

Essential Energy

13.03 Public lighting explanatory document 2024–29

January 2023



Table of Contents

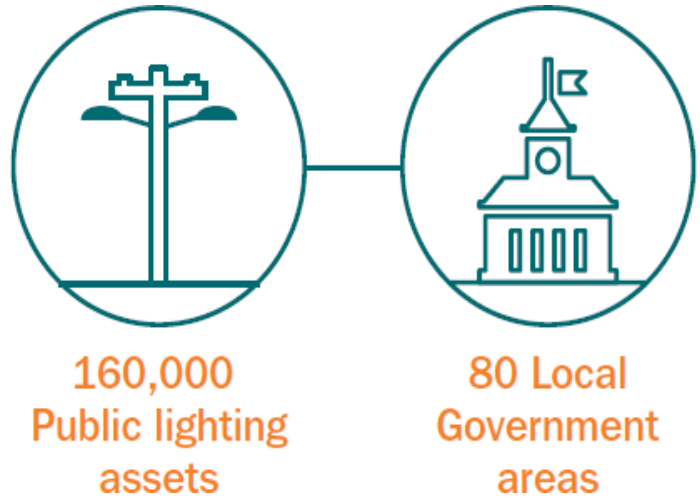
| | |
|---|-----------|
| 1. Executive Summary | 3 |
| 2. Engagement | 4 |
| 3. Regulation of public lighting services | 5 |
| 4. Overview of Essential Energy's public lighting services | 5 |
| 4.1 Overall service elements | 5 |
| 4.2 Key service parameters | 5 |
| 4.3 Public lighting installation components | 6 |
| 5. Technology advancements | 7 |
| 6. Public lighting maintenance | 8 |
| 6.1 Spot failures | 8 |
| 6.2 Cyclical maintenance programs | 8 |
| 6.3 Safety programs | 9 |
| 6.4 Technological obsolescence | 10 |
| 7. Overview of network charging model and inputs | 10 |
| 7.1 Charging objectives | 10 |
| 7.2 Charging summary | 10 |
| 7.3 Quantitative inputs | 11 |
| 7.3.1 Asset lives | 11 |
| 7.3.2 Bulk luminaire maintenance | 11 |
| 7.3.3 Streetlight patrols | 11 |
| 7.3.4 Labour costs | 11 |
| 7.3.5 Material costs | 11 |
| 7.3.6 Defects rectification | 11 |
| 7.3.7 Defects per trip | 12 |
| 7.3.8 Time to complete maintenance tasks | 12 |
| 7.3.9 Travel time to installations | 13 |
| 7.3.10 Summary of light maintenance inputs | 14 |
| 8. Lighting charges | 14 |
| 8.1 New component-based charging system introduced | 14 |
| 8.2 Residual capital | 15 |
| 8.3 New standardised rates for minor capital works | 15 |
| 9. Public lighting revenue | 16 |
| 10. New services identified within a regulatory period | 16 |
| 11. Compliance with AER's control mechanisms | 16 |

1. Executive Summary

Public lighting is a vital community service. Essential Energy's services encompass the construction, operation, inspection, maintenance and replacement of public lighting assets. Road authorities, including local government authorities and Transport for NSW, are responsible for assessing the need to install public lighting and determining the lighting levels required for any installations.

