



Energy Efficient Public Lighting **Member update**

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1.0 Executive Summary

In recent years, many Councils have been exploring opportunities to move to more energy efficient public lighting options such as LED luminaires as a way to control rising electricity costs, reduce greenhouse gas emissions and improve amenity. However, progress has been slow, as there are a range of regulatory and other barriers to the adoption of this technology.

In response to members concerns about the challenges in introducing more energy efficient options, WALGA released a Discussion Paper in November 2014 titled *Energy Efficient Street Lighting*. The paper outlined the key challenges for Local Governments in transitioning to more energy efficient public lighting, and helped to shape up an action plan for WALGA's advocacy on this issue.

Since the discussion paper was released, there has been some progress towards removing the barriers to the introduction of energy efficient street lighting. Some of the developments that have occurred in the past three years are:

- An LED luminaire suitable for residential streets was added to Western Power's standard product range in 2015, while Synergy introduced an LED tariff in July 2016;
- LED luminaires have been implemented in street lights in the City of Karratha and Town of Port Hedland as part of the Pilbara Underground Power Program;
- The State Government has committed to reforms to the regulatory environment that are expected to benefit Local Government, including shifting regulation of Western Power to the Australian Energy Regulator and the introduction of full retail contestability; and
- The Australian Standard for street lighting AS/NZ 1158.6 was updated to provide for LED technology.

While these are positive developments, they do not address some of the fundamental concerns that are hampering Local Governments' efforts to introduce new technologies.

In this regard, WALGA has updated its advocacy strategy, and proposes to undertake the following activities in order to pursue the accelerated uptake of more energy efficient public lighting options.

- *Bulk replacement business case model* - In the short term, the primary option available to individual councils is to fund the bulk replacement of street lighting within their Local Government area with more energy efficient luminaires. To assist with this, WALGA is exploring the option to engage a consultant to deliver a business case assessment model which will be made available to all WALGA members to assist with their project assessment and planning.

- *Regulatory reform* - Addressing the remaining barriers will require reforms to improve competition and strengthen the regulatory environment to ensure the efficient operation of the state's public lighting market for the benefit of the WA community. WALGA will continue to advocate for reforms to the existing regulatory arrangements, including the introduction of a Public Lighting Code, and tariff reforms including greater transparency and unbundling energy usage from the maintenance components of tariffs.
- *State Underground Power Program (SUPP)* – Given that Western Power has been replacing street lighting as part of this project, WALGA considers that this represents an ideal opportunity to accelerate the adoption of more energy efficient street lighting technology. Now that they are available as part of Western Power's standard range, WALGA is advocating for LEDs to be the default lighting option that is introduced for all street lighting that is replaced under the SUPP.
- *Alternative ownership models* - Transferring ownership of the street lighting network may be an option to provide local governments with greater control of the street lighting assets within their local area, and the ability to introduce new technology based on market and commercial forces in the best interests of their communities. WALGA proposes to investigate the feasibility of this option for Western Australia.
- *Funding* – WALGA will investigate and advise the sector on funding opportunities that are available from the Commonwealth Government.

2.0 Introduction

The provision of public lighting is a core role for Local Governments and delivers benefits to the community in terms of safety and amenity.

The introduction of more energy efficient street lighting is an important way to deliver on WALGA's vision for Local Governments in WA to have the capacity to provide economically, socially, and environmentally sustainable services and infrastructure that meets the needs of their communities.

In recent years, many Councils have been exploring opportunities to move to more energy efficient lighting options, as a way to control rising electricity costs, reduce greenhouse gas emissions and improve amenity. In particular, they have been looking to replace current street lights with more energy efficient technology such as LED luminaires.

However, progressing these changes has been difficult, given that Western Power owns the majority of Western Australia's street lighting infrastructure. It has no incentive to introduce more energy efficient technologies given that it may not recognise the economic or community benefits. In fact, Western Power may even be worse off financially as a result of the lower electricity consumption, maintenance costs and extended operating life associated with the more efficient technology.

