

April 2015

Public Lighting Services



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Approval and Document Control

VERSION	DATE	AUTHOR
1.0		

Amendment overview
New document

Glossary

Abbreviations	
ACS	Alternative Control Service
CF	Compact Fluorescent
HBRA	High Bush Fire Risk Area
HPS	High Pressure Sodium
LBRA	Low Bush Fire Risk Area
MH	Metal Halide
MV	Mercury Vapour
OM	Operating and Maintenance
OMR	Operation, Maintenance and Replacement
PE	Photoelectric
PL	Public Lighting
RAB	Regulatory Asset Base
RIN	Regulatory Information Notice
W	Watt



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1. Purpose and structure of this document

This document explains our revenue requirements and proposed prices for the provision of public lighting services for the forthcoming regulatory period. It is supported by a public lighting spreadsheet model, which addresses the Regulatory Information Notice (RIN) requirements for public lighting services and provides details of the building block calculation that underpins our proposed prices.

This document is structured as follows:

- Section 2 provides a summary of key points.
- Section 3 sets out the RIN requirements and identifies where they are addressed.
- Section 4 sets out information on the classification and regulation of public lighting services.
- Section 5 provides an overview of the expenditure drivers for public lighting, including information on asset age profiles.
- Section 6 presents information on our current and proposed fee-based charges for shared public lighting services, including details of the price control and the proposed X factors. An overview of the building block cost model output is also provided. We also explain our proposed charges for unmetered services for public lighting customers (Type 7 metering services).

2. Summary of key points

- We support the AER's proposed classification of public lighting assets. Specifically, the AER's approach limits price control regulation to the provision of shared public lighting assets.
- All other public lighting services, including those relating to greenfield and emerging technologies, will be classified as negotiated services. This classification will enable customers to negotiate terms and conditions with their distributor or an alternative third party service provider.
- We have calculated a fee-based charge for shared public lighting assets in accordance with the AER's building block approach.
- On average, the proposed fees for 2016 will be approximately 15 per cent lower than the current (2015) fees in real terms, and will then increase by approximately 2 per cent per annum in real terms for the remaining four years of the forthcoming regulatory period.
- Further detailed information on the calculation of the proposed fees is provided in the accompanying public lighting spreadsheet model.

3. Regulatory Information Notice Requirements

The table below sets out the Schedule 1 RIN requirements, and identifies the relevant sections of this document and the accompanying spreadsheet that provide this information.

Table 1: Explanation of where the relevant RIN provisions are addressed

RIN provision	How and where addressed
15. PUBLIC LIGHTING ALTERNATIVE CONTROL SERVICES	
15.1 Specify which items are capital expenditure and operational expenditure for each year of the <i>current regulatory control period</i> and forecasts for the <i>forthcoming regulatory control period</i> .	Public lighting spreadsheet model. It is noted that the treatment of items as operating or capital expenditure is unchanged from the current period.
15.2 Provide unit costs for the current regulatory control period and forecast for the forthcoming regulatory control period for:	Public lighting spreadsheet model, "DNSP inputs O&M" tab; and "DNSP inputs Capex" tab.
(a) Luminaires;	
(b) Dedicated street lighting poles;	
(c) Brackets;	
(d) Lamps;	
(e) Photoelectric cells;	
(f) Labour rate (per hour);	
(g) Miscellaneous materials.	
15.3 Provide the depreciation period in years for each type of luminaire.	Public lighting spreadsheet model, "Depreciation & WACC post 2004" tab.
15.4 Provide the bulk change cycle in years for lamps and photoelectric cells.	Public lighting spreadsheet model, "O&M cost assumptions" tab.
15.5 Provide details of the average replacement age of each type of luminaire.	Public lighting spreadsheet model, "Total RAB" tab, and section 5.
15.6 Provide the number of luminaires, by type.	Public lighting spreadsheet model, "DNSP Inputs General" tab.
15.7 Provide the number of luminaires, poles and brackets replaced per year, for the current and <i>forthcoming regulatory control periods</i> .	Public lighting spreadsheet model, "DNSP Inputs General" tab.
15.8 Provide details, including assumptions used, for any other costs that are incurred for the provision of <i>public lighting services</i> .	Public lighting spreadsheet model, "O&M cost assumptions" tab; "O&M 2016-2020" tab
15.9 Provide models and/or modelling that underpins proposed charges for the <i>forthcoming regulatory control period</i> and the reasons for the assumptions behind those forecasts.	Public lighting spreadsheet model, and section 5.2 of this paper.
15.10 For public lighting alternative control services, specify the number of customers in each year of the current regulatory control period, and forecasts for the forthcoming regulatory control period.	During the current regulatory period, United Energy has provided public lighting services to 17 customers, namely - Bayside Council, Boroondara Council, Casey Council, Frankston City Council, Glen Eira Council, Greater Dandenong City Council, Kingston Council, Knox City Council, Manningham City Council, Maroondah City Council, Maroondah City Council, Monash Council, Mornington Peninsula Shire, Port Phillip Council, Stonnington Council, Whitehorse Council, and VicRoads. We expect this to remain the case for the forthcoming regulatory period.

