



# Street Lighting Strategy

## Abstract:

This document outlines Ergon Energy's strategy for managing street light assets for street lighting customers throughout regional Queensland during the 2015 to 2020 regulatory control period and beyond. The document focusses on functions associated with establishing and operating new street lighting assets and their impact on existing maintenance regimes.

Keywords: Street Lighting, Street Lights, Alternative Control Services, Major Lights, Minor Lights, Bulk Lamp Replacement

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# Street Lighting Strategy

## 1 Overview

### 1.1 Purpose

The purpose of this document is to outline Ergon Energy's strategy for managing street lighting assets through the regulatory control period 1 July 2015 to 30 June 2020 and beyond.

Consideration has been given to maintenance of legacy street lighting assets, transition to more energy efficient street lighting (Light Emitting Diode (LED)), stakeholder engagement mechanisms, enhanced information management capability and addressing the affordability drivers for our customers.

### 1.2 Scope

The scope of this document is limited to functions associated with establishing and operating street lighting assets for street lighting customers throughout regional Queensland.

## 2 References

### 2.1 Ergon Energy controlled documents

| Document number or location<br>(if applicable) | Document name  | Document type   |
|--|--|-----------------|
| <a href="#">NA000403R434</a>                   | Queensland Public Light Design Manual                                | Design Manual   |
| <a href="#">PLNW0002</a>                       | <a href="#">Network Optimisation Street Lighting Management Plan</a> | Management Plan |
|  | Ergon Energy Street Lighting Service Levels (draft)                  | Service Levels  |

### 2.2 Other documents

| Document number or location<br>(if applicable)   | Document name                                       | Document type |
|--|---|---------------|
| <a href="#">Regional Queensland Energy Efficient Street Lighting Trial Report</a>              | December 2012                                       | Report        |
| <a href="#">US Department of Energy - Technology Fact Sheet - Establishing LED Equivalency</a> | October 2012  | Report        |
| <a href="#">Barriers to Energy Efficient Street Lighting</a>                                   | PWC Equipment Energy Efficiency Committee July 2011 | Report        |

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## 3 Legislation, regulations, rules, and codes

This document refers to the following:

| Legislation, regulations, rules, and codes            |
|---|
| AS/NZS 1158:2010 Lighting for Roads and Public Spaces |
| Queensland Government Notified Prices                 |
| Electricity Act 1994 (Qld)                            |
| Local Government Act 2009 (Qld)                       |
| Transport Infrastructure Act 1994 (Qld)               |

## 4 Definitions, acronyms, and abbreviations

### 4.1 Definitions

For the purposes of this strategy, the following definitions apply:

| Term                          | Definition   |
|-------------------------------|--|
| Customer portal               | Spatial database and its associated management processes that relate to street lighting assets and the associated standing data used by the Australian Energy Market Operator (AEMO) for market settlement purposes.<br>Ergon Energy currently utilises LightMap as its geospatial street lighting asset tool and customer portal.   |
| FRC                           | Full retail competition was introduced in Queensland from 1 July 2007; This is when the majority of customers in Queensland were eligible to obtain a market contract. Ergon Energy was not required to publish customer details to the market under a minimalist transitioning approach. The start of the next regulatory control period is likely to see the full publication of customer details enabled. |
| Major Roads                   | Roads labelled as arterial, sub-arterial, or collector and high safety risk locations  |
| Minor Roads                   | Roads that are not arterial, sub arterial or collector. Often labelled as residential or access roads, these have low intensity lighting   |
| PE Cell                       | Photoelectric Cell used for the electrical switching on and off lamp/light based on pre-set natural light levels   |
| Public Lighting Design Manual | The manual for design of street lighting assets in Queensland authorised and updated from time to time by Ergon Energy and Energex   |
| Road Patrol                   | Road Patrol Lighting Outage Detection Program  |
| Street Lighting               | Lighting that illuminates local government and state controlled roads and includes a luminaire, lamp, Low voltage (LV) supply and a photoelectric cell or control device   |
| Street Lighting Customer      | For premises, is a customer for the premises in the following circumstances:<br>(a) the premises are street lighting<br>(b) the customer is the State or a local government  |
| Tariff 71                     | A notified tariff published in the Queensland Government Notified Prices available to Street Lighting Customers for the purpose of illuminating roads as defined within the Queensland Government Notified Prices.   |

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## 4.2 Acronyms and abbreviations

