



**IPWEA**

INSTITUTE OF PUBLIC WORKS  
ENGINEERING AUSTRALASIA

# Street Lighting & Smart Controls Programme SLSC

## Sponsorship Prospectus

November 2015





## EXECUTIVE SUMMARY

Recognising the fundamental digital transformation now underway in street lighting and other outdoor infrastructure, the Institute of Public Works Engineering Australasia (IPWEA) is proposing to work with public and private sector partners to deliver a two-year Street Lighting & Smart Controls Programme in 2016-17 to:

- Inform and educate public works professionals, utility providers and private sector partners on the application and benefits of Street Lighting and Smart Controls technology; and
- Inform government at all levels about the application and benefits of Street Lighting and Smart Controls technology and, about where reform is needed to reflect Government policies to improve the livability of our cities and to improve productivity through innovation.

IPWEA has concluded that there is now an overwhelming commercial, safety and environmental case for the wholesale renewal of street lighting infrastructure. While there is a growing push in both Australia and New Zealand to see this happen, there are a range of significant knowledge gaps, misaligned interests and out-of-date guidance for those who will manage such deployments.

At the same time as LED street lighting and control systems have matured, so too has a range of other digital outdoor infrastructure assets falling under the umbrella of the Smart City. Street lighting increasingly looks like it may provide the enabling backbone for the Smart City and hence the interrelationship between these two aspects of public infrastructure must be considered together.

## ABOUT IPWEA

The Institute of Public Works Engineering Australasia (IPWEA) is the professional organisation for those involved in and delivering public works and engineering services to the community both in Australia and New Zealand. IPWEA provides both services to its members and advocacy on their behalf.

One of these services is the National Asset Management Support (NAMS) programme which has been a highly recognised and widely utilised service throughout Australia and New Zealand.

IPWEA covers public works and services delivered by all tiers of government and its membership encompasses both the public and private sectors involved in delivering those works and services. Almost all of Australia and New Zealand's professional consultancy firms which specialise in public sector infrastructure including roads, water, power, rail, ports and airports - have managers and staff who are members of IPWEA.



**IPWEA is proposing a two-year programme of high-level government and industry engagement, the development of robust industry standard documentation, a comprehensive information and education programme as well as engagement with standards bodies and facilitation of applied research programmes.**

**This document outlines the proposed programme and seeks funding support from a range of government and private sector organisations to deliver it.**

## BACKGROUND

IPWEA has been closely monitoring developments with street lighting since 2012 and, in 2014, published its *Practice Note 11: Towards More Sustainable Street Lighting*. IPWEA subsequently staged well-attended training workshops around Australia.

Recognising the fundamental digital transformation now underway in street lighting and other outdoor infrastructure, IPWEA is proposing to work with public and private sector partners to deliver a two-year programme of activity in 2016-17 to:

- inform and educate public works professionals, utility providers and private sector partners on the application and benefits of Street Lighting and Smart Controls technology; and
- inform government at all levels about the application and benefits of Street Lighting and Smart Controls technology and, about where reform is needed to reflect Government policies to improve liveability of our cities and to improve productivity through innovation.

## NEED FOR A STREET LIGHTING & SMART CONTROLS PROGRAMME

In spite of the overwhelming commercial, safety and environmental case for wholesale renewal of street lighting infrastructure, less than 10% of Australia's and New Zealand's ('ANZ') street lighting has thus far been upgraded to LEDs or committed to such a change and almost no smart controls systems are yet being installed. In reviewing the limited progress in 'ANZ', IPWEA has concluded that a Street Lighting and Smart Controls programme is needed now because:

- 1. LOWER ENERGY USE & COSTS** - New LED street lighting and advanced controls technologies can reduce street lighting energy use by more than 50%, dramatically reduce maintenance costs and, overall, cut total street lighting costs by at least 25%.
- 2. SAFER ROADS WITH WHITE LIGHT** - International research has long confirmed that improved street lighting is one of the most cost effective road safety measures when judged on injury and fatalities saved per dollar invested. Despite this, Australian and NZ lighting levels are amongst the lowest in the developed world. Strongly adding to the case for improved street

lighting, more recent research shows that driver reaction times and stopping distances under white lighting (e.g. LEDs) are significantly shorter than under yellow street lighting (e.g. High Pressure Sodium). Some 40% of Australian street lighting and about 85% of NZ street lighting, including almost all lighting on main roads, consists of yellow high pressure sodium street lighting.