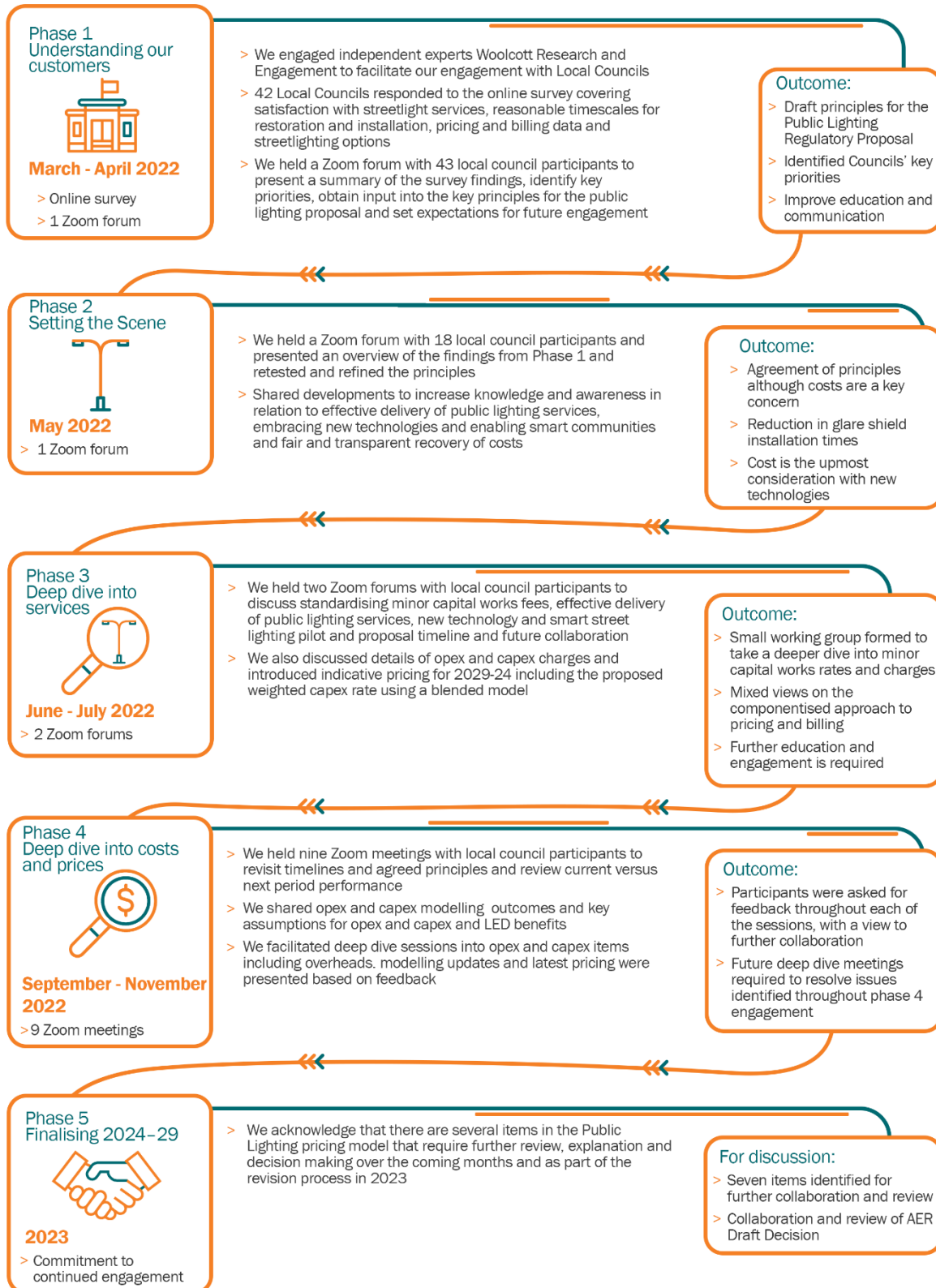
During the current regulatory period, we introduced cost-reflective network charges for our public lighting services by introducing a component-based charging model. This optimised decision-making when choosing replacement technologies and simplified the current network charging structure, allowing for greater transparency.

A commitment was also made to both the Australian Energy Regulator (AER) and our customers to transition 90% of traditional lighting technologies to light emitting diodes (LEDs). We are well on track to exceed this target – to date, over 80% of streetlights have been upgraded to LED, with plans to transition a further 15% in the next 12 months. Bulk upgrade programs have been very well received by local councils. The rollout has been seen as a resounding success, improving maintenance outcomes and reducing energy costs.



2. Engagement

The Public lighting proposal is based on engagement and feedback from local councils and Joint Organisations (JOs). We held a series of online forums and meetings specifically to prepare our Proposal. We have completed four phases of engagement to date and have planned a fifth phase for next year for further discussions on a number of matters. An overview of our public lighting Proposal engagement program is shown below.



