

Mr Craig Walker
Equipment Energy Efficiency Committee
Department of Transport, Energy and Infrastructure
Government of South Australia
Email: craig.walker2@sa.gov.au

Dear Mr Walker

The Energy Efficiency Council welcomes the release of the Draft Street Lighting Strategy by the national Equipment Energy Efficiency Committee. This submission sets out the Energy Efficiency Council's views on the Draft Strategy.

The Energy Efficiency Council is the peak body for companies that provide energy efficiency services and products to businesses and governments. The Council brings together the expertise of the energy efficiency sector to develop policies and programs to transform Australia into a competitive, low-carbon economy.

The Energy Efficiency Council strongly supports the development of a national strategy to improve the quality and energy efficiency of street lighting. The annual cost of public lighting, which is largely borne by local governments and road agencies, exceeds \$250 million, including \$125 million in energy costs. Improving the energy efficiency of street lighting can reduce these costs and free up resources for other pressing community needs. Although these cost savings are sufficient justification for improving the energy efficiency of street lighting, it would also substantially reduce greenhouse gas emissions, as street lighting typically accounts for 30 to 60 per cent of local governments' emissions.

The Energy Efficiency Council recommends that the Street Lighting Strategy should aim to deliver the best long-term financial returns from improving the energy efficiency of street-lighting. This means that the Strategy will need to consider the capital, maintenance, carbon and energy costs of lighting while meeting its functional objectives (e.g. road safety). Given the rapid development of new lighting technologies, a Street Lighting Strategy will deliver the best long-term returns if it balances the deployment of the best current street lighting technologies and the development of new street light technologies.

There are a range of barriers to upgrading the energy efficiency of street lighting in Australia, including:

- **Barriers for new technologies:** the systems for managing street lighting in Australia are typically highly conservative, which creates a barrier for new street lighting technologies to enter the market. This exacerbates market failures like spill-over benefits that reduce investment in research and development.
- **Information and skill barriers:** unless the parties that own and manage street lighting have access to good information and experts, they will not be able to select, install and maintain street lighting to deliver the best outcomes. This does not mean that all local governments need in-house expertise in street lighting. On the contrary, it suggests that regional approaches and outsourcing are essential.
- **Finance barriers:** upgrading the energy efficiency of street lighting delivers good returns on investment. However, the owners or managers of street lighting need to have access to capital to pay for the upfront cost of more efficient street lights. In addition, in some parts of Australia the residual value of existing fittings is grossly inflated, making otherwise highly economic street lighting retrofits unviable.
- **Implementation barriers and institutional barriers:** although more efficient street lights deliver a good financial return to the community, misaligned incentives, monopoly control by energy distribution businesses and misaligned incentives impede improvements to street lighting. Owners and managers need the right incentives, skills and processes to drive investment in more efficient street lighting.

Based on the goals and barriers to implementing energy efficient street lighting, the Energy Efficiency Council recommends that the strategy include four main themes:

- **Supporting the development of new products**, which includes:
 - o International collaboration
 - o Investing in research and development
 - o Trialling new products
 - o Specifications and standards
- **Information and skills**, which includes:
 - o A national information source
 - o Modelling dynamically-optimised retrofit programs
 - o Other actions, including trialling new technologies, standards, regional retrofit approaches and opening up the market to competition
- **Finance**, which includes:
 - o Access to finance or options to spread upfront costs
 - o Ensuring that costs and benefits reflect true costs and benefits
 - o Judicious use of incentives for demonstration, trialling new technologies and addressing misaligned incentives
- **Implementation and tackling institutional barriers**, which includes
 - o Regional retrofit approaches
 - o Opening up street lighting management to competition
 - o Improving the regulation and incentives of energy distribution businesses
 - o Minimum Energy Performance Standards (MEPS)

An effective national Street Lighting Strategy that incorporates these recommendations would deliver significant benefits to local communities. This submission sets out these issues and recommendations in more detail in pages three to six.

If you have any questions about this submission please contact the Energy Efficiency Council on 03 8327 8422.

Yours sincerely



Rob Murray-Leach,
Chief Executive Officer

1. Supporting the development of new products

The Street Lighting Strategy should set out actions to support the development of new products and bring down their costs. This includes:

1.1 International Collaboration

Street lighting products are both installed and developed around the world. International collaboration and information exchange will be critical to support the development of new products and reduces the need for local research, particularly where local and global research is undertaken in accordance to internationally trusted standards.

1.2 Investing in domestic and global Research and Development

Australian institutions and companies are already investing in developing new street lighting technology, but governmental support for pure and applied research and development will encourage additional private investment.