As the peak body for the sector, WALGA has a key role to play in advocating for reforms that will allow Local Governments to have greater control over the street lighting infrastructure so that they best meet the community's needs.

In response to members concerns about the challenges in introducing more energy efficient options, the Association released a Discussion Paper in November 2014 titled *Energy Efficient Street Lighting*. The paper outlined the key challenges for Local Governments in installing energy efficient public lighting, and helped to shape up a draft action plan for WALGA's advocacy on this issue.

Since the paper was released, WALGA has been progressing this plan, and has undertaken a number of activities aimed at addressing members concerns. While there has been some success from this approach, there still remains significant barriers to the widespread uptake of more energy efficient technologies.

This paper intends to update the Local Government sector on the recent developments in relation to the policy and regulatory environment, and WALGA's advocacy strategy to encourage and enable the uptake of more energy efficient lighting options going forward.

3.0 Recent Developments in the Policy and Regulatory Environment

WALGA's 2014 *Energy Efficient Street Lighting* discussion paper identified a number of barriers preventing Local Governments from managing street lighting in the best interests of their local community. These included:

- *The regulatory environment* – Western Power's ownership of the majority of the street lighting network has limited opportunities for Councils to adopt new and more efficient technology and take advantage of alternative service offerings. Further, Western Power has control of the poles that street lights are attached to and do not allow third parties to access these, which prevents Local Government from using third party service providers.
- *Non-contestability* – At present, only those customers within the South West Interconnected System that are consuming more than 50 megawatt hours (MWh) of electricity a year (an average of 137 units per day) can choose their electricity retailer. Given that individual streetlights are classed as separate exit points, they consume less energy than is required to be eligible for contestable electricity supply – using a maximum of around 2 MWh per year.
- *Transparency* – Local Governments have no visibility of what contributes to the cost of providing street lights as a service in each luminaire class.
- *Australian road lighting standards* – The Australian Standard for street lighting previously did not provide for LED technology.
- *Service standards* – At present, the only service standards for street lighting that are included in the current Access Arrangement relate to repair timeframes. There are no standards that relate to other issues such as light levels and spillage.
- *Funding* – Undertaking a bulk replacement is a costly and resource intensive exercise that can run into the millions of dollars.

While these are significant challenges, there has recently been progress towards addressing some of these issues.

3.1 Improved access to LED technology

Up until recently, one of the key barriers to the introduction of more energy efficient technology was that Western Power did not include these options in the standard product range available to Local Governments within the SWIS.

However, after several years spent developing a business case, Western Power has now included 22W LED lamps in its street lighting range. Further, Synergy has also introduced a new LED tariff, which came into effect from 1 July 2016.

While it is positive that Local Governments can now access LED lighting, there are still some concerns about the option currently being offered by Western Power.

A key issue is in relation to meeting public lighting guidelines. There is some uncertainty as to whether the 22W LEDs that are on offer will deliver the same level of lighting that was previously achieved using a 42w CFL or 80w MV light. Some councils have raised concerns that 42W LED lights would be required to deliver the same level of lighting, and therefore using the available 22W LEDs would require more street lights in the same area. This would result in additional costs and act as a disincentive to the introduction of the new technology.

However, advice from Western Power relating to the maximum pole spacing to achieve the lighting standard for various luminaires suggests that this is not the case.

There are also concerns that the colour temperature associated with the 22W LED may have adverse health and wellbeing impacts. The American Medical Association (AMA) has released an official policy statement which sets out guidelines on minimizing the potential harmful effects on health from discomfort and glare. The AMA recommends a maximum temperature of 3000K, however the 22W LED lamp available on the Western Power product range has a colour temperature of 4000K.