4. Service classification and form of regulation

The AER's Framework & Approach paper classifies public lighting services as shown in the table below.

Table 2: AER's classification of public lighting services

Service	Classification
Operation, maintenance, repair and replacement - shared public lighting assets	Alternative control (fee-based)
Operation, maintenance and repair - dedicated public lighting assets	Negotiated
Replacement - dedicated public lighting assets	Negotiated
Alteration and relocation of DNSP public lighting assets	Negotiated
New public lights (that is, new lighting types not subject to a regulated charge and new public lighting at greenfield sites)	Negotiated

Source: AER

In adopting this classification, the AER accepted the points we raised in our submission to the AER's preliminary Framework & Approach paper.

The rationale for the proposed classification is as follows:

- A distinction is made between:
 - public lighting assets dedicated to a particular customer in the sense of being a standalone assembly - that is, they are public lighting assets that are separate from other distribution assets; and
 - luminaires connected to the shared distribution network, which are shared public lighting assets.
- Shared public lighting assets are regulated, principally because of safety issues associated with their connection to the distribution network. Given their monopoly characteristics, it is appropriate for these services to be classified as Alternative Control Services.
- Shared public lighting assets are different in nature to dedicated public lighting assets. There is greater scope for competition to develop in the provision of dedicated public lighting assets.
- To maximise customer choice, flexibility and innovation in service provision, it is useful to distinguish between the "replacement" and "operation, maintenance and repair" of dedicated public lighting assets.
- The separate classification of dedicated public lighting services allows customers to choose who maintains and repairs their assets and who replaces them. Furthermore, by classifying these services as "negotiated", customers are able to negotiate terms and conditions from either the distributor or a third party service provider.
- New public lighting, which includes emerging technologies and greenfield sites, are also classified as negotiated services unless that new public lighting is (or is to be) provided by shared public lighting assets as this raises the safety issues that generally apply to shared public lighting assets. This classification reflects the potential scope for customers to obtain services from third parties on a competitive basis.

As already noted, we support the AER's proposed classifications. For the purposes of this determination, the AER is only required to address the fee-based charges for the operation, maintenance, repair and replacement of

shared public lighting assets. In accordance with the AER's classification of public lighting services, charges for the remaining services will be determined during the course of the regulatory period on the basis of the terms and conditions that are negotiated with our customers.

Fee-based Alternative Control Services are subject to a CPI minus X price cap¹. Our proposed price cap arrangements for shared public lighting services are detailed in section 6.6.

5. Public lighting expenditure drivers

Our public lighting asset management and service delivery plans are driven by the following requirements:

- To comply with the Public Lighting Code;
- To maintain a duty of care to provide for the safety of the public through provision of public lighting; and
- To operate and maintain a safe public lighting network.