- 3. GROWING ANZ PUSH FOR MASS REPLACEMENT** - Keen to capture cost, safety, reliability and environmental gains, wholesale replacement of legacy street lighting with LEDs and advanced controls are now underway in cities around the world. Pressure for similar mass replacements in Australia and New Zealand is growing, but many councils and road authorities are struggling to overcome information gaps and a variety of institutional barriers. While the push for mass replacement of legacy street lighting is growing in 'ANZ', as with any new technology — but especially with more complex LED lighting — it is easy to make mistakes when not well-informed.

#### 4. EDUCATION & TRAINING URGENTLY NEEDED -

LED street lighting and advanced controls can provide a wider range of features, benefits and design options than legacy lighting technologies. However, LEDs have been around for a far shorter time than the technology it replaces, so soundly-based training and education to bridge the knowledge gap is particularly important at this stage of market development as there is generally a low level of lighting knowledge – even before the arrival of new more complex LED technology - within Australian and New Zealand local government.

#### 5. FRAGMENTED RESPONSIBILITY AND MISALIGNED INTERESTS

- Street lighting in 'ANZ' currently suffers from fragmented responsibility, misalignments of interest and a highly operational approach that is impeding progress and not adequately recognising the primary role of street lighting as a provider of safety and amenity for the public. Some of the structural barriers to change can only be addressed through intervention by state and national governments.

There is a particular challenge in Australia with misaligned interests where utilities generally own the streetlights but where it is local councils and other road authorities that have legal responsibility for providing street lighting. The regulatory pricing regimes for street lighting were not designed to accommodate rapid technology change and these regimes are coming under strain in both Australia and in parts of the United States where public lighting is utility-owned.

#### 6. LOW COMPLIANCE LEVELS & OUT OF DATE STANDARDS

- Compliance of installed assets with current AS/NZS road lighting standards is low. Furthermore, those standards have been slow to change in response to new technologies and are now substantially out of date compared with international best practice. Also, standards committees have very low levels of local government representation and lack appropriate funding for the public good role they perform.

#### 7. GROWING INTEGRATION OF SMART LIGHTING & SMART CITIES

- As street lighting enters the digital age, so too is a range of other outdoor infrastructure. These are grouping under an umbrella frequently called the 'Smart City'. Ubiquitous in nature and positioned physically in the public domain, street lighting increasingly appears to be the ideal 'backbone' for enabling the Smart City. There is a strong economic justification for street lighting renewal, and this provides opportunities for cities, towns and villages to simultaneously deploy a range of Smart City infrastructure approaches. These technologies could not only improve the data and information available to councils, but could also provide new sources of revenue.

A 'smart' street lighting network that can be remotely controlled and monitored, may also become a platform for carrying or enabling a range of other technologies. The following list was specifically requested in the recent RFI put out by Chicago<sup>1</sup> in the USA and provides tangible examples of the type of smart controls and communication features that comprise the "Smart City":

- wi-fi or other internet services
- fibre optic network expansion
- cellular data, cell phone towers, or signal amplifiers
- Vehicle-to-Infrastructure connections
- Vehicle-to-Vehicle connections
- Bluetooth/near-field-communications
- music and/or emergency broadcasting speakers
- motion or noise sensing
- cameras – video, photography
- transportation metrics - vehicle/pedestrian/bicycle counting
- parking space monitoring
- climate monitoring: temp, snow, ice, rain, flood, humidity, air quality etc.
- environmental monitoring: methane/natural gas leakage, vibration etc.
- 'smart' parking management
- traffic monitoring & management, adaptive to public safety
- automatic vehicle location (AVL)
- navigation systems: open, public, or subscription
- Blue Button personal security system
- device charging stations
- electric vehicle (EV) charging stations.

