



## **Lighting Council Australia Submission**

*Minamata ratification consultation: Marsden Jacob Associates*

**November 2017**

Contact:  
David Crossley  
Technical Manager  
Lighting Council Australia  
Email: [dcrossley@lightingcouncil.com.au](mailto:dcrossley@lightingcouncil.com.au)  
Phone: 02 4268 2318

## RESPONSE TO MINAMATA CONVENTION CONSULTATION – MARSDEN JACOBS ASSOCIATES

### General Comments

This submission follows a meeting between Marsden Jacobs Associates and Lighting Council Australia on 20 October 2017 at Lighting Council Australia head office in Hawthorn, Victoria.

Present at the meeting were:

- Dr. Peter Kinrade (Associate Director, Marsden Jacob Associates)
- Elizabeth O'Brien (Marsden Jacobs Associates)
- Richard Mulcahy (CEO, Lighting Council Australia)
- David Crossley (Technical Manager, Lighting Council Australia)

Marsden Jacob Associates informed Lighting Council Australia that the Commonwealth Department of Environment and Energy is conducting consultation to inform an economic study regarding the effects, impacts, and changes to the market that may occur if the Australian Government ratifies the Minamata Convention.

Lighting Council understands the Minamata Convention is an international agreement proposing to:

- Reduce the mercury content allowed in fluorescent lamps; and
- Remove mercury vapour lamps from the market from around 2020.

Following the meeting Lighting Council Australia consulted with its members on a series of questions that may assist Marsden Jacob Associates to conduct their economic study. Those questions and Lighting Council Australia's responses are below.

### **1. What is the average retail or project cost of an LED luminaire that would be used as a mercury vapour street light replacement?**

The majority of mercury vapour luminaires are installed in local council areas on minor roads categorised as pedestrian or *Category P* roads (as defined by standard AS 1158 series *Lighting for roads and public spaces*).

Lighting Council Australia estimates the average cost of a LED luminaire that would replace an 80W or 125W *Category P* mercury vapour luminaire (which is by far the highest volume installed) is \$250.

The minority of mercury vapour luminaires are installed on major roads (or Category V). Such roads are the responsibility of state main roads departments.

Lighting Council estimates the average cost of an LED luminaire that would replace a *Category V* mercury vapour luminaire is \$600.

Mercury vapour lamps are also installed in decorative post top poles or bollards that are used in public parks or commercial buildings gardens. The price to replace such a luminaire with a similar decorative LED luminaire would vary between \$200 to \$2000.

## **2. What is the cost of a LED lamp that could be marketed to replace mercury vapour lamps?**

A high quality LED lamp (designed and tested to last 50,000 hours) marketed to replace mercury vapour lamps would be around \$50 and vary according to the wattage of the product (higher wattage products would be higher-priced, and lower wattage products would be lower-priced).

LED replacement lamps may be attractive to installation owners for applications outside of street lighting (i.e. commercial and industrial applications) due to the lower capital outlay.

However, Lighting Council Australia does not recommend LED lamp replacement because of potential incompatibility issues with incumbent ballasts. Moreover, the light distribution from an LED lamp is not guaranteed to be the same as that of a mercury vapour lamp which would be problematic for applications such as street lighting where minimum lighting levels apply to various surfaces including the roadway and pedestrian paths. Luminaire replacements are also preferred to maximise energy savings by removing inefficient legacy control gear (i.e. mercury vapour lamp ballast) from the electricity grid.

## **3. What is the likely cost to install a LED luminaire as a replacement for a mercury vapour luminaire (i.e. not including the cost of the luminaire)?**

The installation cost (not including the LED luminaire) will vary considerably depending on whether the replacement is a one-off, part of a bulk LED luminaire replacement programme, the location (e.g. metropolitan or regional) and requirements such as traffic management etc.

Lighting Council Australia estimates the costs may vary from \$100 per luminaire up to \$1000 per luminaire depending on the above factors.

