

Accelerated Replacement of Street Lights with LED Fittings

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Summary

In accordance with Sustainable Sydney 2030, the City is committed to reducing organisational greenhouse gas emissions by 70 per cent by 2030 (compared to 2006 baseline). As part of the Environmental Action Plan 2016-2021, the City will accelerate actions to reduce organisational emissions, with a target of 44 per cent by 2021 (compared to 2006 baseline).

About 75 per cent of the City's organisational emissions come from grid electricity. Nearly 40 per cent of grid electricity used by the City relates to provision of street lighting. This includes street lighting that the City owns (about 40 per cent of total street lighting use) and street lighting that Ausgrid owns (about 60 per cent).

LED lighting is significantly more efficient than conventional fittings, such as compact fluorescent tubes, mercury discharge vapour lamps and fluorescent tubes. On this basis, the City has already replaced nearly all the conventional street lights that it owns with LED fittings.

Ausgrid has recently begun to replace street light fittings with LEDs, but only when such fittings are at their end of life. It could take another decade or more for all lights to be replaced.

Along with the Southern Sydney Regional Organisation of Councils, the City has advocated over many years for Ausgrid to change over its street lighting to LEDs. Earlier this year, the City received a preliminary offer from Ausgrid to replace Ausgrid-owned street lighting.

The Ausgrid offer has now been reconfirmed and updated (see Attachment A – letter from Ausgrid, dated 29 June 2018). Ausgrid proposes to replace about 9500 street lights with LEDs. The reduction in electricity use will be nearly 900 kW (this is a 48 per cent reduction) or about 3,600 MWh a year. As well as using less electricity, LEDs are much cheaper to maintain as they have a much longer life than conventional fittings. The upfront cost of LEDs is, however, more expensive.

The City has analysed four payment options offered by Ausgrid. The preferred option is detailed in Confidential Attachment B. The savings from reduced energy bills and lower maintenance costs are greater than the cost of installing the new LEDs. There is a strong positive net present value, meaning the City will save money over the 12 year period while substantially reducing its carbon emissions.

It is estimated that 3,500 tonnes a year of carbon will be saved once the project is complete. This is approximately nine per cent of the City's carbon footprint and represents the largest single carbon reduction project being undertaken to achieve the City's 2021 target. This project will also reduce the amount of renewable energy that must be purchased in the future to meet the City's renewable energy targets.

When the project is completed, the City will be one of the first councils in Australia to have all its street lights converted to LED.

Ausgrid is the authorised monopoly provider of public lighting services in the City area. The City is not required to seek tenders to replace the fittings that Ausgrid owns. This report seeks Council approval for the Chief Executive Officer to negotiate and finalise terms for the changeover to LEDs, and to execute an agreement on behalf of Council.

Recommendation

It is resolved that:

- (A) Council note that a reduction in greenhouse gas emissions of up to 3,600 tonnes a year can be achieved by installation of code-compliant LED light fittings on residential and main roads in the City area to replace existing Ausgrid-owned street lighting;
- (B) Council note Ausgrid is the sole supplier of public lighting services in the City area, that there are no alternative reliable or competitive tenderers, and that a satisfactory result would not be obtained by inviting tenders for energy-efficient public lighting services; and
- (C) authority be delegated to the Chief Executive Officer to negotiate, enter into and administer an agreement with Ausgrid to replace existing Ausgrid-owned street lighting in the City area with energy-efficient LED lighting for the price and savings set out in Confidential Attachment B to the subject report.

Attachments

Attachment A. Letter from Ausgrid dated 29 June 2018 - Accelerated Replacement Program

Attachment B. Business Case Summary (Confidential)

Background

1. In accordance with Sustainable Sydney 2030, the City is committed to reducing organisational greenhouse gas emissions by 70 per cent by 2030 (compared to 2006 baseline). Between 2006 and 2016, the City reduced organisational emissions by about 26 per cent. As part of the Environmental Action Plan, the City will accelerate actions to reduce greenhouse gas emissions, with a target of emissions reductions of 44 per cent compared to 2006.
2. The Environmental Action Plan 2016-2021 identified that the conversion of the street lights to LED is the single biggest energy efficiency action that can be undertaken to achieve the 2021 carbon reduction targets for the City of Sydney organisation.
3. Around 75 per cent of the City's organisational emissions come from consumption of grid electricity, of which nearly 40 per cent is used for street lighting across the City area. Accordingly, reducing the amount of electricity used by street lights as soon as possible is highly desirable.
4. About 40 per cent of the street lighting in the City area is owned and maintained by the City, and about 60 per cent of the street lighting is owned and maintained by Ausgrid, the local electricity distributor. LED lighting is generally much more efficient than conventional street lighting. The City has already replaced the vast majority of the street lights that it owns with LED fittings (in total, around 6,500 lights). This has resulted in a reduction in electricity of about 2,500 MWh a year. Based on the current grid emissions coefficient, this equates to about 2,400 tonnes of carbon abated a year. In percentage terms, the average reduction (new versus old) is about 47 per cent.

