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Australian Energy Market Commission

Level 15, 60 Castlereagh St

Sydney NSW 2000

Unlocking CER benefits through flexible trading - Lighting Council Australia submission

To whom it may concern

Lighting Council Australia appreciates the opportunity to respond to the Australian Energy Market Commission's *Unlocking CER benefits through flexible trading* consultation paper. Lighting Council Australia's submission is focused on the facilitation of smart street lighting infrastructure in Australia that has the potential to reduce street lighting energy use and provide additional services to the smart city market.

Background information on smart street lighting systems

Lighting Council Australia recommends that smart street lighting systems should be facilitated through the adoption of rules for non-traditional metering (i.e. minor energy flow metering).

Smart street lighting systems include the potential for energy savings and additional functionality compared to traditional street lighting. The term smart street lighting refers to street lighting infrastructure that is effective as a simple street light and has additional features designed to decrease energy use and increase productivity and services.

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Smart street lighting infrastructure comprises at least LED luminaires (able to be dimmed), data collection sensors, communication technology and non-traditional metering systems. Additional features could include digital signage, CCTV, speakers, 'push to talk' emergency system and electric vehicle charging.

The combination of the pole, data collection, data sharing, analytics and application development will increase services within the context of smart cities.

The ability to dim or ramp up street lighting illuminance levels can increase visibility at event precinct areas during events or dim to save energy when streets are unoccupied. Both approaches require the street lighting system to be metered so that the energy savings/costs flow through to the responsible entity (e.g. roads authorities and local governments).

One of the advantages of such systems is decreased energy use when lighting is dimmed. Metering of such systems is possible using non-traditional metering approaches/locations and should be facilitated to take full advantage of such systems.

Currently, street lighting is unmetered, bills are calculated and this approach includes the possibility of inaccuracies. It also does not realise the energy and bill savings that are possible to achieve in this market area. Further significant service benefits are forecast to be achieved via smart street lighting systems within the context of smart cities.

New technology smart street lights are being increasingly recognised as a platform for the collection of smart cities data for the following reasons:

- Street lighting is ubiquitous, being regularly spaced every 30 – 80 m along most urban roadways and streets of Australia;
- Street lighting is located in public spaces above roads and away from buildings, providing good visibility for various sensors and wireless communications devices;
- Street lighting is already connected to a reticulated electricity supply, thereby helping to reduce rollout cost.

The opening of data streams and an understanding of data patterns are leading to new smart city services and new applications in the following areas:

- Environment and water: waste and water treatment; pollution control
- Built environment and city management: green buildings; urban design; urban services; smart use of buildings

- Urban mobility: last mile solutions; urban logistics; intelligent transport systems (e.g. transport journey planning applications provide real time travel information to help commuters better plan their journeys).
- Energy: smart energy management; energy efficiency; renewables
- Safety and security: public safety; command and control systems
- Smart health care services
- Use of energy efficient, smart-ready technologies

New technology smart LED street lights offer increased energy efficiency, reduced maintenance costs and longer lifetimes over traditional street lighting technology. The entities responsible for providing street lighting infrastructure in Australia would like to install this technology and be able to achieve the energy savings benefits. However, the current metering rules are hampering this uptake due to requirements such as the need for a metering display – This is impractical for infrastructure installed at height above roadways. A non-traditional metering approach is needed to open up this market in Australia.

The current regulations do not accommodate new smart street lighting technology (e.g. there is a need to meter the new variable output loads and the new devices that will be included in the street lighting network).

Regulators are requested to develop the rules that can enable the development of this market. Lighting Council Australia highlights this is an area in need of immediate reform. Such smart street lighting systems are being rolled out around the world and are demonstrating metering accuracy, energy savings and services benefits.

The energy used by new technology LED street lighting has reduced (i.e. now around 13W – 150W per fitting). The cost of electricity per fittings is now in the order of $14 - $160 annually. It is very important that any new system of rules to accommodate smart street lighting does not add significant costs to the market (e.g. billing and information provisions should be simple and low cost to implement).