The following abbreviations and acronyms appear in this strategy.

| Term, abbreviation or acronym | Definition                                      |
|-------------------------------|---|
| ACS                           | Alternative Control Service                     |
| AEMO                          | Australian Energy Market Operator               |
| BLR                           | Bulk Lamp Replacement                           |
| CSO                           | Community Service Obligation                    |
| DNSP                          | Distribution Network Service Provider           |
| DTMR                          | Department of Transport and Main Roads          |
| EECL                          | Ergon Energy Corporation Limited (Ergon Energy) |
| EEQ                           | Ergon Energy Queensland (Retail)                |
| GIA                           | Guided Innovation Alliance                      |
| LED                           | Light Emitting Diode                            |
| LGAs                          | Local Government Authorities                    |
| OEM                           | Original Equipment Manufacturer                 |
| PE                            | Photoelectric                                   |
| WACC                          | Weighted Average Cost of Capital                |

## 5 Background

Ergon Energy recognises the important public service of providing street lighting to illuminate roads across its substantial distribution footprint. Our customers expect this service to provide a reliable and appropriate visual environment for pedestrians and vehicles on our public roads. This expectation includes consideration of energy efficiency, appropriate cost management, and technology choice.

There are broadly two types of roads in Queensland – those that are the responsibility of the relevant local government under the *Local Government Act 2009 (Qld)* (local roads) and those that are the responsibility of the Department of Transport and Main Roads (DTMR) under the *Transport Infrastructure Act 1994 (Qld)* (TI Act) (State controlled roads)

The *Local Government Act 2009 (Qld)* provides, in section 60, that a local government has control of all roads in its local government area (excluding State-controlled roads). 'Road' is broadly defined to include footpaths, bicycle paths, tunnels, bridges and so forth. Control involves the maintenance and improvement of roads and regulates the construction of public utilities around roads.

The *Electricity Act 1994 (Qld)* provides for 'street lighting customers' who are customers where the premises is street lighting and the customer is a State or local government – indicating that these parties have the responsibility for initiating the services.

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Ergon Energy has over 155,000 streetlights connected to its distribution network and owns, operates and maintains more than 140,000 streetlights across its entire distribution area.

Street lighting services are provided to seventy (70) local government authorities (LGA) and the DTMR. Of the total number of streetlights connected, approximately 30% are on major roads and 70% on minor roads. Ergon Energy does not maintain lights owned by street lighting customers.

Maintenance is carried out through two primary disciplines. These are:

1. Preventative maintenance – road patrol, bulk lamp replacement (BLR) and pole inspection.
2. Forced and corrective maintenance – defect remediation or corrective maintenance as required.

Apart from replacing street light lamps and photoelectric (PE) cells to regular cycles (three and six years respectively) the corporation does not operate an aged asset replacement program aimed at replacement of street lights at the end of their economic life.

## 5.1 Customer Paradigm

The operating costs of street lighting are becoming a significant issue for Ergon Energy's street lighting customers and there is an increasing need to deliver greater asset management efficiency and more energy efficient street lighting. EECL provides two key services to customers: 1) the provision, installation, and maintenance of street lighting assets; and 2) the delivery of energy across its distribution network. EECL recovers its costs through two charges: an Alternative Control Service (ACS) charge for the first service and an unmetered supply network tariff for the second service. These charges are billed to the customer's retailer.

Street lighting customers with Ergon Energy Queensland (EEQ) pay retail street lighting tariff 71 which is offered under the Queensland Government's *Notified Prices*. This tariff recovers the costs associated with the delivery of energy (it is made up of network and retail costs).

For the first time in the financial year 2014–15 these customers are paying 10% of the ACS charges with a price path to full recovery being considered by the Queensland Government. The balance of the ACS charges funded via the Community Service Obligation (CSO) paid to EEQ by the Queensland government.

In 2013, Ergon Energy completed a street lighting audit program in local government areas with greater than 200 streetlights (Ergon Energy owned and third party owned) within the geographical boundaries of the authority. Data collected during the audit has substantially improved the ability to efficiently manage and bill for the street light asset class.

Utilising the outcomes of the audit, Ergon Energy now has a new database of records recorded in a new geospatial street light management tool and customer portal<sup>1</sup>. The customer portal is an important tool for customers who can now review lighting assets in their area, see new inventory and confirm responsibilities for every light in their geographical jurisdiction. This enhanced functionality is a significant enabler supporting Ergon Energy's objective to improve the customer service experience for street lighting customers.