This cost would be similar to the cost for re-lamping, cleaning and repairing existing mercury vapour fittings so distribution network service providers would be best placed to provide accurate cost estimates for this work.

**4. If an import ban applies to mercury vapour lamps in 2020, how much forward notice should be given to the market and for what reasons?**

Lighting Council Australia understands that Europe, China, India and Korea are the major source countries for mercury vapour lamps. If these countries ratify the Minamata Convention then they will no longer be able to export mercury vapour lamps.

This situation should be brought to the attention of distribution network service providers (DNSPs) as soon as possible so they can plan for the lack of replacement lamps after 2020.

Regardless of the Minamata Convention, global use of high intensity discharge lamps (e.g. mercury vapour) is declining rapidly and Australian lamp suppliers and DNSPs are already experiencing supply inconsistencies as lamp production runs decline in frequency.

**5. Could there be unintended consequences of a ban on mercury vapour lamps? i.e. if LED lamps are installed into existing luminaires instead of upgrading to integrated LED luminaires, what problems might occur?**

The majority of street lights are owned by DNSP's who have technical staff able to access quality suppliers, products and product warranties. Due to this educated customer base the likelihood of poor quality products and lighting outcomes are much less likely than in other market areas.

The market area at greatest risk of poor quality LED lamps is the small industrial/warehouse units that are currently using mercury high-bay fittings. However, given the low price of lower quality integrated LED high-bay fittings, a full luminaire replacement (even if the result is a low quality LED fitting) is the most likely outcome.

Government incentive schemes such as the NSW Energy Savings Scheme, Victorian Energy Upgrades scheme, South Australian Retailer Energy Efficiency Scheme and ACT Energy Efficiency Incentive Scheme include the ability to replace inefficient commercial lighting with LED lamps and fittings. It is possible for an upgrade to occur at very reasonable, or even low cost.

We also highlight potential safety improvements when mercury vapour luminaires are replaced by integrated LED luminaires. Many of the mercury street lights and mercury high-bay fittings currently installed are old and the electrical safety status of these fittings/installations is questionable. For local governments, roads authorities and DNSP's the cost to bring all wiring up to the current Wiring Rules (i.e. AS/NZS 3,000:2007) standards when retrofit occurs is significant and can delay projects. However, a quality contractor will, in the process of fitting a new luminaire, leave the installation safer than prior to the upgrade. So, there are also unforeseen safety benefits.

**6. What is the average lifetime of a mercury vapour lamp?**

The average life of a mercury vapour lamp is around 20,000 hours.

**7. What is the estimated size of the installed base of commercial and industrial (i.e. not street lighting) mercury vapour lamps?**

This is difficult to quantify and would mainly be lower wattage rating mercury vapour high-bay luminaires used in light industrial (e.g. small workshops and warehouse type facilities). Over the last two to three years the majority of new installations of this category would have used new LED luminaires. Also, the government incentive schemes have upgraded many mercury vapour fittings.

We estimate there may be 200,000 to 500,000 non-street lighting mercury vapour luminaires still installed in light industrial installations.

**8. Can you name proactive local governments and roads authorities that are updating their mercury vapour lamps with LED luminaires?**

Many local governments are in active discussions with DNSPs regarding street lighting LED luminaire upgrades for *Category P* roads. Also, for the last five or six years many local governments in Victoria

have undertaken projects to replace mercury vapour fittings with compact fluorescent or T5 fluorescent technology fittings as these fluorescent products have higher efficacies than mercury vapour.

We understand that Ipswich, Brisbane, Sunshine Coast, Hobart, Glenorchy, Melbourne City, Sydney City and Baw Baw local government areas have implemented LED upgrade projects. Also, DNSPs such as SA Power Networks are promoting LED upgrades to local governments.

All DNSPs have now approved LED products to be used to upgrade *Category P* roads and upgrade projects are being discussed and implemented.