Lighting pole types may be steel, wooden or concrete and are managed in a similar way to the rest of our pole fleet. Routine inspection occurs every five years in Low Bushfire Risk Areas and every three years in High Bushfire Risk Areas. Lighting poles are defined as those poles that have lighting assets and no other electricity assets. The great majority of these poles will be steel. Steel poles have problems with corrosion in some areas, and corrosion treatment (Denso treatment) is commonly used to extend their life.

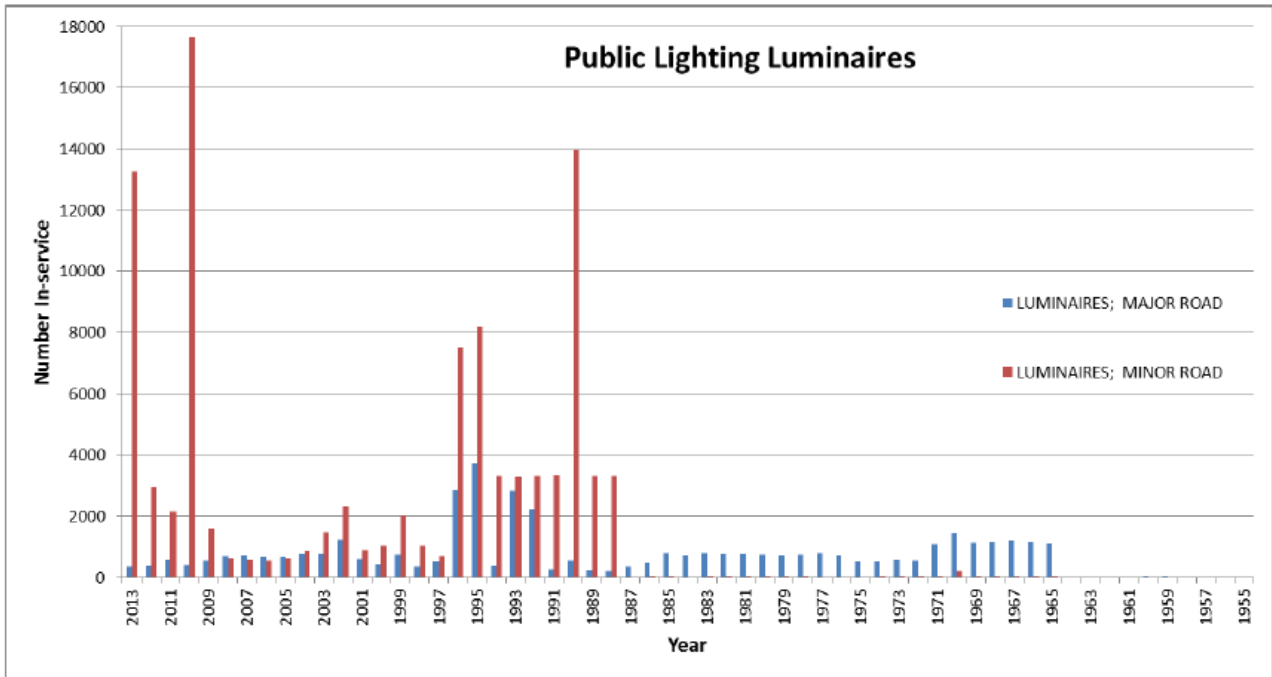
For minor roads, bulk lamp replacements occur on a four yearly basis and luminaires that are identified as faulty or at end of life will be replaced. We also replace failed / faulty luminaires when reported by the public. Under the Guaranteed Service Levels arrangements we repair a faulty light reported by the public within two business days.

Unlike minor roads, public reports on faulty main road lights are much less frequent. For major roads, routine patrols of luminaires are programmed to occur three times per year across the network. The patrols are intended to identify defective lamps or components including lanterns, poles, brackets and access cover plates that may otherwise remain defective for prolonged periods. Any items identified as faulty during inspections are programmed for repair.

The majority of the capital expenditure for this asset class relates to luminaire and public lighting pole replacement. The age profiles for these two assets are shown in the figures below.