Service Levels with street lighting customers are under development and will provide improved clarity for both the customer and Ergon Energy on street lighting responsibilities.

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<sup>1</sup> As at the date of this document, LightMap is the customer portal software.

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## 5.2 Strategic Principles

Ergon Energy has a number of clear customer focused principles that are defining its street lighting strategy moving forward. These principles are specifically focused on improving Ergon Energy's relationship with its street lighting customers, developing better asset management capability, reducing the operating and maintenance costs of the street lighting inventory, and transitioning to energy efficient street lighting solutions via an economically sustainable plan. The key street lighting principles for Ergon Energy are:

- Listen to customer needs and respond to them professionally and transparently
- Work collaboratively with customers and their agents to address the current technical, regulatory and financial barriers to achieving substantial deployment of highly energy efficient and maximum performance LED lighting technologies by 2025
- Lower the total cost of street lighting services per installation to deliver better value propositions for customers and mitigate against future energy price rises
- Improve data granularity and its availability to customers to support decision making processes and improve day to day interaction on street lighting management
- Engage customers on performance measures and service delivery expectations with the intent of enhancing the overall customer experience and involvement with the streetlighting agenda
- Achieve 'best practice' in street lighting management.

## 6 The Future

Ergon Energy recognises the issue of rising costs associated with street lighting. Interest from street lighting customers is building to reduce costs through the deployment of more efficient and potentially longer lasting lighting technology such as LED. Light emitting diode technology has improved rapidly over the past 5-7 years to the point where internationally the technology is starting to be rolled out in mass deployment programs. However, in the local context a number of technical, regulatory, and financial challenges exist to the adoption of the technology.

The headline cost benefits from LED are significant with savings in both energy reduction and maintenance costs. This technology has increased the interest from street lighting customers in looking at options where they can take control of the rising costs of street lighting.

Ergon Energy is of the view that LED street lights will be an increasing part of its street lighting inventory into the future. However, Ergon Energy considers that the transition to LED technology needs to be managed so that its introduction is certain to not only reduce the energy operating costs of street lighting for customers. Further that the maintenance costs associated with lamp and luminaire life that determine the ACS charges (e.g. BLR programs and lamp failure) at the same time do not compromise public safety measures. For this reason, this strategy considers a staged approach to introducing LED street lighting, where Ergon Energy will in the 2015 to 2020 regulatory control period; focus on proving the benefits of the technology in targeted deployments such as new estates and collaboration with councils and DTMR on upgrading of nominated aged assets, with appropriate financial contribution from those parties.



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Congruent with a planned transition to LED street lighting, Ergon Energy invest significant effort in making street lighting asset details and associated service delivery performance more readily accessible to customers in relation to the assets for which they receive energy consumption and ACS charges. This will involve:

- Ongoing development of the street light customer portal for the purposes of improving engagement on street light inventory management, asset attributes and bill management
- Continuing customer engagement on services standards, compliance with standards, and appropriate reporting frameworks
- Broadening current stakeholder communication activity with the intent of improving awareness of street light management issues, challenges and opportunities
- Seeking to learn from benchmark organisations on achieving 'best practice' performance and maintenance regimes.

## 6.1 Benefits to the customer

A number of potential benefits flow from the enhancements to street lighting management through continued improvement and broader sharing of street lighting asset data (via the customer portal), wider engagement on service standards and work processes, and the medium to long term deployment of LED technology. These include:

- Identification of street lights geographically for each customer
- Easier management of customer account information
- Dashboard messaging from the customer portal
- Complete transparency of assets in the customer's footprint and an ability to resolve areas of overlap
- Reporting of consumption, asset age, type and class and billing reports for financial management on the customer side
- Reduced costs from reductions in energy consumption
- Reduced costs from ACS charges
- Effective development of key performance indicators and future service delivery standards
- Implementation of ongoing consultation frameworks aimed at optimising maintenance programs without compromising performance and safety
- Mitigation of the impacts of future energy price rises
- Reduced carbon footprint from lower energy consumption and lower maintenance mobilisation
- Social benefits from reduced light spill across the community and international evidence of lower crime rates.