Lighting Council Australia estimates that the ability to implement smart street lighting systems (and achieve energy savings benefits) will provide:

- Significant benefits for consumers.
- Improvements around street lighting safety, security and reliability.
- A platform for increased innovation and flexibility.
- Reduced costs around street lighting commissioning and maintenance.
- The Australian Government with greater access to technologies that work towards decarbonisation.
- Environmental benefits for various species of flora and fauna.
- Long term benefits for consumers.

Lighting Council Australia comments are provided below (in normal text) in response to specific questions (bold) taken from the consultation paper.

QUESTION 14: METERING REQUIREMENTS FOR SECONDARY SETTLEMENT POINTS

Are current NEM metering installation requirements likely to limit the uptake of secondary settlement points and the associated benefits?

Yes, the current NEM metering installation requirements (i.e. street lighting assets are currently unmetered loads) do not accommodate flexible (dimmable) loads. Specifically, the current arrangements do not allow the benefits of dimmable street lighting (e.g. energy and bill savings) to flow through to the customer due to the calculation methodology (i.e. type 7 metering) used instead of actual energy measurement.

Energy savings benefits are estimated to represent around half of the overall benefits achievable by smart street lighting. Asset owners and entities responsible for providing street lighting are not implementing smart street lighting in significant numbers due to this lack of ability to realise the energy/bill saving benefits.

Australia is further losing out due to the lost energy savings, lost energy productivity, increased greenhouse gas production that is attributable to the limitations within the current rules.

Australian citizens and businesses are missing out on increased services that are able to be provided via smart lighting/smart city services.

The accuracy of the energy use and the associated billing of street lighting would improve if the NEM metering installation provisions were altered to accommodate smart street lighting systems. Currently, inaccuracies are mainly due to: Asset inventory inaccuracies; Faulty assets; and Photocell switching variations.

If changes are needed, what of the following minimum requirements need to be set in the NER for market participation and settlement at secondary settlement points?:

- **A physical display at the metering point**
- **Minimum service specifications**
- **Remote communications**
- **Accuracy and data requirements**

Physical display: A physical display at the metering point is not recommended and should be amended - This is a part of the current problem.

Instead of a physical display at the metering point, there should be a requirement for metering information to be accessible to the asset owners and responsible entities (i.e. road authorities and local governments). Such access is possible via online portals/applications.

Lighting Council Australia agrees with AEMO that the accreditation and procedures framework for a proposed new metering provider category specific to minor energy flow meters could provide a mechanism to enable the assessment and application of an equivalently accessible display. The initial validation process could verify the link to the physical devices.

Minimum Service Specifications: Regarding Minimum Service Specifications (MSS) Lighting Council Australia agrees with AEMO that secondary settlement points should not need to comply with the minimum service specifications. Energy and other data is available from smart street lighting systems. Remotely activating and de-activating the data flow from smart street lighting is possible.

Remote communications: Remote communication with smart street lighting systems is necessary to facilitate the acquisition of data. Remote communications are an inherent part of smart street lighting systems.

Accuracy and data requirements

Lighting Council Australia agrees with AEMO that the accuracy requirements for type 4 metering installations should be maintained for secondary settlement point meters.

Are there any other service or technical requirements that need to be specified for metering installations at secondary settlement points in the NER?

Final arrangements should be practical, low cost and determined through further consultation with smart street lighting system providers.

Should changes be made to the accreditation and registration of metering providers and metering data providers for secondary settlement points?

Lighting Council Australia agrees with AEMO's proposal for the creation of accreditation and registration requirements for metering providers and MDPs to demonstrate capability and competency specific to secondary settlement point metering installations. An additional metering provider category should be created so that AEMO can create bespoke requirements and procedures for secondary settlement point metering installations.

Final arrangements should be practical, low cost and determined through further consultation with smart street lighting system providers.

QUESTION 15: MINOR ENERGY FLOW METERS FOR USE AT SECONDARY SETTLEMENT POINTS

Should the requirements that apply to type 4 metering installations be amended to create a new minor energy flow metering installation, or are there more flexible regulatory approaches to enable market settlement for secondary settlement points?