3. Regulation of public lighting services

The New South Wales (NSW) Public Lighting Code became mandatory in July 2019 and has a direct link to Essential Energy's licence conditions. The code states that public lighting service providers:

- > operate a public lighting scheme safely, efficiently and effectively over its economic life in accordance with the in-service values specified for Category V (vehicular traffic lighting) and Category P (pedestrian area lighting) in the AS/NZS1158 series of standards pertaining to the lighting of roads and public spaces
- > operate a 24-hour call centre to receive public and customer fault reports
- > repair public lighting assets – except where an excluded or complex faults condition exists – within 10 business days of receiving a fault report (or on average 8 business days per customer per year). However, in priority cases, service providers must complete repairs quicker. Priority cases include pedestrian crossings or groups of three or more lights on Category V roads
- > undertake cyclic maintenance of public lighting assets to ensure the efficient and safe operation of the system. To achieve the agreed maintenance standards and maintain the designed lighting technical parameters of the luminaire (an integrated lamp, such as LED technology), there must be a lamp replacement program or a similar process aimed at achieving the same or an improved result
- > provide service drivers by offering compensation if the repair is not carried out within the individual repair standard.

The code is currently under review. We have developed our proposal based on the service levels recommended in the current NSW Public Lighting Code Version 1.2, which imposes a guaranteed service level (GSL) obligation on service providers as follows:

- > A distributor who exceeds the repair standard timeframes must pay the customer no less than \$25 as compensation for loss of illumination.
- > This clause only applies if the resident's premises is located in the part of the street that would ordinarily be illuminated by the streetlighting or is the customer for the lighting asset, generally local councils (henceforth referred to as 'councils').
- > A distributor who exceeds the average repair standard timeframes for the financial year must credit the relevant customer 0.25% of the total annual maintenance charge for that year.

4. Overview of Essential Energy's public lighting services

4.1 Overall service elements

Public lighting services are defined as:

- > the operation, maintenance, repair and replacement of public lighting assets
- > the alteration and relocation of public lighting assets
- > the provision of new public lighting.

Public lighting services are regulated as an alternative control service under a price-capped regime. The AER has proposed including emerging public lighting technology as part of the lighting services group. Emerging technology relates to luminaires that NSW distributors did not carry at the time of the distribution determination.

This Draft Regulatory Proposal applies to all public lighting in the Essential Energy distribution area that we own and/or are responsible for maintaining. It does not apply to security lighting, which is regulated as an alternative control service (ancillary network service), some non-standard decorative lighting or other special-purpose lighting.

4.2 Key service parameters

Essential Energy services 95% of NSW geographically. Within this service territory, we service around 160,000 streetlights and more than 70,000 dedicated streetlight supports, such as poles, serving more than 80 councils. The lighting technology used for public lighting continues to change.

As of 1 July 2022, LED-based luminaires accounted for around 80% of public lighting installations. This is expected to increase to 95% by 30 June 2023.

Over the life of this regulatory period, Essential Energy's objectives include:

- > meeting public lighting customer and local community needs for effective, reliable and energy-efficient lighting of roads and public spaces
- > maintaining a safe public lighting system in line with AS/NZS 1158
- > fulfilling all regulatory requirements, including those established in the NSW Public Lighting Code by the NSW Treasury – Office of Energy and Climate Change
- > minimising the costs to service our public lighting customers
- > providing clear, transparent and cost-reflective pricing mechanisms, highlighted through the component-based network charges outlined in this proposal.

As specified in AS/NZS1158 Lighting for Roads and Public Spaces, there are two lighting categories:

- > Category V lighting schemes ('major'), which apply to major roads and highways.
- > Category P lighting schemes ('minor'), which

Population by category

| Category breakdown | Category V (major) | Category P (minor) | Total |
|--------------------------|--------------------|--------------------|---------|
| Asset database July 2022 | 40,492 | 122,093 | 162,585 |

4.3 Public lighting installation components

Delivery of public lighting services requires the design, financing, procurement and construction of public lighting installations, as well as ongoing maintenance, inspection and operation. Each public lighting installation has several asset components. The major components provide the framework for component-based pricing.

Public lighting components

| Component | Description |
|-------------------------|--|
| Lamp | Lamp type (technology) and nominal rating (wattage). Higher wattage lights are required for main roads. |
| Photoelectric (PE) cell | Performs the switching functionality of the luminaire under low light conditions. |
| Luminaire/lantern | Apparatus that distributes, filters or transforms light transmitted from sources such as lamps and LED modules. Current-era luminaires also include control gear and circuit protection in the housing, and a photoelectric (PE) cell socket for connecting individual PE cells for luminaire control. |
| Bracket | Connects luminaire with support (pole) and varies by shape and length. Most steel columns have an integrated bracket. |
| Support | A pole or other support, usually made of wood, steel or concrete. May be shared with assets used for distribution services or dedicated solely to public lighting. |

5. Technology advancements

Essential Energy is committed to collaborating with our customers to investigate methods of service. Where appropriate, we will implement new technologies that are commercially and technically viable. These technologies include but are not limited to:

- > changes in LED technology that offer more efficient and more reliable luminaires as they come onto the market
- > multi-function or smart poles
- > luminaires with integrated sensor ports
- > smart controls on public lighting assets
- > asset management systems that monitor, report and track asset details and maintenance activities.