## 6.2 Creating a pathway for LED

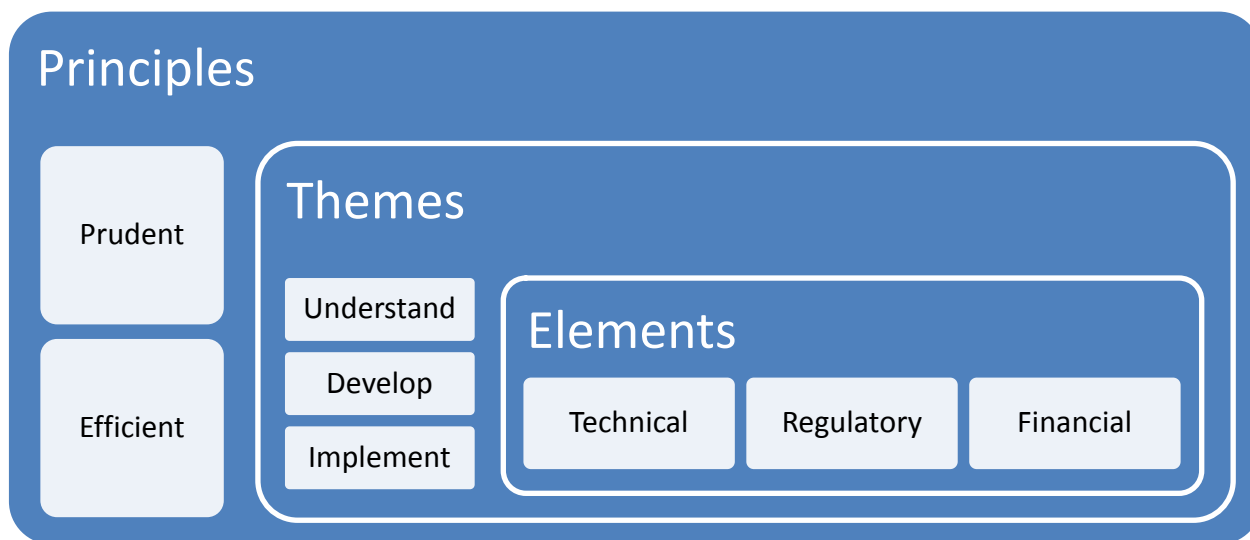
Ergon Energy considers that, based on international evidence and the corporation's involvement in LED trials, the future technology for street lighting will be LED. The rapid rise of LED and significant improvements in performance quality indicates there is a risk of interim technologies being stranded in the current inventory. This would be a less than ideal outcome for customers.

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Accordingly, the Ergon Energy street lighting strategy acknowledges the trend to LED and identifies the requirement for a comprehensive plan to enable a pathway to this future. This framework involves the key principles of prudence and efficiency across three themes of:

- Understanding
- Developing
- Implementing

Elements of the action plan described in this strategy cover technical, regulatory, and financial elements as described in Figure 1.



**Figure 1: Street Lighting Guiding Framework**

## 6.3 Risk

Ergon Energy will proactively respond to customer needs in relation to street lighting. Doing nothing runs the risk of having an action imposed on the business, which could have perverse outcomes for the customer.

As with all new technology adoption, there are risks that need careful management based on the available information. It is considered that mitigation options exist where Ergon Energy can shift the risk (e.g. vendor warranties) or share the risk (e.g. with customer). A key consideration is whether or not on balance there is a net societal benefit from the adoption.

The guiding framework provides avenues for management of risks by understanding, developing and implementing in a methodical and systematic way. At each stage, the technical, regulatory, and financial aspects will be carefully considered.

## 7 Strategic Analysis

### 7.1 Customer

Local governments, in particular, are actively seeking ways and means of reducing the burden of rising electricity costs.

Some LGAs have already requested Ergon Energy deploy LED technology but a number of issues need to be resolved before this can occur.

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While greater energy efficiency will deliver immediate reductions in energy charges to customers, Ergon Energy's focus needs to be on ensuring that installation of LED streetlights at scale leads to not only reduced energy charges but sustainable ACS charges (recovery of capital investment and maintenance costs) for customers. This requires addressing some regulatory requirements and gaining greater confidence in LED technology resilience and performance in the field. The immediate benefit of reduced energy charges must be complemented by the certainty that the promised longer lamp life of LEDs can be translated into lower preventative and corrective maintenance costs over the life of the asset. If the technology fails to perform to specification and maintain compliance to regulatory obligations, any savings in energy costs could be diluted or erased by higher maintenance costs over time. The targeted outcome is to reduce both energy costs and overall ACS charges to achieve a sustainable cost path for street lighting.