<sup>1</sup> Chicago Smart Lighting Project RFI - September 2015



## OUTLINE OF PROPOSED SLSC PROGRAMME



The Street Lighting and Smart Controls programme will include the following core components:

### 1) Government Engagement

#### The SLSC programme will:

- Identify local government, energy, sustainability and road management policies and programmes that would be advanced by widespread deployment of Street Lighting and Smart Controls technology
- Identify current impediments and barriers to deployment of LEDs and smart controls
- Open dialogue with State and National governments on the application and benefits of Street Lighting and Smart Controls technology and, on where reform is needed to facilitate timely deployment
- Develop policy discussion papers for State and Federal Government Ministries and Agencies.

### 2) Australasian Street Lighting and Smart Controls Council

#### It is proposed that:

- An Australasian Street Lighting and Smart Controls Council will be brought together under the neutral banner of IPWEA.
- The Council, initially chaired by IPWEA's CEO, will invite high-level membership from State and National governments, local government bodies, IESANZ, Lighting Council Australia, Lighting Council NZ, energy efficiency associations, representatives of the Smart Controls industry, representatives of specialist street lighting service providers, representatives of the utilities and representatives of the road authorities as well as the programme delivery partners, Next Energy and SLP.
- The Council's primary objective will be to facilitate high-level dialogue between industry thought leaders, engaging their support and contribution to deliver effective change.
- The Council will also establish priorities for the work of the Street Lighting and Smart Controls Programme.

### 3) Industry Standard Documentation

#### The SLSC programme will provide:

- Model street lighting strategies for local governments and road authorities
- Model LED Street Lighting Specifications to improve application approaches
- Model LED Luminaire Specifications to improve procurement processes
- Model LED Smart Controls Specifications to improve procurement processes
- A tender gateway through IPWEA for local government where this may not currently exist or be used
- IPWEA Practice Notes tailored for Australia and New Zealand.

### 4) Education, Training & Professional Development

#### The SLSC programme will develop:

- A webinar series on Street Lighting and Smart Controls (~6 per annum)
- Face-to-face training courses in major cities with on-line video participation for remote areas (one series per annum)
- Knowledge sharing through articles in IPWEA's e-newsletter and magazines and the e-newsletter "Public Lighting Today"
- An SLSC Maturity Matrix to allow local governments and road authorities to self-assess progress against measures such as the level of council information on street lighting, adoption of clear council policies, deployment of LEDs, deployment of smart controls and integration with Smart City infrastructure
- An SLSC Benchmarking Model similar to, or as a sub-set of the existing NAMS model, to peer assess and report back to State/Federal Governments on SLSC rollout and national economic ROI. This will use simple and objective measures such as the overall national deployment of LEDs, deployment of smart controls (and commitments to future deployment), the net financial benefits arising from existing deployments, and the potential net financial benefits still to be realised from a full national rollout. This benchmarking model will be developed once the SLSC Programme has gained sufficient traction.

#### The SLSC programme will also explore:

- The introduction of a CPD points system for SLSC stream knowledge uptake and, thereafter, the provision of IPWEA Certification in SLSC.

### 5) Engagement of Standards Bodies

#### The SLSC programme will:

- Identify positions on key committees of Standards Australia and Standards New Zealand that should be filled in order to redress the current low level of local government representation
- Encourage participation by IPWEA members, and vet and approve candidates for nomination
- Brief nominees on IPWEA objectives, their role on a standards committee and how to be most effective.



## 6) Facilitating Targeted Research

### The SLSC programme will:

- Identify applied research priorities of local government, utilities and road safety authorities
- Identify appropriate research bodies with an interest in conducting applied research in Street Lighting and Smart Controls
- Identify sources of industry funding and government and NGO funding agencies that may be willing support applied research programmes
- Provide oversight and monitoring of research programme progress
- Facilitate the dissemination and publication of research programme outcomes.

## 7) News & Information:

- News about the latest developments in street lighting and smart controls will be provided, and valuable knowledge will be shared, through articles in IPWEA's e-newsletter and magazines and the e-newsletter *Public Lighting Today*.