During the current and prior regulatory periods, we introduced LED lighting into our standard public lighting infrastructure. We used negotiated charges to support councils' early takeup during the 2014–19 period. Widespread bulk upgrade programs also continue to transition approximately 95% of all luminaires to LED technology. The transition to LED technologies contributes to improved maintenance outcomes while lowering councils' energy costs.

We continue to work with councils on smart controls. These are devices that can:

- > control the luminaire, such as by switching and dimming
- > monitor the luminaire, such as by metering and asset performance monitoring
- > transmit monitoring data from third party equipment and sensors such as environmental sensors, CCTV, and vehicle and pedestrian monitoring devices.

Currently, the most widely used control method is by an individual PE cell installed on the luminaire. The implementation of LED luminaires has opened avenues for increased control of illumination, as opposed to using on/off PE cells that limit their potential, including dimming.

Essential Energy has started a pilot program to understand how smart controllers can be effectively used within the network. This is a joint venture with one of our councils that is eager to explore the possibilities of smart city capabilities.

Our customers are the major driver for investigating smart controls. Our customers are seeking benefits from smart controls that include reduced public lighting operational costs, improved service quality and to generate other forms of income. We are continuing to consult extensively with our public lighting customers to understand their drivers and needs.

In recognition of ongoing advancements in public lighting technology, the AER's 2024–29 Framework and approach classifies emerging public lighting technology as an alternative control service. This enables new services to be introduced mid-period within the regulatory framework.

6. Public lighting maintenance

Public lighting maintenance comprises a range of diverse routine and non-routine activities.

Summary of routine and non-routine public lighting tasks

| Tasks | Description |
|---|--|
| Outage detection | Operating public fault-reporting facilities, including web-based and call centre reports, and completion of streetlight night patrols. |
| Condition monitoring | Monitoring assets through inspection and scheduled maintenance, including luminaires, supports and brackets. |
| Luminaire 'spot defect replacement' | Completing luminaire replacement with equivalent LED technology, or an alternative where an LED option is not available. |
| Cyclical luminaire maintenance programs | LED luminaires will undergo six-yearly cleaning cycles to ensure adequate light output. In the rare circumstance when an LED equivalent is not currently available or council has not agreed to the upgrade – generally where there are heritage-style assets – cleaning occurs on four-yearly cycles. |
| Pole and column maintenance | The need for pole or column maintenance is generally identified through condition monitoring or, in the instance of complete failure, through public report or fault detection. Maintenance activities include tightening bolts, treating or removing corrosion, termite treatment and pole staking. Defective assets may require complete replacement, including the foundations. |
| Bracket maintenance | The need for bracket maintenance is identified through condition monitoring or, in the instance of complete failure, through public report or fault detection. Maintenance activities include tightening bolts and treating or removing corrosion. Defective assets may require complete replacement. |

6.1 Spot failures

Essential Energy had approximately 8,000 spot failures in FY22, meaning 5% of installations required some form of attention each year. Spot failures relate to failed luminaires, lamps, PE cells or other wiring issues, and/or physical damage to the installation.

Our service level obligations for general defect rectification in line with the current NSW Public Lighting Code include an average repair time of eight business days and a maximum of 10 business days for a public light. No change is proposed for the average number of daily tasks completed by field staff, which remains the same as in our past proposal periods, at 2.74 jobs.

6.2 Cyclical maintenance programs

Cyclical maintenance programs maintain light output that is consistent with the installed design standards and reduce spot failures.

They include cleaning fixtures and replacing degraded components, including lamps and PE cells. Lamp output reduces over time and eventually breaches the requirements of AS/NZS1158 and corresponding service level requirements under the Public Lighting Code.