Other considerations to be addressed to enable full benefits of LED technology to customers include:

- Lead time for production and shipment
- General quality of construction, fit and finish
- Ease of installation and maintenance
- Quantity and quality of illumination when installed in the field
- Lack of proven failure rates in the field
- Removal costs of existing lighting assets
- Community perceptions around lighting (for which surveys are needed with residential customers).

## 7.2 Technical

There are legitimate technical considerations for Ergon Energy in relation to the widespread adoption of LED street light technology. It is noteworthy that in the Regional Queensland Energy Efficient Street Lighting Trial December 2012 (which used 2007 technology) the LED street lights performed poorly. According to the US Department of Energy<sup>2</sup> there are a number of key performance characteristics that should be considered when comparing LED products and evaluating their equivalency to conventional lighting, these include:

- Light output (lumens not wattage)
- Spatial distribution of lighting
- Colour quality and appearance
- Form factor
- Compatibility
- Useful lifetime
- Cost.

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<sup>2</sup> [US Department of Energy - Technology Fact Sheet - Establishing LED Equivalency](#)

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These requirements present a new technical challenge in assessing street lighting. Currently lamp efficiency is taken from performance data provided by the manufacturer. Historically lamp performance information supplied by original equipment manufacturers (OEMs) on lumen depreciation and mortality rates is assumed to be correct and applied to current and planned Ergon Energy maintenance strategies. However, it is known that the OEM supplied lamp performance information is based on laboratory testing. On-site field performance can be significantly less particularly with respect to lamp mortality. This is due to factors not modelled in laboratory testing including weather temperature extremes, moisture or insect ingress and vibration due to wind or traffic.

It is likely given the nature of the LED technology that Ergon Energy will need to use a mix of internal and independent assessment methods. Accordingly, it will be necessary to take a managed and phased implementation approach to LED involving proving the resilience and performance thresholds of the technology and connecting with national and international trials.

In addition to the performance issues, the weight of the LED luminaires will need to reduce. Weight limitation exists on the existing pole brackets, lighting columns and outreach arms to support only current luminaires. The majority of the available LED luminaires are twice the allowable weight that the supporting structure can sustain. Alternatively re-engineering of the pole brackets, lighting columns and outreach arms will be required which will have major financial implications. Other unknown factors include the need for some form of cleaning to ensure compliance with Australian Standard AS/NZS 1158:2010 *Lighting for Roads and Public Spaces* and the need for PE cell replacement (currently every six years). These issues need to be factored into a full life cycle assessment.

## 7.3 Regulatory

Street lighting charges are a regulated activity under both the tariff structure and the ACS arrangements. In order to pass through any benefits consideration will also need to be given to the following regulatory elements:

- Tariff – the recognition of the LED product on the Australian Energy Market Operator (AEMO) load table to enable energy calculations
- ACS – the ability to adjust ACS charges by customer geography
- A means by which any residual capital cost for old technology can be equitably recovered in accelerated deployment options (e.g. defined end-of-life and customer driven bulk deployment)
- Adjustment of standards e.g. AS/NZS 1158:2010.

Ergon Energy will need to consider how the ACS charging arrangements can be altered to pass through to customers the benefit of reduced maintenance requirements of LED street lighting as it is introduced in the future.

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Another consideration is that the corporation's street lighting maintenance and refurbishment programs are designed to maintain compliance with our regulatory obligations. The introduction of LED streetlights into the asset inventory at scale will require Ergon Energy to review how it develops and delivers preventative and corrective maintenance programs to comply with regulatory obligations due to the significantly different characteristics of the technology from existing inventory in terms of longevity and performance. For example, Ergon Energy has an obligation to meet a street lighting service availability of 95% as set out in AS/NZS 1158:2010. The previous street lighting maintenance strategy (pre 2009) was not delivering the 95% availability requirement outlined by the standard. Consequently a three-year BLR program was instituted to ensure compliance across the fleet. This is one current regulatory setting into which LEDs are to be inserted and the program of bulk lamp replacement would be adjusted to accommodate their long life characteristics. The risk, however, is that they do not perform to expectations.

Public safety measures and obligations are also a key part of considerations and will have a major influence on LED deployment plans.