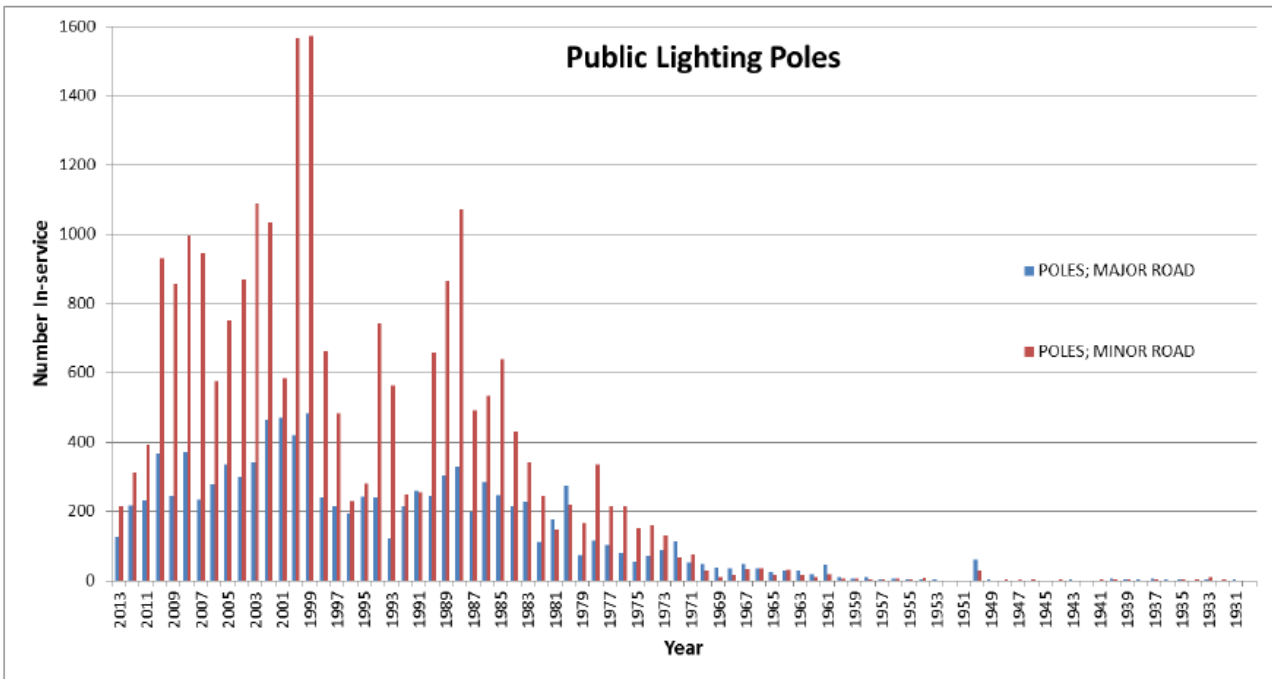
¹ AER, Final Framework and Approach for the Victorian Electricity Distributors Regulatory control period, commencing 1 January 2016, 24 October 2014, page 61.

Figure 1: Luminaire Age Profile



The age at replacement for public lighting luminaires is around 20 years of age. The figure below shows age profile of public lighting poles.

Figure 2: Lighting Poles Age Profile



Like luminaires, the age profile for poles shows an increasing number of assets reaching end of life (40 years of age) during the 2016-2020 period. Consequently, as both age profiles show a growing number of assets approaching nominal end of life, it is expected that replacement volumes for this asset class will increase in the forthcoming regulatory period.

6. Fee-based charges for public lighting services

6.1. Current and proposed prices for shared public lighting

Table 3 shows the current (2015) prices as approved by the AER alongside our proposed prices for 2016.