### **PUBLIC LIGHTING TODAY**

A new monthly electronic newsletter, Public Lighting Today, was launched in New Zealand in September 2015 to bring the latest news on lighting for roads, outdoor parks, reserves, sports fields and outdoor car parking to stakeholders in the public lighting sector including councils, contractors and suppliers. The newsletter will shortly be extended to Australia and will become part of the IPWEA SLSC programme. Link to the live NZ site at [www.pltoday.com](http://www.pltoday.com)

## TIMETABLE OF PROPOSED SLSC PROGRAMME

<b>2015</b>	<ul style="list-style-type: none"> <li>• Secure key sponsorship partners</li> <li>• Finalise programme business plan and two-year programme</li> </ul>
<b>2016</b>	<ul style="list-style-type: none"> <li>• Launch event in both Australia (Sydney) and New Zealand (Auckland) promoting the SLSC concept, vision, objectives, partners, endorsements Training and promotional work to commence in March with:               <ul style="list-style-type: none"> <li>• 6 x webinars in 2016</li> <li>• face-to-face training for Director-level participants in major cities later in 2016 (Sydney, Melbourne, Brisbane, Adelaide, Perth, Auckland, and possibly Wellington and Christchurch)</li> </ul> </li> <li>• Establish Australasian SLSC Council by May</li> <li>• Produce draft Model Street Lighting Strategy and Model Street Lighting Specification for Australia by May</li> <li>• Publish updated Practice Note(s) on “Sustainable Street Lighting”</li> <li>• Launch SLSC Programme, vision and objectives plus Model Street Lighting Strategy (AU and NZ) at IPWEA Sustainability Conference in Aug with training to follow</li> <li>• Publish Model Street Lighting Specification (AU and NZ) by Oct with training to follow</li> <li>• Launch Maturity Matrix by end November</li> </ul>
<b>2017</b>	<ul style="list-style-type: none"> <li>• Continue advanced webinars and face-to-face training</li> <li>• Launch SLSC Benchmarking by March</li> <li>• Publish new Practice Note(s) on “Smart City Lighting Controls”</li> <li>• Publish Model Adaptive Lighting Controls Specification (AU and NZ)</li> <li>• (balance of programme is to be determined by consortium and SLSC Council).</li> </ul>



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## FUNDING SOUGHT FOR PROPOSED SLSC PROGRAMME

IPWEA will be making a two-year contribution in excess of \$50,000 to the Street Lighting and Smart Controls Programme. This will include the sustained commitment of time by its CEO and key Directors as well as use of its membership database, publications and administrative resources to manage the programme. However, the programme is larger than can be managed solely with IPWEA resources and from the any revenue potentially generated from the above activities.

IPWEA is therefore seeking the funding support for the programme from:

- Australian Government departments and agencies
- Australian state government agencies
- New Zealand Government ministries and agencies
- lighting suppliers (minimum of two sponsors sought)
- smart controls suppliers (minimum of two sponsors sought)
- specialist street lighting service providers (minimum of two sponsors sought).

Consistent with a similar programme in Canada, IPWEA will be seeking at least two sponsors from each commercial sponsorship category to avoid any perceptions of conflicts of interest or preference for one supplier.

For government, sponsorship offers the opportunity to rapidly advance the knowledge levels about LEDs and smart controls of local government and road authorities nationally, identify and address barriers to the update of new technology and identify areas where government may be able to address these barriers and impediments. IPWEA is seeking government sponsors with a clear interest in on-going high-level engagement across the range of activities proposed including participation on the Australasian Street Lighting and Smart Controls Council.

For commercial suppliers, sponsorship offers the opportunity to rapidly advance the knowledge levels about LEDs and smart controls of their customer base, address barriers to uptake of new technology and greatly streamline procurement processes (e.g. through standardised specification approaches). IPWEA would only consider commercial sponsors with a clear interest in on-going high-level engagement across the range of activities proposed including participation on the Australasian Street Lighting and Smart Controls Council.