We use historical performance and manufacturer's data to determine the appropriate periods for cyclical maintenance:

- > **Non-LED installations** – lamps are replaced in bulk every four years, with luminaire fixtures cleaned at the same time.
- > **LED installations** –Luminaire fixtures will be cleaned on a six-year cycle.

Based on the current inventory of LED fixtures, we need to clean 28,000 luminaires each year during the 2024–29 regulatory period.

We will adopt the six-year LED cleaning program at the beginning of the 2024–29 regulatory period, replacing the previous four- year lamp replacement program. This is based on increased penetration of LED technology, which will comprise 95% of the public lighting population in NSW.

Further detail on the how we manage and maintain public lighting assets can be found in **Supporting document 13.03.01 Public Lighting System Strategy**.

6.3 Safety programs

Essential Energy is responsible for public lighting activities and their associated potential safety risks, as identified by Essential Energy's field staff, asset inspectors and other staff members.

Public lighting safety risks

| Risk | Description | Mitigation strategy 2024–29 |
|--|---|--|
| Public lighting control wire | Small conductor-type overhead public lighting control wires that are installed on poles and are prone to condition failure. As they are now redundant and often remain in a deteriorated condition, they need to be removed or electrically isolated. | Remove or isolate public lights (where possible) from circuits. when not in use, in line with other planned maintenance activities. Integrate activities with inspectors to identify high-risk situations. |
| Redundant control boxes | Old public lighting systems used external control gear in control boxes mounted on the pole. In some cases, the gear remains in situ and may still be energised. | Remove unused control boxes in line with other planned maintenance activities. Integrate activities with inspectors to identify high-risk situations. |
| Redundant choke boxes | Various forms of lighting used 'choke boxes' to limit the current flow. Some choke boxes have been left in situ on poles and/or in the base of columns when new fixtures have been installed. | Recover and scrap in conjunction with routine maintenance activities. |
| Corrosion in some structures – hybrid pillar/columns | Some pot belly and triangular columns mix customer service connections with public lighting supplies, causing potential confusion about connections. | In conjunction with line inspection activities, replace with separate pillar and streetlighting columns. |

6.4 Technological obsolescence





Changing environmental standards and usage patterns are narrowing sourcing for replacement lamps from reputable manufacturers at reasonable costs. These scarce luminaires include:

- > **High-pressure sodium, metal halide and mercury vapour floodlights** – changing environmental standards relating to the use of mercury, particularly in Europe, affect the ongoing availability of these lamps. We have already significantly reduced their use in standard luminaires through our bulk LED replacement program. However, more than 2,000 floodlight installations still use this technology. We plan to engage customers with our goal to replace all these installations with LED technology during the 2024–29 regulatory period.
- > **Fluorescent tubes** – while not a site-specific environmental issue, fluorescent lamps are inefficient and relatively costly to maintain because of their short lamp life. There have been recent advancements in LED alternatives for this style of luminaire, including options being added to the Australian Energy Market Operator (AEMO) unmetered load table. We will engage customers in the 2024–29 period to replace over 1,100 remaining installations, typically used for under awnings, or attached to bridges and public toilet amenities.

7. Overview of network charging model and inputs

7.1 Charging objectives

The proposed public lighting charging schedules reflect the following principles agreed with councils.

| | Principle | This means: |
|---|---|---|
|  | COLLABORATION AND CO-DESIGN | Working together to build a framework that serves the needs of councils and Essential Energy. Enabling informed decision making and empowering communities. |
|  | EFFECTIVE DELIVERY OF PUBLIC LIGHTING SERVICES | Operating a public lighting scheme safely, efficiently and effectively over its economic life. Ensuring compliance with the service level requirements in the NSW Public Lighting Code and the in-service values for lighting in the AS/NZS1158 series of standards, as they pertain to the lighting of roads and public spaces. Committing to faster turnaround times and responsiveness to requests, and open lines of communication. |
|  | EMBRACE NEW TECHNOLOGIES AND ENABLE SMART COMMUNITIES | Working with councils to ensure a uniform, streamlined approach to embedding new technology and lighting equipment options. |
|  | FAIR AND TRANSPARENT RECOVERY OF COSTS | Ensuring councils' SLUOS charges are fair and cost-reflective of Essential Energy's public lighting operating costs. Bills and charges are transparent and easy to understand. |

7.2 Charging summary

We are proposing several changes to public lighting charges from 1 July 2024, including:

- > using a weighted average model for calculating capital annuity charges.
- > introducing weighted standardised Ancillary Network Service rates for charging minor capital works projects and any associated upfront design effort.
- > Utilising two different labour rates to ensure equitable and cost-reflective charges for the activities performed:
 - averaged powerline worker and resource supervisor rate
 - asset inspector.

