

Attachment 8.10

Public lighting investment plan - Replacement of twin 20 luminaries

May 2014



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Document and Amendment History

Issue No.	Date	Approved By	Summary of Changes
1.0	April 2014	Reg Team	Final
2.0	May 2014	John Bedding	Final with Formatting

About this document

This document is a supporting document to Ausgrid's 2014-19 substantive proposal to the Australian Energy Regulator. It provides justification and explanation of a specific capital expenditure program as well as summarising the key financial information of the program.

This document should be read in conjunction with all submission documents, particularly those relevant to public lighting.

Investment Trigger

The investment trigger is to remove and replace Twin 20 luminaires:

- Improvement in spot outage rates when compared to Twin 20 luminaires
- Potential to increase the Bulk Lamp Replacement (BLR) period from 2.5 years to 4 years.

1 Understanding the Need for Investment

1.1 Identifying the need

The introduction of new technology poses significant risk to Ausgrid if the technology does not live up to expectations. As such, Ausgrid are taking great efforts to ensure these risks are identified and all appropriate risk mitigations plans are in place.

Ausgrid developed a risk mitigation strategy prior to introducing LEDs as the default luminaire for category P roadway lighting. The risk mitigation strategy is detailed below:

- Trial LED luminaires to determine their suitability;
- Ensure commercial risk is minimised by negotiating suitable warranties;
- Deploy LED’s at a manageable rate by only installing LEDs to replace underperforming 42W CFL as they are reported and failed luminaires (80W mercury, 50W mercury and twin 20 fluorescent). No accelerated replacements will be undertaken;
- Closely monitor the performance of LED’s and report failures immediately to supplier; and
- Test the market for alternative manufacturers and suppliers.

1.2 Recommended Replacement Strategy

As stated above, Ausgrid’s plan is to not undertake an immediate accelerated replacement with new LED technology. Ausgrid’s plan is to gain confidence in the technology prior to any accelerated replacement. Provided the initial rollout of LEDs proceeds without any issues then the accelerated replacement of the twin 20 luminaires will progress as follows:

Critical Dates:

Commencement date: June 2015

Proposed Completion date: June 2017

Unit Costs:

Install costs with bracket (South and East Regions): [REDACTED]

Install costs with bracket (North Region): [REDACTED]

Install costs without bracket (South and East Regions): [REDACTED]

Install costs without bracket (North Region): [REDACTED]

Materials excluding bracket: [REDACTED]

Materials including bracket: [REDACTED]

Lamp Type	Total Population (Jan 2013)	Total Capital Cost
Twin 20 Luminaire	22,668	[REDACTED]

Note:

- Material costs do not include consumable items such as screws, connectors and cable
- The labour rates are at Ausgrid call out rate

1.3 Total Costs

The summarised costs are presented in the table below

Year Real \$M FY14	FY15	FY16	FY17
Capex	[REDACTED]	[REDACTED]	[REDACTED]

1.4 Cost Benefit

Ausgrid has used its proposed FY15 – FY19 opex cost build up model and capex annuity model to calculate a cost benefit of The Active Reactor over the standard High Pressure Sodium luminaires. Ausgrid is confident that the cost build up method used in these models is reflective of the actual capital and maintenance costs for each lamp and luminaire. All pricing models can be attached at 8.13 – Public Lighting models

	LED	42W CFL	Twin 20
Yearly maintenance costs	28.55	66.72	53.74
Yearly annuity capital cost	45.13	33.91	24.72
Total	73.68	100.63	78.46

As shown above the LED has the least cost of ownership to Ausgrid.

2 APPENDIX - Light Emitting Diodes (LED) Technology Trial Results

To explore the current capabilities of LED roadway lighting, Ausgrid is currently staging an LED trial on residential roadways. Ausgrid selected three LED technologies to trial in locations chosen from across the Ausgrid network. Each trial site consisted of at least six lights and the total trial consisted of 63 lights.

The purpose of this trial was to identify the following:

- Suitability of the construction of the LED luminaires for use on the Ausgrid network. In particular category P4 and P5 roads.
- Visual impact and minimisation of glare.
- Council and resident reactions to the new type of lighting.
- Understand what problems may be encountered introduction LED streetlights

To date this trial has shown that LED technology can be used as a suitable replacement for the existing technology. However there are still some outstanding issues, particularly with light distribution that need to be addressed. This trial will continue until Ausgrid are confident that this technology is ready to be rolled out across our network.

Ausgrid’s LED trial has demonstrated that:

- A greater range of lighting suppliers are now able to provide LED luminaires for residential roadways that meet the key requirements of AS/NZ 1158.
- The majority of residents prefer the LED’s to the previous lighting (generally tubular fluorescent and mercury vapour) and residents did not find the LED’s to be any brighter or glarier than the previous lighting.
- Residents prefer higher lighting levels than the minimum levels allowed for under AS/NZS 1158 P5.
- Photometric surveys substantiated LED performance claims and were generally consistent with photometric modelling.

All LED trial sites and technologies show marked improvements in both uniformity and the length of roadway that is effectively lit as compared with the previous lighting. Refer to the pictures below showing before LED lighting and after installation of LED lighting which gives a clear illustrations of the improvements discussed above.

Before – 42W Compact Fluorescent - Betty Hendry Parade, North Ryde



After – 29W LED - Betty Hendry Parade, North Ryde