The changeover of older technology light fittings used on main roads (i.e. *Category V*) is just starting to happen and most DNSPs and roads authorities are evaluating LED luminaires. As mentioned above there would not be a high number of mercury vapour luminaires installed on main roads (*Category V*). The majority of the luminaires installed on main roads are high pressure sodium luminaires.

DNSP's own most *Category P* and *Category V* luminaires. Possibly the largest impediment to the upgrade of mercury vapour lighting to LED technology is the residual valuation process of existing assets. The methodology to determine the residual value of an existing asset seems to result in excessively high residual values that must be paid up-front by local governments and road authorities before changeover can occur. Further, the cost of the new LED fitting and installation costs must be included in the total upgrade costs.

Further to the above question responses, Lighting Council Australia makes the following additional points:

- Lighting Council administers the *Fluorocycle* recycling program. With further funding, we would be able to increase our resourcing of this program and further promote the recycling of lamps containing mercury. Our efforts are proving fruitful as the percentages of mercury containing lamps going to landfill are decreasing. However, Commonwealth Government funding would increase the profile of this scheme, enable greater marketing capabilities, and increase recycling rates.
- The Greenhouse and Energy Minimum Standards Regulator has recently implemented new Determinations that reduce the mercury allowed in linear and compact fluorescent lamps to

below the levels proposed under the Minamata Convention. The lighting industry has agreed to these decreased mercury levels and is demonstrating that it is doing as much as possible to reduce the mercury used in Australia.

- Market education regarding a mercury vapour lamp ban should be undertaken. Such education should focus on local governments, road authorities, electricity distributors, property owners, facility managers etc. Lighting Council is able to assist with the preparation of this education material: For example:
  - Outlining the implications of an import ban.
  - Promoting the energy efficiency gains likely including payback periods due to LED upgrades.
  - Providing information on smart ready and smart lighting replacements that may be used in smart city type projects through a series of national seminars.
  - Further energy savings (in addition to the more immediate energy efficiency savings from LEDs) can be achieved through the use of LED dimming and instant on/off capabilities coupled with sensors and smart controls.
  - Promoting the message that LEDs achieve higher delivered light efficiency due to their directional nature.
  - Maintaining mercury vapour luminaires is costly. Such maintenance often requires mechanical lifting, production shutdowns, traffic management, resourcing etc. Upgrading to LEDs will reduce maintenance costs by more than 50%.
  - Reducing hazardous waste (i.e. LED lighting does not contain mercury).
  - Promoting the message that industrial and street lighting LED luminaires are durable and long lasting, with up to 10 year warranties and 100,000 hour lifetimes.
- Our understanding is that ratification of the Minamata Convention by a particular country will have the effect of stopping all manufacture, import and export of mercury vapour lamps by that country in 2020. Lighting Council Australia would appreciate clarification from the Department on this point. If this understanding is correct, irrespective of specific Australian plans relating to the timing of the phase out of mercury vapour lamps, if the majority of manufacturing countries ratify the convention it will become very difficult to obtain mercury vapour lamps in Australia after the date of implementation in those countries.

We understand that at least the EU and China will ratify the Minamata Convention. We request the Commonwealth Department of Environment to contact representatives from those

prospective signatories and advise Lighting Council Australia about their intentions regarding ratification and implementation dates.

If the EU and China do ratify the Convention, we suggest that immediate and widespread education of the market should be undertaken so that capital upgrade budgets can be prepared and upgrade plans developed and approved.

- We do not forecast that mercury vapour lamp importers will stockpile these lamps before ratification dates due to the high risk of being left with large amounts of redundant stock. One exception to this might be DNSPs stockpiling mercury vapour lamps in order to maintain existing fittings for extended periods after 2020.

#### **ABOUT LIGHTING COUNCIL AUSTRALIA**

Lighting Council Australia is the peak body for Australia's lighting industry. Its members include manufacturers and suppliers of luminaires, lighting control devices, lamps, solid state lighting and associated technologies. Lighting Council's goal is to encourage the use of environmentally appropriate, energy efficient, quality lighting systems.