1.3 Trialling new products

There are substantial barriers to new street lighting products entering the Australian market. Some managers (e.g. energy distribution businesses) will only install a product if that product has already been approved for installation, but there is often no clear pathway for a new product to secure approval. Currently, most trials of new products occur in an ad-hoc and uncoordinated basis. As a result, by the time that a product is approved for installation it may have been super-ceded by more efficient and effective alternatives.

The Street Lighting Strategy should develop a clear pathway for new products to enter the market, including national funding for trials at various locations where the results are shared nationally. For example, national funding could support the continuation of the Queensland street lighting trials and trials by progressive local governments. A national testing protocol that sets out the standards for trials would enable local trials to have national relevance. These programs should trial both mature and novel, higher-cost products, as this will help to bring new technologies down the cost-curve.

1.4 Specifications

Specifying the technical features that Councils and street lighting managers are seeking from new products will make it simpler for manufacturers to develop products that meet demand. There are a range of ways to specify requirements, including clear statements of desired features and Minimum Energy Performance Standards (MEPS). Clearly specified MEPS would also reduce the need for field trials, as laboratory tests would eliminate the worst performing products, and address information barriers (see Recommendation 4.4).

2. Information and skills

The Street Lighting Strategy needs to tackle information and skill barriers that impede the upgrade of street lighting. While the strategy will need to increase the information that is available to street lighting managers, it is not essential or efficient for every organisation involved in street lighting to develop in-house expertise in street lighting. MEPS and regional approaches to street lighting can reduce the burden of developing expertise amongst many organisations. The Energy Efficiency Council recommends:

2.1 A national information source

ICLEI's online *Sustainable Public Lighting Toolbox* has helped inform owners and managers of street lighting. The Australian Government should invest to expand and update this website, or a replacement website, on an ongoing basis with information on technologies, funding and models to implement energy efficiency upgrades (e.g. Energy Performance Contracts).

2.2 Modelling dynamically-optimised retrofit programs

Retrofit programs need to focus on delivering the largest return-on-investment over time. This means considering the best current technology and the timeframes over which new products become cost-competitive. From a national perspective, this means developing regularly updated information on the costs of various technologies now and projections for their costs in the future. This information would help street lighting managers to optimise local retrofit programs based on the age of their current street lighting.

Other recommendations

A number of recommendations in the other sections will also address information and skill barriers. These include:

- **Trialling new technologies (Recommendation 1.2)**

National and international trialling of street lighting technologies will help develop the information required to implement energy efficiency upgrades.

- **Regional retrofit approaches (Recommendation 4.1)**

Councils need to be able to access experts to develop and implement local street lighting programs, including negotiating with street lighting managers. While some of the larger councils have in-house staff with appropriate skills, many smaller and regional councils cannot afford to hire consultants or dedicated in-house staff with sufficient expertise. Regional collaborations would reduce the cost for asset owners to access suitably skilled experts.

- **Opening up street lighting services to competition (Recommendation 4.2)**

Apocryphal evidence suggests that a number of distribution businesses have shed their experts in street lighting, reducing their ability to implement highly effective street lighting upgrade programs. Where distribution businesses are the monopoly provider of street lighting services, this seriously impedes asset owners (e.g. local governments) from implementing street lighting upgrade programs.

Opening up the market for street light management to competition will enable local governments to access the best expertise in street lighting, irrespective of their location, and enable distribution businesses that do not want to operate in street lighting to focus on their core business.

- **Minimum Energy Performance Standards (Recommendation 4.4)**

Minimum Energy Performance Standards (MEPS) remove the worst-performing products from the market, eliminating the risk that they will be installed despite gaps in information, skills and bounded rationality.

3. Finance

Street lighting owners, such as local governments, often have difficulties accessing the upfront capital that they need for street lighting upgrades. In addition, factors that distort the costs and benefits of otherwise economic lighting upgrades can make them unviable.

3.1 Access to finance or options to spread upfront costs

Upgrading the energy efficiency of street lights has a high upfront cost. However, retrofits also reduce energy and maintenance costs, creating savings that can be used to pay off the cost of the upfront capital. This means that street lighting owners with limited resources could implement an energy efficiency upgrade if they have access to either finance and/or payment options that enable them to spread the upfront cost of streetlights over a number of years.

Energy Service Companies (ESCOs), retailers and distribution businesses can offer Energy Performance Contracts (EPCs), where they arrange finance, implement a street lighting upgrade, take on the technical risk of the project and guarantee the cost savings. Some businesses (e.g. retailers and distribution businesses) can offer similar packages where capital costs are spread over a number of years and paid back through energy bills.