Please contact IPWEA to discuss a package of specific benefits that can be negotiated to meet your organisation's requirements. Commensurate with the level of support provided, those benefits may include:

- name and logo prominently displayed on programme documents
- support publicly highlighted at opening of all programme events
- organisation banner prominently displayed at all programme events
- number of complimentary registrations at any programme events requiring some payment
- opportunity to display product or services at main entrance to programme events
- naming rights to an event associated with sponsorship
- logo of organisation on programme website with a link to own home page.
- priority advance notice of upcoming programme events and document launches
- opportunity to help shape the future course and direction of the programme.

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## DELIVERY TEAM FOR PROPOSED SLSC PROGRAMME

IPWEA would be supported in the delivery of the Smart Street Lighting and Smart Controls (SLSC) Programme by Sydney-based Next Energy and New Zealand-based Strategic Lighting Partners (SLP) under a joint venture agreement signed by IPWEA and the two specialist consultancies. Summary CVs of the key consultancy personnel involved in the Programme, each of whom has engineering and MBA qualifications — as well as IPWEA's Director Sustainability, who will manage the programme — are below:



**Graham Mawer**

Managing Director,  
Next Energy

Graham leads a major street lighting initiative for 35 local governments in the Sydney area addressing pricing, technology and service issues for the consortium. He has also worked for other private and public sector clients on street lighting projects over the past decade including for NSW Road and Maritime Services, Westlink M7, IPWEA, the West Australian Government's Department of Premier & Cabinet and individual councils in a number of jurisdictions. His street lighting work includes technology reviews, tender work, LED lighting trials, maintenance monitoring, service level negotiations with utilities, preparation of strategic plans and regulatory filings on behalf of local governments.



**Bryan King**

Director,  
Strategic Lighting Partners (SLP)

Bryan is an experienced lighting practitioner and an authority on road lighting practices worldwide. Bryan has a 30 year history of leadership and governance in lighting manufacturing and consultancy businesses for the professional and local government sectors. He is a member of the LG-002 AS/NZS1158 Road Lighting committee, convener of the Lighting Controls and Energy Performance Working Groups, a member of EL-041 (AS/NZS 60598) committee and convener of the IEC Standards NZ National Committee "TC34-Lamps and Luminaires". Bryan was the Founding Chairman of Lighting Council NZ and is currently Executive Director of LCNZ. As a principal of SLP, Bryan has undertaken street lighting consulting assignments for EECA, the South Australian Department of State Development, NSW and QLD councils, New Zealand councils and IPWEA, and shared responsibility for SLP's conference and publishing activities. He has also undertaken consultancy for the IFC World Bank.



**Godfrey Bridger**

Managing Director,  
Strategic Lighting Partners (SLP)

Godfrey has more than 20 years' experience in the energy and infrastructure sectors ranging from business development and consultancy to governance. He is a former Chief Executive of the Energy Efficiency and Conservation Authority (EECA), and was a board member of Mercury Energy when it was the largest electricity distribution company in NZ. He has senior management and business development experience in both the electrical utility and government research sectors. With SLP, Godfrey has undertaken street lighting consulting assignments for the New Zealand Transport Agency, EECA, the South Australian Department of State Development, NSW and QLD councils, New Zealand councils, and IPWEA. He has shared responsibility for SLP initiatives to organise the major Road Lighting 2014 and Road Lighting 2015 conferences held in Auckland, and to publish Public Lighting Today, a street lighting e-letter and website.



**Dr Stephen Lees**

Director Sustainability, Institute  
of Public Works Engineering  
Australasia (IPWEA)

Stephen is an engineer with 40 years executive management experience. He has practiced in the fields of water resources, environmental and natural resources management, and sustainability, with a specific focus on catchment, floodplain and stormwater management, climate change science and adaptation. For 16 years he was CEO of the Upper Parramatta River Catchment Trust, a catchment flood control utility in western Sydney, and CEO for three years of the Sydney Metropolitan Catchment Management Authority. Stephen spent four years with a major private sector engineering consultancy specialising in water resources, sustainability and climate change adaptation. More recently Stephen has worked for IPWEA as its Director Sustainability, and on consulting assignments for several industry and public sector bodies.







**IPWEA SLSC Programme**

Sponsorship Proposal

November 2015