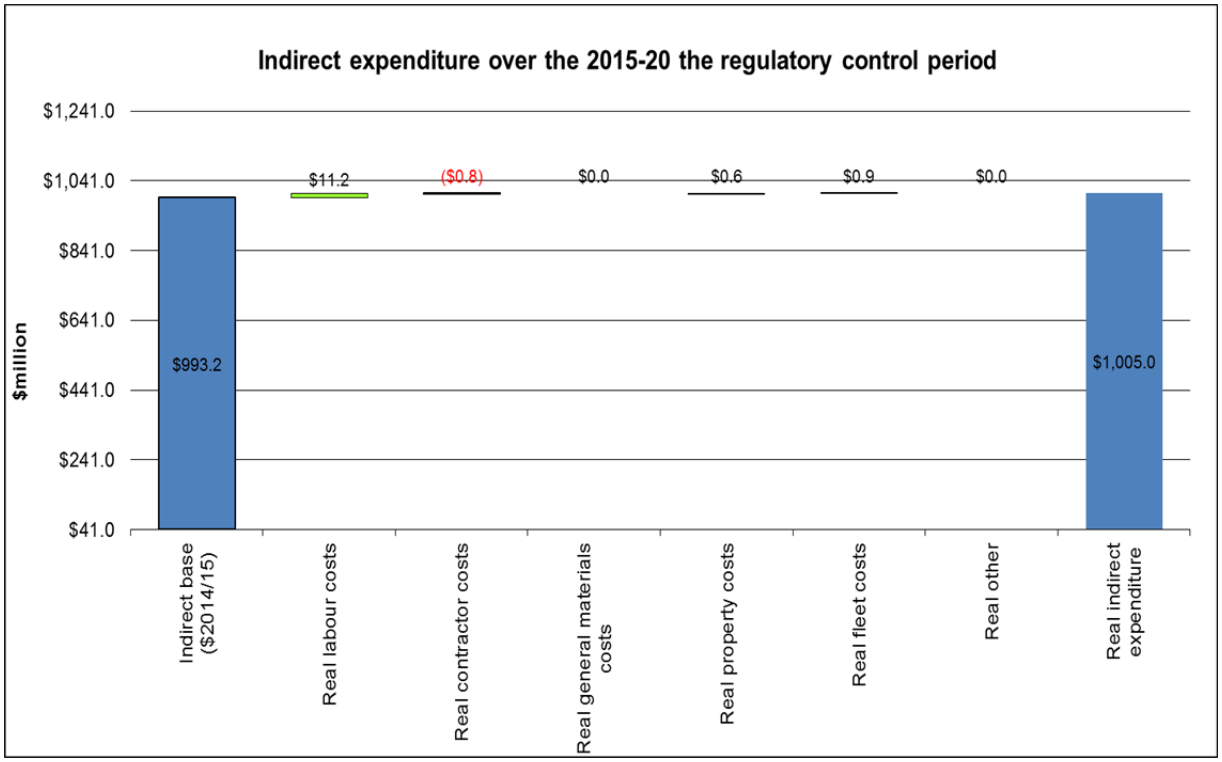


Table 13 below summarises the impact of cost changes on Energex's indirect expenditure for each year of the regulatory proposal.

Table 13: annual impact of cost changes on Energex's indirect expenditure

$m	2015/16	2016/17	2017/18	2018/19	2019/20	Total
Indirect Base ($2014/15)	197.6	193.0	195.3	203.8	203.5	993.2
Real labour costs	0.2	1.2	2.2	3.2	4.3	11.2
Real contractor costs	-0.1	-0.2	-0.2	-0.2	-0.2	-0.8
Real general materials costs	0.0	0.0	0.0	0.0	0.0	0.0
Real property costs	0.0	0.1	0.1	0.2	0.2	0.6
Real fleet costs	0.0	0.1	0.2	0.2	0.3	0.9
Real other costs	0.0	0.0	0.0	0.0	0.0	0.0
Total	**197.8**	**194.2**	**197.6**	**207.3**	**208.1**	**1,005.0**

The impact of cost escalation on direct operating expenditure over the forthcoming regulatory control period is illustrated in Figure 5 below.