Table 3: Current approved and proposed public lighting prices (nominal dollars, excluding GST)

Light type	2015 Charge (\$ per year)	2016 Charge (\$ per year)
Fluorescent 2x20 watt	\$83.59	\$69.82
Fluorescent 3x20 watt	\$82.19	\$69.82
Mercury Vapour 50 watt	\$95.90	\$80.11
Mercury Vapour 80 watt	\$64.80	\$54.13
Mercury Vapour 125 watt	\$95.90	\$80.11
Mercury Vapour 250 watt	\$90.67	\$64.30
Mercury Vapour 400 watt	\$125.55	\$89.02
Mercury Vapour 700 watt	\$125.55	\$89.02
Sodium High Pressure 70 watt	\$141.91	\$118.54
Sodium High Pressure 100 watt	\$107.49	\$75.77
Sodium High Pressure 150 watt	\$97.72	\$68.89
Sodium High Pressure 250 watt	\$99.64	\$70.65
Sodium High Pressure 400 watt	\$125.55	\$89.02
Metal Halide 70 watt	\$131.92	\$93.00
Metal Halide 100 watt	\$131.92	\$93.00
Metal Halide 150 watt	\$131.92	\$93.00
Metal Halide 250 watt	\$134.51	\$95.38
Metal Halide 400 watt	\$134.51	\$95.38
T5 2X14W	29.22	\$42.92

Table 3 shows that in all cases (with the exception of the T5 2X14W energy efficient light type, which is discussed below) the 2016 price is reduced compared to 2015. This price reduction is attributable to lower borrowing costs and the operating and maintenance efficiency gains that we have been able to achieve under our new contracting model. These efficiencies more than offset the forecast growth in the replacement (capital expenditure) component of the total cost, which reflects the age profile, forecast failure rates and the projected growth rate of the shared lighting asset base. Further information on our operating and maintenance costs and capital expenditure forecasts is provided in sections 6.3 and 6.4 below, while section 6.5 provides an overview of the revenue building block calculations.

As explained in our 2015 schedule of fees for public lighting services² we currently provide public lighting operation, maintenance and replacement (OMR) services in relation to the T5 2*24W, compact fluorescent (CF) 32W and CF 42W light types. Our fees for these services have not been subject to AER approval. Instead, during the current period we have agreed to permit the installation of these light types, subject to a public lighting customer entering into a contract and paying a commercial charge for the service. Table 4 below shows the commercial charge for these light types in 2015 alongside our proposed charges for 2016, which are subject to the AER's approval.

Table 4: Current commercial and proposed public lighting charges (nominal dollars, excluding GST)

Light type	2015 Charge (\$ per year)	2016 Charge (\$ per year)
Twin 24w Fluorescent	\$29.22	\$42.92
32W Compact Fluorescent	\$29.22	\$42.92
42w Compact Fluorescent	\$29.22	\$42.92

The three light types listed in Table 4 above, along with the T5 2X14W type shown in the bottom row of Table 3 are energy efficient (sustainable) light types. We are forecasting a significant increase in the cost of bulk changeover of sustainable lights. This reflects the age of these assets, and is the reason for the proposed increase in the annual charges for these lights. It is noted that not all councils use sustainable lights, so arguably, only those councils that have these assets installed should incur the costs associated with this service. The charges proposed in this document do not reflect the different costs associated with providing sustainable light types. We intend to discuss this matter with the relevant councils prior to the AER's draft decision, and we will set out any amendments to the charging arrangements in our revised Regulatory Proposal.

6.2. Current and proposed prices for Type 7 metering services

In addition to the fee-based charges for shared public lighting services, we also provide Type 7 metering services to public lighting customers as an Alternative Control Service. The service involves establishing metering data for public lights connected to our distribution network where there is no physical meter provided. We propose that the current charge of \$1.258 per light is increased by CPI to \$1.29 per light, and annually by CPI for each year of the forthcoming regulatory period. The rate of increase is consistent with historic practice, and the proposed charge reasonably reflects the efficient costs of providing the service.

² https://uemg.com.au/media/43208/2015_-_public_lighting_charges_definitions.pdf

6.3. Operating and maintenance costs for shared public lighting

Table 5 below lists the key operating and maintenance (OM) activities we undertake as part of the provision of shared public lighting services.