These types of loan arrangement could be facilitated by low-cost financing from bodies like Low Carbon Australia and the Clean Energy Finance Corporation. In addition, State governments could adjust the relevant laws, such that loans to finance energy efficiency projects that pay back the loans are excluded from local governments' borrowing limits.

3.2 Ensuring that costs and benefits reflect true costs and benefits

When a street lighting owner chooses to retire inefficient light equipment, they are often required to pay the manager (e.g. a distribution business) a residual or written down value. The residual or written-down values of street lights are typically determined by a regulator, and in many instances around Australia the residual values have been grossly inflated. This distorts the costs of installing new, efficient street lighting equipment, making otherwise cost-effective replacements uneconomic. It is impossible to overstate the importance of this barrier in blocking good retrofit programs

The Energy Efficiency Council recommends an urgent national review of the residual value of existing streetlights, with a significant downgrade of residual values in many regions.

3.3 Incentives

In many situations effective street lighting upgrades will be economic without incentives. However, the Energy Efficiency Council disagrees with the simplified statement in the Draft Street Lighting Strategy that incentive payments are only suitable to support project types "where the paybacks are poor or non-existent".

Incentives are appropriate in the following situations:

- **Demonstration projects:** Where incentives are used to overcome information and bounded rationality barriers to provide case-studies that catalyse further projects.
- **Trialling new technologies:** New technologies often have higher upfront costs. Limited subsidies to trial and deploy small numbers of these products, will help bring down their costs. Recommendation 1.2 sets out a proposal to trial new technologies
- **Misaligned incentives:** Some street lighting owners and managers receive distorted incentives, or seek higher return-on-investment rates than the community. In these situations, projects that are cost-effective for the community do not proceed because they are not deemed cost-effective by the asset owners or managers. Generally it is preferable to address misaligned incentives directly, but in some instances it may be simpler to address these situations through incentives.

4. Implementation and Tackling Institutional Barriers

Even where street lighting owners have access to appropriate technology, information and finance, they will only be able to implement street lighting upgrades if there is a clear pathway and low transaction costs for them to implement the upgrade. There are a range of barriers that impede implementation, including the cost in staff time to develop street lighting upgrade programs and difficulties faced by owners when negotiating with distribution businesses. The Energy Efficiency Council recommends a particular focus on institutional barriers, including:

4.1 Regional retrofit approaches

There are benefits to regional approaches. In particular, if local governments work in regional agglomerations it would reduce the cost of staff time to develop and implement street lighting programs and negotiate contracts with the street lighting managers. The Street Lighting Strategy should support and foster these types of regional approach.

4.2 Opening up street lighting services to competition

In many parts of Australia electricity distribution businesses are the monopoly providers of street lighting management services, despite the limited synergies between electricity distribution services and managing street lighting. A number of local governments have complained about their inability to select an alternative service provider, despite the poor service that they claim to have received from their distribution business. In some states local governments are allowed to use alternative service providers, but in practice they still face significant barriers moving from distribution businesses to self-managing street lighting or engaging alternative managers.

Ultimately, local governments and other parties that pay for street lighting should have the authority to select the street lighting technology and managers that they want. The Energy Efficiency Council recommends a strong national focus on opening up street lighting services to competition. This would mean that Councils could find alternate managers for their street lighting if their distribution business is unable or unwilling to provide competitive street lighting services. However, those distribution businesses that are willing and able to provide high-quality services would be able to compete with other service providers for contracts for street lighting services.

4.3 Improving the regulation and incentives of electricity distribution businesses

There are significant problems in the regulation of distribution businesses that include but extend beyond street lighting, including the incentive structure for distribution businesses. The lack of competition in street lighting service provision and the 'pass-through' cost model, where distribution businesses pass on the costs of energy use to the street lighting owner, provides limited incentive for distribution businesses to improve the efficiency of street lights. The Energy Efficiency Council recommends that the Street Lighting Strategy address these regulatory problems through a combination of:

- Opening up street lighting services to competition
- Altering the incentives for distribution businesses so that their incentives align with energy users in general and the street light owners in particular
- Regulating distribution businesses and their tariff models for street lighting

4.4 Mandatory Energy Performance Standards (MEPS)

Minimum Energy Performance Standards (MEPS) remove the worst-performing products from the market, eliminating the risk that they will be installed despite institutional barriers and other issues. MEPS would also ensure that, even in the absence of a specific program to improve the efficiency of street lights, outdated lighting technologies would be upgraded to a minimum standard when they reach the end of their economic life.