## 7.4 Financial

Assuming the mechanisms described for passing through the benefits of LED can be resolved, there are some key financial considerations for accelerated LED deployment:

- The upfront capital costs
- The lifecycle costs
- Mitigation of lifecycle costs
- How such a program would be funded
- How any residual capital is recovered.

Currently LED street light luminaires are more than twice the current cost of a conventional replacement luminaire meaning higher capital investment costs if LED technologies were to be introduced in the near term. However the price glide path for LED is estimated to be a 15-20% reduction per annum over coming years. This means within the next regulatory control period 2015 to 2020 there is a high likelihood that LED pricing will be much closer to parity with conventional lighting procurement and installation costs. In addition, forecast energy savings in the order of 50-60% and longer life (50,000 hours) means that the whole-of-life cost of LED may be able to provide both significant energy and maintenance benefits. Consideration, however, needs to be given to factors such as the additional weight associated with the LED product where the rating of current cross arms is outside of the necessary specification and what impact that has on costs of implementing LED street lights into the future. This factor may be mitigated by lighter weight LED technologies becoming available.

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Given the recent evolutions of LED technology, it is expected that the future life cycle costs of street lighting can be reduced and optimised through the introduction of LED lighting, subject to the projected performance of the technology being realised in the field under normal conditions. As the cost of carrying out street lighting corrective maintenance identified through road patrols or public notification is almost double that of completing planned maintenance per installation, specifically the BLR program; it becomes critical to have confidence that the failure rates of LED lamps are not significantly higher than the current lighting inventory. As such, performance monitoring of the LED lamps is a critical function of the introduction phase of the LED technology to ensure projected benefits of broader deployment are not eroded by failure of the technology to perform to expectations in a typical regional Queensland operating environment. It is expected that LED street lighting should have a much longer life than conventional lighting to achieve the forecast benefits.

Based on the current pricing glide path projections and subject to greater certainty on lamp performance and mortality rates, Ergon Energy considers that a positive business case can be demonstrated for a new and targeted replacement program to include LED. The objective is for costs of a contained LED implementation to be funded through existing charging structures (ACS) with customers in the short term realising the benefits of reduced energy charges for the new and replaced lights. Investment in LED street lighting, however, will be capped during the next regulatory period until the risks, costs and benefits are sufficiently understood and any significant variations from expected performance documented and costed. The intent is to ensure that the benefits of reduced energy consumption costs are not eroded by increased construction and maintenance costs.

In any future accelerated scenario the key considerations are whether or not there is a net benefit from reduced energy and ACS charge impacts considering the additional required capital for the LEDs and yet to be proven performance resilience of the technology. High level modelling suggests a net societal benefit, however more work needs to be done to understand not only the financial impact on Ergon Energy (and, ultimately, street lighting customers) but the public safety impacts.

In terms of funding the additional capital costs of LEDs under accelerated replacement scenarios, Ergon Energy can look to funding this cost subject to the charges reflecting the additional capital requirements of LED street lighting upfront (with the customer to recoup those costs through energy savings) or the customer making this capital contribution. Options will need to be modelled and evaluated.

At a national level, work has been undertaken to propose mechanisms for LGAs to fund the new capital for LEDs and residual cost of the existing lights<sup>3</sup>. This work suggested the customer contributes to the replacement cost either through its own means or continues to repay it over time in addition to the new costs of the LEDs. Ergon Energy will work with its street lighting customers on these and other considerations

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<sup>3</sup> [Equipment Energy Efficiency Committee \(PWC July 2011\) Barriers to Energy Efficient Street Lighting](#)

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## 7.5 Stakeholder Impacts

Managing key stakeholder expectations of the street lighting portfolio into the future will require the identification in the first instance of both external and internal groups and an understanding of their drivers and motivations.

Any plan to engage stakeholders should seek to enrol and enlist these stakeholders by highlighting the necessary interfaces (and their relevance) between stakeholder groups and responsible officers at Ergon Energy to maximize the chances of a high value outcome.