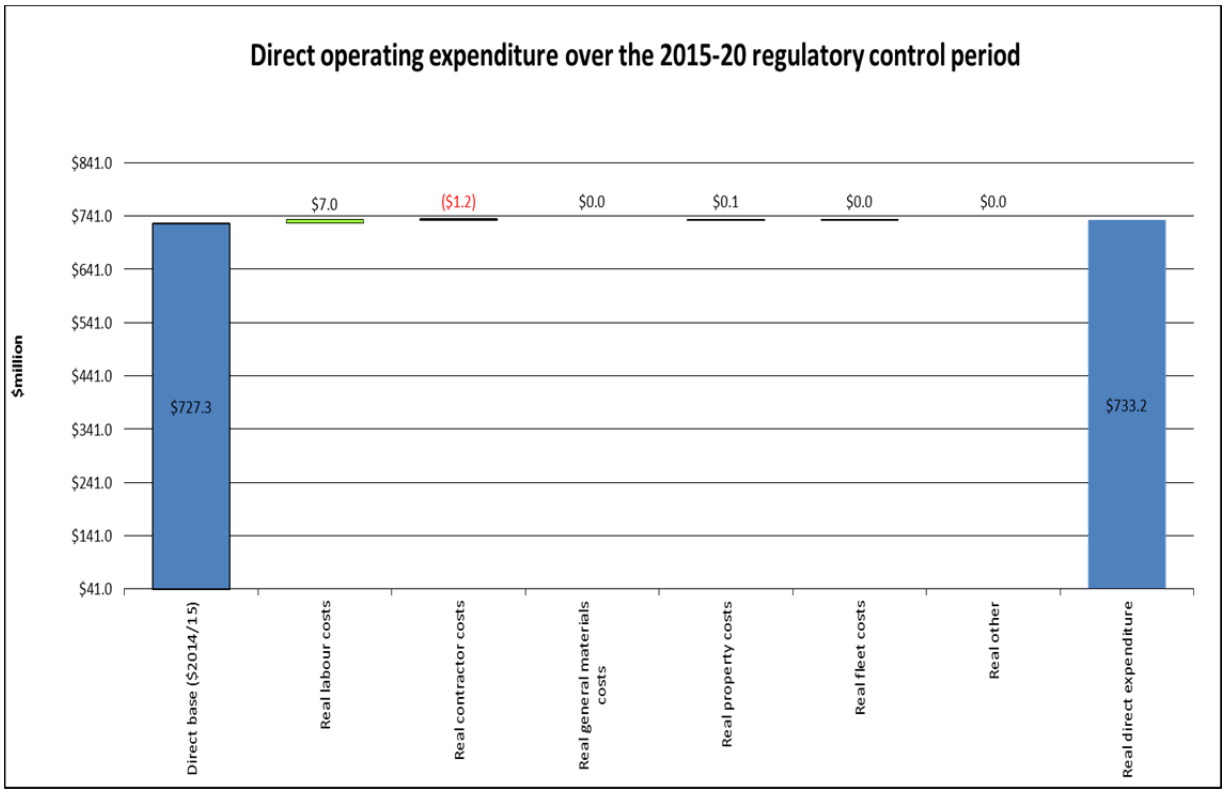


Figure 5: annual impact of cost changes on Energex's direct operating expenditure

Table 14 below summarises the impact of cost changes on Energex's operating expenditure for each year of the regulatory proposal.

Table 14: annual impact of cost changes on Energex's direct operating expenditure

$m	2015/16	2016/17	2017/18	2018/19	2019/20	Total
Base opex ($2014/15)	144.8	144.6	145.3	145.9	146.6	727.3
Real labour costs	0.1	0.8	1.4	2.0	2.7	7.0
Real contractor costs	-0.2	-0.3	-0.3	-0.3	-0.3	-1.2
Real materials costs	0.0	0.0	0.0	0.0	0.0	0.0
Real property costs	0.0	0.0	0.0	0.0	0.0	0.1
Real fleet costs	0.0	0.0	0.0	0.0	0.0	0.0
Real other costs	0.0	0.0	0.0	0.0	0.0	0.0
Total	**144.8**	**145.2**	**146.5**	**147.7**	**149.0**	**733.2**