7.3 Quantitative inputs

7.3.1 Asset lives

Capital charges depend on the expected economic life of assets. The life of individual asset types may vary according to their construction, location and design life. For the purposes of network charges, standard lives are assigned to major components. Supports have long lives, while luminaires have medium-sized lives considering the technological redundancies of LED luminaires. The standard asset lives we propose for pricing the capital components of unbundled pricing are:

- > lamp-based luminaires – 20 years
- > LED luminaires – 10 years
- > brackets – 35 years
- > supports (including connections) – 35 years.

7.3.2 Bulk luminaire maintenance

LED luminaires will undergo a six-yearly cleaning cycle to ensure adequate light output. For the small volume of non-LEDs, bulk lamp replacements are based on a four-year cycle.

7.3.3 Streetlight patrols

To ensure compliance with AS/NZS1158, we undertake twice-yearly night patrols for Category V lighting to ensure 95% operations uptime for the asset base. The cost in this proposal is based on our night patrol costs for FY17 after averaging the program cost over the number of assets inspected.

7.3.4 Labour costs

We applied the same labour pay points as outlined in the 2019–24 AER determination and priced our services in accordance with the current *Essential Energy Enterprise Bargaining Agreement 2021*.

7.3.5 Material costs

The current market-based contract rates are used for major material items such as luminaires, columns and brackets. Where materials are taken from store stock, we applied the current store holding price plus store on-costs.

7.3.6 Defects rectification

The regulated network charging models are based on predictions of the number of defects we will attend to in any one year for each light type and technology.

We have used maintenance log failure rates to ensure costs reflect the technology and quality of the specific luminaire. These rates were based on total recorded failures for FY21 and the asset population as of the end of July 2021.

Not all luminaires recorded failures in this period, as shown in the table below covering both LED and non-LED luminaires.

Common Non-LED luminaire failure rates

| Traditional luminaire type | Number of luminaires (July 2021) | Failure rates (%) |
|---|-------------------------------------|----------------------|
| Compact fluorescent 42 W | 12,275 | 11.21 |
| High-pressure sodium 70 W | 6,004 | 14.72 |
| High-pressure sodium 150 W | 4,836 | 7.88 |
| High-pressure sodium 250 W | 11,152 | 5.07 |
| High-pressure sodium 400 W | 1,831 | 2.89 |
| Mercury vapour 80 W | 3,852 | 2.26 |
| Mercury vapour 250 W | 180 | 5.56 |
| Mercury vapour 400 W | 231 | 4.33 |
| Averaged total (includes failure rates for items not included above) | | 8.19% |

Common LED luminaire failure rates

| | Number of luminaires (July 2021) | Failure rates (%) |
|------------------------------|-------------------------------------|--------------------------|
| Lighting subcategory PR5/PR6 | 69,332 | 0.82 |
| Lighting subcategory PR3 | 27,782 | 1.05 |
| Lighting subcategory V3 | 6,148 | 0.62 |
| Lighting subcategory V1 | 14,477 | 0.28 |
| Lighting subcategory V1 High | 968 | 0.62 |
| Averaged total | | 0.69%¹ |

7.3.7 Defects per trip

We have aligned our internal rectification timeframes for the current regulatory period with the Public Lighting Code's recommendation of 10 business days. A repair time of 10 business days provides flexibility for field employees. It enables them to bundle tasks on a weekly basis in higher-volume depots or a fortnightly basis for lower-volume depots.

No change is proposed for the average number of daily tasks completed by field staff. This remains the same as in our past proposals, at 2.74 jobs.

Our proposed network charges reflect a forecast time for attending each spot failure, taking into account the low volume of tasks completed across our depots.

7.3.8 Time to complete maintenance tasks

All public lighting repairs are conducted as if there is live electricity. Personal protective equipment such as insulating gloves are always used.

Essential Energy has no dedicated public lighting crews as our light inventory and defect rates do not support this. A typical public light Elevating Work Platform (EWP) is telescopic with no stabiliser legs (spring locks only). Essential Energy's line work EWPs are often knuckle type with front and rear stabilisers. This results in additional necessary setup times as they are not dedicated plant, which are currently not viable.