Table 5: Operating and maintenance activities - shared public lighting

	Main Road light	Minor Road
Repair of light faults	Yes	Yes
Repair of light poles and brackets	Yes	Yes
Street patrols	Yes	No
Bulk change of PE Cells	No	Yes
Bulk change of Globes	No	Yes
Call centre	Yes	Yes
GIS	Yes	Yes

Lights are classified as being located on main or minor roads. This delineation is based on the road classification in the Melway publication. This distinction is made for invoicing purposes, as follows:

- OM costs relating to shared public lights on main roads are charged 60% to Vic Roads, and 40% to Councils.
- 100% of the OM costs for shared public lights located on minor roads are charged to councils.

There is no bulk change of PE cells or globes on main roads. Instead, the lights are replaced on failure.

The total OM cost allowed by the AER for shared public lighting for 2015 is approximately \$3.5 million. The table below provides a breakdown of the cost of services for 2015 as determined by the AER, and the forecast cost of providing those services for the forthcoming regulatory period.

Table 6: 2015 OM cost allowance, and forecasts for the next period (\$000 real 2015)

Service	2015 AER allowance	2016	2017	2018	2019	2020	2016 to 2020
Faults and repairs	2,381.8	1,856.1	1,906.9	1,957.6	1,954.8	1,952.1	9,627.5
Bulk replacement - MV80	694.8	859.4	859.4	859.4	859.4	859.4	4,296.8
Bulk replacement - Sustainable	315.6	877.1	877.1	877.1	877.1	877.1	4,385.3
Patrols	135.4	94.0	94.0	94.0	94.0	94.0	470.0
Total	3,527.6	3,686.6	3,737.3	3,788.1	3,785.3	3,782.5	18,779.7

Putting to one side the forecast increase in the bulk changeover of sustainable lights (which is largely outside our control), our total annual OM is forecast to be lower than the current AER allowance. As already noted, this is due largely to efficiency gains we have achieved through the contracting arrangements that we introduced in 2011.

Further information on our OM cost forecasts, by light type, is set out in the public lighting spreadsheet model.

6.4. Replacement (capital) expenditure for shared public lighting

Table 7 below shows our replacement (capital) expenditure forecast for the forthcoming period. The costs for replacement include all labour, contract, vehicle and plant costs associated with the provision of the service.

Table 7: Capital replacement forecast (\$'000 real 2015)

2016	2017	2018	2019	2020	Total
\$2,378	\$2,479	\$2,564	\$2,639	\$2,753	\$12,814

Further details of our replacement (capital) expenditure forecasts are set out in the public lighting spreadsheet model.

6.5. Overview of building block calculations for shared public lighting

The AER's framework and approach paper sets out a formula for regulating the fee-based charges that will apply for shared public lighting assets. The formula requires that these charges should not increase annually by more than CPI-X, where X is to be defined through the distribution determination process.

In order to calculate the charges for shared public lighting assets in the first year of the forthcoming regulatory period, and the annual changes thereafter, the AER employs a spreadsheet model. This model adopts a building block approach, which determines our revenue requirements given the value of the assets, their remaining life, forecast failure rates and our forecast opex and capex requirements. The revenue building block calculations are summarised in the tables below.

Table 8 sets out details of the regulatory asset base (RAB) for the forthcoming regulatory period.

Table 8: Shared public lighting asset base for 2016 – 2020 (\$M real 2015)

	2016	2017	2018	2019	2020
Opening Public Lighting Regulatory Asset Base	19.7	20.8	21.9	23.0	24.1
Capex	2.4	2.5	2.6	2.6	2.8
Less regulatory depreciation	1.3	1.4	1.4	1.5	1.6
Less the capital component of the exit fees	-	-	-	-	-
Closing Regulatory Asset Base	20.8	21.9	23.0	24.1	25.3

Based on the RAB values shown above, Table 9 sets out the revenue building blocks for the forthcoming period.