Lighting Council Australia agrees with the AEMO proposal that a modified type 4 metering approach should apply to minor energy flow meters. Such an approach should proceed through further consultation regarding the aspects that are practical to implement and those that do not warrant inclusion.

Are there other changes to requirements for type 4 metering installations that should also be considered for a minor energy flow metering installation?

Lighting Council Australia recommends:

- The current requirement for a physical display at the metering point be amended to allow remote viewing.
- Further consultation with industry participants regarding final accreditation/ registration/testing requirements for metering providers and the rules around secondary settlement point metering installations. Any new rules should be practical, low cost and achievable using systems that are being implemented in comparable economies to Australia.
- Consideration of the full suite of data capabilities accessible via smart street lighting systems. The access, exchange and use of such data will be important for a number of different parties including DNSPs, road authorities, local governments and other service providers.
- Recognition of remote communication for metering data transfer.

Lighting Council Australia does not agree that 5-minute metering data granularity should be required of smart street lighting systems. The capabilities of existing systems should be examined closely before final decisions are made regarding such requirements.

What different obligations will need to be placed on metering providers and metering data providers for minor energy flow metering installations? Should these obligations be set out via AEMO's proposed approach of new categories in the NER?

Lighting Council Australia agrees with AEMO that a new metering provider category (with bespoke requirements and procedures) should be created to accommodate

smart street lighting systems. Final arrangements should be practical, low cost and determined through further consultation with smart street lighting system providers.

What would be an appropriate inspection and testing regime for minor energy flow metering installations?

Lighting Council Australia recommends a practical, low cost inspection and testing regime be implemented for smart street lighting systems. Accredited testing (e.g. Australian and international testing arrangements and recognition) of smart street lighting systems should be recognised.

We note the proposed metering review and recommend bespoke arrangements for smart street lighting systems to match system capabilities and that are practical/low cost to implement.

QUESTION 16: MINOR ENERGY FLOW METERS FOR STREET FURNITURE

Should minor energy flow meters be able to be used for street furniture?

Yes, Lighting Council Australia agrees that minor energy flow meters should be able to be used for smart street lighting systems. This would reduce the barrier to entry, improve the accuracy of energy settlements and provide an incentive for customers to utilise the energy saving aspects of new technology LED smart street lighting systems.

As outlined above, street lights are currently unmetered and unable to benefit from dimmable street lighting systems that can reduce energy consumption and costs - This is a significant barrier to entry for such systems.

Allowing minor energy flow meters for street lighting would open access to energy savings – This would, in turn, provide an incentive for the billable party to seek energy savings. Settlement accuracy would improve due to actual metering data being used rather than calculated.

Further benefits of smart street lighting systems are being realised in other economies and are reported to be: Increased service levels, maintenance savings and increased road/street/pedestrian safety due to automatic and fast failure detection; Decreased greenhouse gas emissions due to lower energy use; Environmental benefits for sensitive flora and fauna when street lights are dimmed to accommodate annual breeding cycles of various species; Increased smart city service provisioning due to the acquisition and use of data via sensors and applications (see further information above in the background section).

If so, should DNSPs be allowed to act as metering coordinator, metering provider, and metering data provider for street furniture under certain circumstances?

Lighting Council Australia recommends a careful approach to the final arrangements around DNSPs being able to act in the roles of metering coordinator, metering provider and metering data provider. While we agree the location, authorisation and safety aspects around street lighting mostly rest in the DNSP domain, there are other aspects to smart street lighting systems (e.g. smart city data acquisition) that will not be relevant to DNSPs and should be accessible to other service providers.

We also highlight that not all street lighting assets are owned and managed by DNSPs. Some street lighting is owned and managed by state and territory road authorities and local governments and these entities should also be able to act as the metering coordinators, providers and data providers.

Would any other changes to the rules be required in relation to metering for street furniture?

See the response to question 14.

Arrangements regarding data availability/sharing should form part of final consultations around the processes and procedures.

About Lighting Council Australia

Lighting Council Australia is the peak body for Australia's lighting industry. Lighting Council's goal is to encourage the use of quality, environmentally appropriate, energy efficient lighting systems.

Yours sincerely

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