We have completed a desktop assessment of likely times to complete tasks.

¹ This figure represents the failure rates as at January 2022. Essential Energy continues to review failure rates as LED penetration increases across the network. Current failure rates appear to be closer to 1.08% on average

Time and motion study findings

| | Routine activities per public light | Effort (mins) |
|----|--|---------------|
| 1 | Completing Hazard Identification, Risk Assessment and Control (HIRAC) and noting any adjustments | 2 |
| 2 | Safe-approach testing for column | 1 |
| 3 | Placing signs and safety barriers (witches' hats) | 3 |
| 4 | Positioning EWP and stabiliser engagement | 3 |
| 5 | Checking and applying harnesses and gloves | 1 |
| 6 | Testing lantern before maintenance | 1 |
| 7 | Manoeuvring boom | 2 |
| 8 | Testing/checking standards and wiring before repairs | 1 |
| 9 | Replacing lamp/PE cell, cleaning diffuser and minor repairs | 7 |
| 10 | Completing streetlight maintenance task log | 1 |
| 11 | Removing safety barriers, disengaging EWP stabilisers, placing gearing onto EWP | 3 |
| | Total | 25 |

Based on our analysis and benchmarking against other public lighting businesses, Essential Energy recommends a realistic estimate of two people for 25 minutes of maintenance activity per luminaire (50 labour minutes in total including setup time).

7.3.9 Travel time to installations

Due to Essential Energy's sparse lighting inventory, the average trip will repair only a small number of luminaires, making the average travel costs per repair high. While the bulk of public lights are located within a 5-kilometre radius of the works depot, some remote public lights can be up to 270 kilometres away.

Average travel time to lights (one way)

| Distance range from depot | Average travel speed (km/h) | Average one-way travel time to/from streetlight (~mins) |
|---------------------------|-----------------------------|---|
| 0–5 km | 26.7 | 5.5 |
| 6–10 km | 37.0 | 12.9 |
| 11–15 km | 43.0 | 18.1 |
| 16–20 km | 49.0 | 22.0 |
| 21–30 km | 57.5 | 26.5 |
| 31–40 km | 65.0 | 32.8 |
| 41–50 km | 70.0 | 39.0 |
| 51–100 km | 78.8 | 56.0 |
| 101–270 km | 80.0 | 123.3 |
| Weighted averages | 45.9 | 10.3 |

7.3.10 Summary of light maintenance inputs

Public lighting fault repair maintenance

| Item | Quantity | Additional information |
|-------------------------------------|------------------|---|
| No. of public lights to repair | 1.5 streetlights | The number of streetlights being repaired and/or replaced in one run. |
| No. of field staff working together | 2 people | The number of field staff working together to complete the public light repair/replacement tasks. |
| Time to mobilise | 10 mins | Time taken to prepare the teams and trucks before leaving the field service centre. |
| Travel time to site | 10.3 mins | Weighted average travel time from the field service centre to the faulty public light(s). |
| Time to repair luminaire | 25 mins each | Weighted average travel time to replace or repair the luminaire. |
| Travel time between public lights | 15 mins | Weighted average travel time between two faulty public lights requiring repair or replacement. |
| Travel time from site | 10.3 mins | Weighted average travel time to the field service centre from the faulty public light(s). |
| Time to demobilise | 10 mins | Time taken to demobilise the team and truck after arriving back at the field service centre. |

Further details are provided in **Supporting document 13.03.02 Public lighting model**.

8. Lighting charges

8.1 New component-based charging system introduced

Essential Energy introduced a new component-based schedule of network charges in the 2019–24 regulatory period on the 1 July 2019. Our objectives were to simplify and make transparent streetlight charges for both Essential Energy and councils.

The component model breaks the charge into three components – luminaire, bracket and pole – and displays the maintenance and capital cost for each component.

The core logic and bottom-up approach of the approved 2015 network charges.

Only assets previously on Tariff 3 or Tariff 5 attract capital recovery. With Tariff 1 capital recovery ending on 30 June 2019, assets that were on this tariff moved to a maintenance-only charge after this date. If a component on a previously maintenance-only charging system now needs replacing, an individual component (such as the luminaire) can now attract maintenance and capital components without the whole assembly requiring change (i.e., the pole and bracket can still be on maintenance-only charges). Assets previously on Tariff 2 have been flagged to ensure no capital recovery is applied at the next luminaire upgrade.