In addition, LED luminaires included in Western Power's product range must also be suitable for all types of roads in Local Governments' jurisdiction. The 22W LED product available in Western Power's product range is suitable to meet Category P standards – which relate to low volume traffic roadways and other outdoor public spaces. However, there is a need for Councils to be able to access options that are suitable to meet Category V standards – which are used for high traffic volume roadways where the requirement of motorists is dominant.

To address these issues and provide greater opportunities for local governments to introduce energy efficient options that best meet their community's needs, a broader range of LED luminaires, including other wattages, must be available.

3.2 Electricity Market Review

The previous Liberal National Government committed to a number of changes to the regulatory environment as part of the Electricity Market Review. These reforms had the potential to address some of the concerns raised by Councils in relation to street lighting.

It is not yet known whether the new McGowan Government intends to progress these reforms.

3.2.1 Transition to the Australian Energy Regulator (AER)

A key platform of the previous Government's response to the Review was that regulation of the WA electricity network would be transferred to the Australian Energy Regulator (AER).

This reform was intended to come into effect from July 2018, and would see Western Australia adopt the market arrangements of the National Electricity Market together with the National Electricity Rules (NER) governing the energy market, regulation of electricity networks and retail arrangements.

To progress the transfer of regulatory arrangements, a package of Bills were introduced to Parliament in June 2016 – the *National Electricity (Western Australia) Bill 2016* and the *Energy Legislation Amendment and Repeal Bill 2016*. It was intended that these Bills would be passed in November 2016 to allow Western Power to commence the regulatory process under the national regulatory framework from December 2016 and for the Australian Energy Regulator's determination to apply from 1 July 2018. However, the Public Utilities Office has recently advised that these timeframes will not be achieved. Western Power will now remain regulated by the ERA until at least 2019. It is unclear whether the McGowan Government will progress these reforms.

While the shift to the AER would not directly impact Local Governments' ability to access energy efficient technology, it has the potential to deliver benefits in terms of the overall cost of street lighting and improving transparency.

Under the national regulatory regime, efficiencies and greater transparency were expected to be achieved as Western Power comes under greater scrutiny through the AER's benchmarking process. The AER is required to publish an annual benchmarking report, which would include an examination of the relative efficiency of the distribution and transmission electricity network service providers in delivering street lighting services.

While it is expected that greater transparency and benchmarking of street lighting services would deliver benefits to Local Government, the overall impact of this reform remains to be seen. It is recognised that benchmarking will be just one change that occurs under a new regulatory regime. There are a number of other factors which are considered in the regulatory determination. Any changes to these other factors, for example the allowable rate of return, may not deliver the same benefits and could in fact outweigh any gains that are achieved from the benchmarking process.

3.2.2 Contestability

The previous Government also announced that it would introduce contestability for retail and small business customers. Advice from the Public Utilities Office suggests that this reform means that street lighting would also become contestable.

Competition in the street lighting market will improve Local Governments' ability to manage their street lighting costs, and choose the electricity retailer that best meets their needs. Competition between retailers would deliver a number of benefits from lower retail prices, improved services, and alternative products. These types of benefits have been seen in other markets which have become contestable in recent years.

WALGA has been advocating for some time for contestability to be introduced into the street lighting market, through legislative change by amending the *Electricity Corporations Act 2005* to provide ministerial discretion in exempting classes of exit points. While the previous State Government did not enact these changes which would have delivered contestability in the short term, it did commit to full retail contestability in the future.

This transition was intended to occur as part of Phase 2 of the Electricity Market Review, with the changes to come into effect once the subsidy for the electricity market is reduced to zero - which is expected to be in 2019. The Full Retail Contestability Project within the Public Utilities Office had commenced examining the design and implementation of the new legal framework that will be required to enable full retail contestability. While the previous Government indicated that full retail contestability was expected to come into effect from mid-2019, it is unclear whether the McGowan Government will progress this agenda.