Table 9: Building block calculation for shared public lighting (\$M real 2015)

	2016	2017	2018	2019	2020	Total
Return on Capital	1.6	1.7	1.8	1.9	2.0	9.0
Depreciation	1.3	1.4	1.4	1.5	1.6	7.2
Opex	3.7	3.7	3.8	3.8	3.8	18.8
Estimated cost of corporate income tax	-	-	-	-	-	-
Total Revenue Requirement (unsmoothed)	6.6	6.8	7.0	7.2	7.3	34.9

6.6. Price control arrangements and proposed X factors for shared public lighting

As already noted, public lighting Alternative Control Services are subject to a CPI minus X price cap. The algebraic form of the CPI minus X price cap is set out in full in the AER's Framework and Approach paper³. We have used the public lighting spreadsheet model to calculate the X factors for the forthcoming regulatory period, based on the building block inputs set out in section 6.5.

The X factors for each year of the forthcoming period for each light type are shown in Table 10 below. It should be noted that a positive X factor indicates a price reduction, while a negative X factor indicates a price increase.

Table 10: Proposed X factors

Light type	2015 approved charge	X factors				
		2016	2017	2018	2019	2020
Fluorescent 2x20 watt	\$83.59	18.5%	-4.8%	-6.2%	-5.2%	-5.2%
Fluorescent 3x20 watt	\$82.19	17.1%	-4.8%	-6.2%	-5.2%	-5.2%
Mercury Vapour 50 watt	\$95.90	18.5%	-4.8%	-6.2%	-5.2%	-5.2%
Mercury Vapour 80 watt	\$64.80	18.5%	-4.8%	-6.2%	-5.2%	-5.2%
Mercury Vapour 125 watt	\$95.90	18.5%	-4.8%	-6.2%	-5.2%	-5.2%
Mercury Vapour 250 watt	\$90.67	30.8%	-6.9%	-0.7%	-8.8%	-4.2%
Mercury Vapour 400 watt	\$125.55	30.8%	-6.9%	-0.7%	-8.8%	-4.2%
Mercury Vapour 700 watt	\$125.55	30.8%	-6.9%	-0.7%	-8.8%	-4.2%
Sodium High Pressure 70 watt	\$141.91	18.5%	-4.8%	-6.2%	-5.2%	-5.2%
Sodium High Pressure 150 watt	\$97.72	31.2%	-6.9%	-7.2%	-2.2%	-4.3%
Sodium High Pressure 100 watt	\$107.49	31.2%	-6.9%	-7.2%	-2.2%	-4.3%
Sodium High Pressure 250 watt	\$99.64	30.8%	-6.9%	-0.7%	-8.8%	-4.2%
Sodium High Pressure 400 watt	\$125.55	30.8%	-6.9%	-0.7%	-8.8%	-4.2%
Metal Halide 70 watt	\$131.92	31.2%	-6.9%	-7.2%	-2.2%	-4.3%
Metal Halide 100 watt	\$131.92	31.2%	-6.9%	-7.2%	-2.2%	-4.3%
Metal Halide 150 watt	\$131.92	31.2%	-6.9%	-7.2%	-2.2%	-4.3%
Metal Halide 250 watt	\$134.51	30.8%	-6.9%	-0.7%	-8.8%	-4.2%
Metal Halide 400 watt	\$134.51	30.8%	-6.9%	-0.7%	-8.8%	-4.2%
T5 2X14W	\$29.22	-43.3%	7.6%	6.2%	5.2%	4.2%
Twin 24w Fluorescent	\$29.22	-43.3%	7.6%	6.2%	5.2%	4.2%
32W Compact Fluorescent	\$29.22	-43.3%	7.6%	6.2%	5.2%	4.2%
42w Compact Fluorescent	\$29.22	-43.3%	7.6%	6.2%	5.2%	4.2%

On average, the fees for 2016 will be approximately 15 per cent lower than the current (2015) charges in real terms, and they will then increase by approximately 2 per cent per annum in real terms for the remaining 4 years of the forthcoming regulatory period.

³ AER, Final Framework and Approach for the Victorian Electricity Distributors Regulatory control period, commencing 1 January 2016, 24 October 2014, page 61.