Key external stakeholders identified include:

- Queensland Department of Energy and Water Supply (DEWS)
- Queensland Department of Local Government, Community Recovery and Resilience
- Queensland Department of Transport and Main Roads
- Local Government Authorities (70 in Ergon Energy's area) and residential and business communities within
- Local Government Association of Queensland

Key messages and interaction points include:

- Current service standards, performance and primary requirements of the parties
- Asset information availability and development
- Customer engagement objectives
- Preventative, forced and corrective maintenance program design
- Technical, regulatory and financial impacts of LED street lights
- Impact on Ergon Energy Corporation Limited (EECL) of street lighting energy contestability
- Definition of special customer programs e.g. turtle lighting
- Potential to outsource management and maintenance of street lighting
- Potential for third party management and maintenance of fleet
- Mitigation of potential serious electrical events
- Mitigation of potential structural degradation of steel poles
- Mitigation of vandalism cost pressures
- Public safety and community expectations of street lighting

## 8 Strategy

Ergon Energy aims to respond to its customers' needs in street lighting by focussing on the principles of prudence and efficiency in the delivery of this service.

Ergon Energy will have a proactive strategy that will set strong foundations for efficient decision making in this complex area. This will provide Ergon Energy with a framework to capture and manage issues and risks both known and unknown. Effective transition to energy efficient, long lasting LED technology is a significant component of the street lighting strategy moving forward. Considerable focus on improved customer service, continued efficiency gains, and enhanced data availability are the cornerstones of the strategy.

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## 8.1 Transitioning through Business As Usual

Ergon Energy will need to continue to maintain existing inventory to the best possible standards using a like for like replacement policy in its forced and corrective maintenance programs as appropriate. The introduction of LED technologies will be centred predominantly on new developments and targeted replacement programs in conjunction with street lighting customers.

Ergon Energy will maintain its street lighting fleet and manage the customer experience through Service Levels which will ensure:

- Identification of which lights should be patrolled
- The number of light outages at any time and time taken to repair light outages
- Fault reporting arrangements
- Performance standards and penalties for non-compliance with Standards
- Availability of annual performance statistics
- Replacement of lamps within a stipulated timeframe, including benchmarking standards and monitoring, and reporting on the service levels achieved
- Definition of asset useful life and condition monitoring criteria.

Ergon Energy will adjust the focus of light patrols by using the customer portal software as a management tool and will promote public awareness for reporting outages and develop and implement a quality assurance program for early life failures.

As new regulations are developed and adopted, they will be implemented to the benefit of our customers. These regulations may require explanation and Ergon Energy will undertake to communicate with and explain the impacts of any changes to our street lighting customers.

## 8.2 Preparing for LED

LED is a solid-state lighting technology and its adoption for street light use is, in utility terms, relatively recent. Not all technical performance aspects of LED are currently understood by Ergon Energy or its customers. Through effective stakeholder engagement, Ergon Energy will test and trial LED technologies with our customers and in the process co-invest in the future of street lighting. Ergon Energy will leverage international experience and not reinvent the wheel and will use local research institution relationships to understand technical issues like visibility and photometrics.

Street lighting is governed by a number of statutory and regulatory frameworks many of which will be impacted by a change of technology to LED. Understanding these impacts is critical to any future decisions about adoption of the technology. Ergon Energy will transparently consolidate all the impacted laws and regulations to inform future decisions on street lighting.

Notwithstanding the potential savings, replacing old technology with new technology requires the investment of new capital and operating regimes. Ergon Energy will work to understand the financial impacts on customers of LED technology deployment and communicate these in an open and transparent way.



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## 8.3 Developing the LED implementation framework

The number of manufacturers with LED street lighting technology has risen significantly. To ensure high quality products are used it will be necessary to develop screening and testing methodologies and associated procurement specifications and processes for LED technologies. Ergon Energy will develop these methodologies and have them informed by interacting with our customers for screening potential LED technology, assessing key aspects, and continuous assessment and validating new products. Ergon Energy will also develop a quality assurance program for early life failures.

Given the rate of progress in LED technology, it will be necessary to continuously screen, test and pilot new equipment. Ergon Energy will undertake this through a rolling testing process.

In recognition of the progress made in other jurisdictions, the development of these methods and processes will take into consideration lessons already learnt nationally and internationally.

New regulations will be required to reflect the nature of LED technology. Ergon Energy will diligently work towards the development of new regulations.

Developing financing models and structures will be critical in enabling the acceleration of deployment of LED street lights. Ergon Energy will facilitate the development of these by working with independent expertise, Shareholders and street lighting customers.