To achieve further benefits to Local Government, WALGA is seeking contestability of public lighting services, to include the introduction of choice in other elements of street lighting such as maintenance. This would provide councils with a greater capacity to manage their street lighting network for the benefit of their local community.

3.3 Updated Australian Standards

In 2015, the Australian Standards have been updated to include LED technologies.

This began as a process to revise *AS/NZS 1158.6:2010 Lighting for Roads and Public Spaces* to accommodate LED technology requirements. Following multiple rounds of public and stakeholder consultation, Standards Australia decided the most appropriate way forward was a modified text adoption of *IEC 60598.2-3 Luminaires - Part 2-3: Particular requirements - Luminaires for road and street lighting* by Standard Australia's Technical Committee EL-041 Lamps and Related Equipment.

This was to address safety requirements for luminaires, and a technical specification regarding performance requirements by another Technical Committee, LG-002 Lighting for Roads and Public Spaces.

As a result, in late 2015, Standards Australia published the following standards which take into account LED technology.

- *AS/SNZ TS 1158.6:2015 Lighting for roads and public spaces - Luminaires – Performance*
- This forms part of the AS/NZS 1158 series, which covers lighting schemes for the generality of roads and outdoor public areas. The document defines enhanced luminaire performance and durability provisions to account for extreme Australian and New Zealand conditions.

- *AS/NZS 60598.2.3:2015 Particular requirements— Luminaires for road and street lighting* - This covers the minimum safety requirements. It is a modified adoption of the IEC standard, due to the varying operating and environmental conditions found in Australia and New Zealand.

3.4 Pilbara Underground Power Project

The Pilbara Underground Power Project provided an opportunity to progress the installation of more energy efficient street lighting in two Local Government areas in the region.

In June 2013 WALGA accessed funds from the Community Energy Efficiency Program to install LED street lights in the City of Karratha, and Town of Port Hedland. This project occurred in conjunction with both Local Governments and Horizon Power.

Some 674 LED streetlights were installed as part of the program, which also provided an important opportunity to identify key policy barriers to the broader uptake of energy efficient street lighting in WA.

4.0 The Way Forward – WALGA’s action plan

While there has been some progress towards the introduction of more energy efficient street lighting, further reforms are needed to overcome the remaining barriers. WALGA is seeking reforms that will deliver:

- transparent and efficient street lighting tariffs;
- greater competition and innovation in the street lighting sector; and
- large scale bulk replacement of energy efficient street lighting in Western Australia.

To assist with this process and accelerate the adoption of energy efficient street lighting, WALGA proposes to undertake the following activities.

4.1 Bulk Replacement of Street Lighting – Business Case Model

While there are broader regulatory and policy changes that will help resolve the issues faced by Local Governments in introducing more efficient technology, achieving change in this area is likely to take some time.

In the short term, the primary option available to individual councils is to fund the bulk replacement of street lighting within their Local Government area with more energy efficient luminaires, through either their own resources or by accessing grant funding from the Commonwealth Government.

Before entering into negotiations it is important that councils undertake an appropriate assessment and business case to ensure that a bulk replacement program will deliver net benefits over the full life cycle of the project.

To assist with this, WALGA is exploring the option to engage a consultant to prepare a business case framework for the bulk replacement of street lights with LED luminaires. The project will deliver a business case assessment model which will be made available to all WALGA members to assist with their project assessment and planning. Individual Local Governments will be able to enter their own data into the model, which will provide results on the feasibility of a bulk replacement program for their particular Local Government area.

4.2 Regulatory Reforms – Ongoing advocacy

Addressing the remaining regulatory barriers will require reforms to improve competition and strengthen the regulatory environment to ensure the efficient operation of the state's public lighting market.

One of the key areas to be addressed is to more closely align the objectives of Western Power and Local Governments. The misalignment of objectives is one of the key reasons that the introduction of more energy efficient technologies has been slow. Western Power aims to maximise its returns from the street lighting network, and to reduce associated risks. By contrast, Local Governments have a wide range of objectives on behalf of the community, including improving public amenity and safety, reducing greenhouse gas emissions and energy consumption, and minimising costs.