Charges are applied on a per-unit basis for each component included in the installation, with capital charges only applicable where we have funded the installation of that component.

Our proposed public lighting charges are provided in **Attachment 12.04 – Public Lighting (SLUoS) pricing schedule**.

8.2 Residual capital

Where Essential Energy funded the construction or replacement of a public lighting asset, capital and maintenance charges apply. Where customers choose to replace a public lighting asset subject to capital recovery charges before the end of its economic life, a residual value charge will be applied. This charge represents the remaining undepreciated value of the asset and ensures that Essential Energy recovers the cost of capital not yet recovered for the installation.

This residual value charge will be calculated using the following formula:

$$\text{Residual value charge} = (\text{useful life} - \text{installed life}) \times \text{rate}$$

- **Useful life** is the determined useful life applicable to the asset component being replaced.
- **Installed life** is the number of years the asset component has been installed.
- **Rate** is the AER approved capital recovery rate for the asset component being replaced at the time of replacement.

8.3 New standardised rates for minor capital works

In line with the NSW Public Lighting Code, Essential Energy has introduced a minor capital works offering where councils can request service providers to construct new public lighting infrastructure. These requests typically involve constructing a new luminaire, bracket and associated wiring to an existing network pole where Low Voltage (LV) power is currently available.

The work associated with these requests is not cost reflective with the current capital annuity pricing methodology. To improve the outcomes under this offering for both councils and Essential Energy, we propose the introduction of new standardised minor capital works ANS rates. These rates are calculated using weighted averages for the required labour, materials, electrical design effort, planning effort and traffic controls.

The introduction of these rates has been discussed at the May 2022 Public Lighting Council Engagement Session 2 and in a smaller reference group of council representatives in June 2022. Councils' feedback to date has been supportive with moving to these rates in July 2024.

ANS fees for minor capital works are provided in **Attachment 12.06 – Ancillary Network Services (ANS) Pricing Schedule**.

9. Public lighting revenue

Actual and forecast revenue for the current 2019–24 regulatory period and forecast revenue for the future 2024–29 regulatory period is provided below for comparative purposes.

Actual and forecast public lighting revenue 2023–24

| Public Lighting Revenue (\$M real, Jun 2024) | | | | | | | | | |
|--|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 2019-20 | 2020-21 | 2021-22 | 2022-23 | 2023-24 | 2024-25 | 2025-26 | 2026-27 | 2027-28 | 2028-29 |
| \$13.0 | \$12.2 | \$12.1 | \$13.6 | \$12.7 | \$12.5 | \$12.3 | \$12.1 | \$12.1 | \$12.1 |

Our proposed component based public lighting charges are provided in **Attachment 12.04 – Public Lighting (SLUoS) Pricing Schedule**.

10. New services identified within a regulatory period

The AER's 2024–29 Framework and approach paper classifies emerging public lighting technology as an alternative control service. It enables new services to be introduced mid-period within the regulatory framework.

Where we have identified a new service that falls within an existing service group classification, but without network charge approval, we propose to develop charges in a manner that is consistent with other services in the same grouping.

We endeavour to create new network charges using the AER-approved public lighting models and add inputs as required. Where the approved model is not conducive to developing our network charges, we will evaluate our methodology by consulting with public lighting customers.

This approach lets us flexibly provide new services to customers and give customers the protection of a regulated charging mechanism.

11. Compliance with AER's control mechanisms

The AER has decided to cap Essential Energy's public lighting services network charges in the 2024–29 regulatory control period with a proposed formulae for the control mechanism.

We have adopted the AER's approach to the proposed formulae and will demonstrate our compliance through our published lists of alternative control services charges, during the annual pricing proposal assessment process.

Clause 6.2.6(b) of the National Electricity Rules (NER) outlines that the basis of alternative control services' control mechanisms must be stated in the distribution determination. The basis of control may use elements of the NER's Part C, which outlines the building block approach for Standard Control Services.

Similar to the building block approach prescribed for standard control services, we have derived prices for alternative control services to demonstrate compliance with the control mechanism in order to adopt a cost build-up approach to setting charges.