## 9 Planned strategic actions 2015 to 2020

Ergon Energy aims to have a clear strategy of a progressive phased approach to address data and service enhancements and transition to energy efficient LED lighting. The focus in the 2015 to 2020 regulatory control period will be on creating the platform for future accelerated activity. As such, the actions in this period are centred on:

- Significantly greater engagement with our customers
- Improved information management and sharing
- Mitigation of regulatory, technical and financial risks
- Proving and defining the pathway to broad-scale LED street lighting implementation.

The following actions are provided as a high level view of the priorities.

### 9.1 Meeting current requirements

Ergon Energy will be continually reviewing its programs and costs to ensure that all investment is prudent and efficient, and all regulatory obligations are met.

Ergon Energy currently has an obligation to maintain to a service availability of at least 95% under AS/NZS 1158:2010. Under these arrangements, a BLR program is scheduled every three years and the PE cell is replaced every six years. This regime manages the lamp and luminaire depreciation in a workable manner across the entire network. ACS charges reflect these and other costs of maintenance including forced and corrective works, pole inspections and light patrol.

### Enhanced Streetlight Management

Greater focus on the customer experience and adopting new streetlight management practices are central platforms of Ergon Energy's street lighting agenda. Ongoing engagement with our customers and other stakeholders on improvement potential is vital to becoming a benchmark organisation.

# Street Lighting Strategy

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The completion of a comprehensive street light audit in 2013 has provided a critical foundation for ongoing service improvements, greater visibility of street light assets to customers and new management practices. This high quality data has been loaded into the customer portal software database and will enable highly granular asset management of the street light inventory by age, class and geography.

The customer portal software will significantly enhance the management of streetlights by providing better exchanges of asset data and improved analysis opportunities that are more efficient and transparent to the customer.

Ergon Energy will make its street light performance and management practices more transparent to its customers and engage openly on future direction.

## 9.2 Benefits to Customer

Customers can expect a number of benefits to flow from the enhancements to street light management and the new and replacement policy. These include:

- Identification of street lights by geography for each customer
- Easier management of customer account information
- Dashboard messaging from the portal
- Complete transparency of assets
- A dispute resolution mechanism embodied in the customer portal software
- Reporting of consumption, asset age, type and class
- Billing and Service Performance reports
- Optimisation of street light maintenance (e.g. street light patrol)
- Sustainable streetlight cost paths.
- Greater involvement in Ergon Energy's decision making processes.

Ergon Energy will have a comprehensive stakeholder engagement plan for street lighting which it will work diligently to.

## 9.3 Informed Decision Making

By improving the fundamentals of its street light asset management framework, Ergon Energy will develop a deeper collaboration with customers around matters such as new and replacement street lighting planning, technology evaluation, standards evolution, and optimisation of service delivery and expenditure. This will lead to outcomes such as improved efficiency of maintenance programs (bulk replacement, pole inspection, light patrol) and the ability to target specific types of assets for efficient deployment.

## 9.4 New Streetlight installations

Ergon Energy will work with local government customers to ensure all new property developments will have the ability to specify LED technology.

Using carefully developed specifications based on rigorous validation, the *Queensland Public Light Design Manual* will be updated to accommodate LED technologies that meet these requirements.

Changes to the ACS charging will be required to pass through reduced maintenance costs to customers from LED when deemed to be specifically available.

# Street Lighting Strategy

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Ergon Energy will pursue and advocate for changes to design standards to accommodate LED. The learnings from initial LED installations will be used to inform the objective of longer term implementation of LED technologies at greater scale and integration into business as usual practices.

## 9.5 Replacement Streetlights

Ergon Energy will liaise with LGAs and DTMR on the potential for targeted streetlight replacement pilots for aged assets in the 2015 to 2020 regulatory control period whilst maintaining a base 'like for like' replacement policy for the majority of existing lighting assets until such time that greater certainty on LED technology resilience and performance is achieved. These pilots are critical to enabling a smooth transition to a lower cost street lighting future. Ergon Energy will continue to evaluate other energy efficient street lights for inclusion in its replacement options inventory during this period.

Any individual street lights requiring replacements identified from the BLR program, light patrol, pole inspections or forced and correction maintenance will be considered for replacement with LED based on a design assessment criteria. Any decision to replace existing light types with LED will be based on prudence and efficiency measures that can be proven.

The maintenance strategy will be evolved to contain an 'Obsolete Lighting Schedule' which will provide the new LED replacement details.

Using the customer portal software Ergon Energy will move to make available reliability and performance data and capture accurate lamp life assessment. This will assist in determining the future business cases for installing LED technologies as a standard.