WALGA will continue to advocate for reforms to the existing regulatory arrangements, including the introduction of a Public Lighting Code, and tariff reforms including greater transparency and unbundling energy usage from the maintenance components of tariffs.

WALGA is seeking to facilitate and drive engagement of West Australian stakeholders in the national Street Lighting and Smart Controls Programme (SLSC). The SLSC is an initiative designed to help accelerate the deployment of LED street lighting and smart controls. It brings together government (Federal Department of Environment and Energy), industry associations (including Australian Local Government Association, Lighting Council Australia, Energy Networks Australia and Institute of Public Works Engineering) as well as industry partners. Work completed by the SLSC Programme to date includes clear identification of the barriers to deployment of LED lighting and smart controls the development of a roadmap to overcome these issues. While mercury vapour street lights, the oldest technology in common use, accounts for 39% of the national portfolio in Western Australia it accounts for 57% of the portfolio of street lights. This is the highest proportion of this legacy technology in any Australian jurisdiction and reflects the slow initial conversion to CFL lamps and almost no widespread adoption of LED technology to date (except networks owned and operated by some Councils including Cities of Perth, Subiaco and Joondalup and Horizon Power in the Pilbara).

It is hoped that this Programme will be a catalyst for the stakeholders, including the Office of Energy, Economic Regulation Authority, Western Power, Horizon Power, Main Roads and Local Government to work together to address the barriers to deployment in Western Australia.

4.3 State Underground Power Program

The State Underground Power Program (SUPP) is a State government initiative that is administered by the Public Utilities Office of the Department of Finance.

It involves placing Western Power's existing overhead distribution lines in residential areas underground. Local Governments can nominate areas to be converted to underground power. Each nomination is assessed against social, economic and technical criteria by the SUPP Steering Committee. Within this project, the State Government and Western Power will fund up to 50% of the total costs, while the remainder is paid for by Local Government.

As part of this project, Western Power has been replacing street lighting with CFLs.

WALGA considers that the SUPP is an ideal opportunity to accelerate the adoption of more energy efficient street lighting technology. Now that they are available as part of Western Power's standard lighting options, WALGA is advocating for LEDs to be the default lighting option that is introduced for all street lighting that is replaced under the SUPP.

4.4 Alternative ownership options

Transferring ownership of the street lighting network may be an option to provide local governments with greater control of the street lighting assets within their local area, and the ability to introduce new technology based on market and commercial forces in the best interests of their communities. This approach has been used or is in negotiations in other jurisdictions both overseas and in Australia, including the Northern Territory, South Australia, the Sunshine Coast Council and the Hobart and Glenorchy Councils.

WALGA proposes to investigate the feasibility of this option for Western Australia. There are a range of issues that will need to be considered, including:

- In-depth financial and technical analysis and risk assessment in advance, to ensure that ownership of the asset is in their long term best interests. For some local councils, taking ownership of the assets may not deliver a benefit if they do not have the necessary expertise to manage it appropriately.
- Alternative ownership structures such as regional councils, regional subsidiaries or council controlled organisations.
- Ownership boundaries for street lighting infrastructure, including for the luminaire, cabling and control equipment.

- Required changes to the regulatory environment.
- The willingness of the State Government and Western Power to engage in negotiations to transfer the assets and the financial feasibility of commercial terms.

4.5 Funding

The significant costs associated with retrofitting or replacing existing street lights with the new technology have been a major barrier to the widespread adoption of LED technology.

While the cost of introducing more energy efficient technology is significant, there are a number of options that Local Governments could consider to progress these projects. One funding option is to leverage grant funding that is available from the Federal Government. WALGA will investigate and advise the sector about any upcoming opportunities to access funding through Federal Government grants or other programs.