Discussion

5. Ausgrid has already started the replacement of street lights that it owns in residential street with LEDs. This is occurring very gradually, as existing street lights reach their economic end of life. At the current time, only about 20 per cent of the Ausgrid-owned street lights have been replaced.
6. At the current rate, it could take more than another decade to replace some existing fittings with LEDs. Therefore, along with Southern Sydney Regional Organisation of Councils, the City has been advocating vigorously for Ausgrid to speed up the rate at which it replaces existing street lights.
7. In April 2018, the City received an offer from Ausgrid to replace conventional lights on all street and roads in the City area - not just residential streets. The offer allows a choice of payment methods for new LED street lights. Payment could be either up-front or over 10 years, in accordance with a regulated arrangement that is approved by the Australian Energy Regulator. The applicable rate of interest would be very low. As well, the City would be required to pay out the residual value of existing lighting that is replaced.
8. This offer has been updated and reconfirmed (see Attachment A). There are now four options for payment. These involve a choice of whether to pay up-front or to pay over time. This applies to both new fittings and fittings that are being replaced. The conditions of each option are regulated by the Public Lighting Code and the National Electricity Law.

9. The very substantial reduction in ongoing electricity bills and maintenance costs associated with LEDs means that - even with the cost of early retirement of existing fittings - the changeover will be cash-positive over time and there will be no cost of carbon (the changeover has a positive net present value).
10. The total number of lights to be replaced is 9500, the reduction in lighting load is around 900 kW MW, and the reduction in electrical consumption is about 3,600 MWh a year. As a percentage, the reduction in electricity use for the new lights will be 48 per cent, which is very similar to the figure achieved for City-owned lighting.
11. This initiative means over 3,500 tonnes of carbon will be abated each year, which is about nine per cent of the City's total emissions at the current time.
12. The cost of installing new lights is more than offset by operational savings over 10 years (lower costs of maintenance and lower electricity bills).
13. In summary, over 10 years, the preferred option will deliver both cost savings for the City and major reductions in emissions. This report requests that the Chief Executive Officer be authorised to negotiate and agree to final terms for the accelerated replacement program, and to execute the agreement on Council's behalf.
14. The commercial benefits of the proposed replacement are summarised in Confidential Attachment B.

Key Implications

Strategic Alignment - Sustainable Sydney 2030 Vision

15. Sustainable Sydney 2030 is a vision for the sustainable development of the City to 2030 and beyond. It includes 10 strategic directions to guide the future of the City, as well as 10 targets against which to measure progress. This program is aligned with the following strategic directions and objectives:
 - (a) Direction 1 - A Globally Competitive and Innovative City - accelerating the replacement of conventional street lights with LEDs will ensure that Sydney remains aligned with other leading global cities in terms of technology provision for public infrastructure. In addition, the deployment of LEDs will facilitate future rollout of lighting and non-lighting "smarts" co-located on LED luminaires.
 - (b) Direction 2 provides a road map for the City to become A Leading Environmental Performer - as outlined above, accelerating the replacement of conventional street lights with LEDs will make a major contribution towards the achievement of the City's organisational emissions reductions targets for 2021 and beyond.
 - (c) Direction 9 - Sustainable Development, Renewal and Design - entrenching LEDs as the default lighting technology for both established and renewal areas ensures a consistent and more sustainable built environment in the future. In addition, the deployment of LEDs will ensure new development is ready for smart technologies that can be co-located in LED luminaires in the future.
 - (d) Direction 10 - Implementation through Effective Governance and Partnerships - timely and efficient delivery of this program at a pre-agreed cost and on a pre-agreed basis demonstrates the effectiveness of the partnership that the City has built up over time with key public infrastructure providers like Ausgrid.

Organisational Impact

16. Delivery of this program is primarily the responsibility of Ausgrid, however, an appropriate level of internal resourcing will be made available both to monitor project progress and to provide expert input at key decision points e.g. selection of lighting levels, delineation of smart pole areas etc.

Risks

17. The primary concern with this project is delays to getting started and delays in getting work done. Achieving substantial completion by mid-2020 is essential if the City is to achieve its 2021 organisational emissions reduction target. To this end, the report recommends that the CEO be empowered to negotiate final terms for the replacement program and enter into a binding agreement. The City will also endeavour to have residential street lighting, which is less complex and more standardised, to be delivered in the earliest phase of the project and as quickly as possible. More lead-time may be desirable to achieve the optimal result along main roads.
18. The risk of unexpected cost increases with this project are minimal. A nominal maximum cost (constant terms) of works has been established in advance. Also, LED technology is still improving and there are reasons to expect a reduction in both changeover costs (supply/installation of light fittings) and operational costs (because energy reductions may be greater and maintenance costs may be lower). The City will make it clear to Ausgrid that it expects all possible improvements in energy efficiency should be pursued. Also, any future reductions in cost of supply and installation should be passed on to the City (e.g. because of lower prices for LED main road lighting on account of a future Ausgrid tender). This will be a pre-condition for the replacement.
19. The start of the next five-year regulatory period for Ausgrid is mid-2019. The regulated rate of return should be somewhat lower, hence, costs to the City should be lower. Also, the City will be lobbying the Australian Energy Regulator to reduce the level of maintenance charges that is approved for LEDs. This makes sense, because LEDs have demonstrated much lower levels of failure than previous lighting technologies.
20. An incidental benefit to the City should be a reduced incidence of street lighting outages. This should lead to a lower level of complaints about night-time illumination and some improvement in night-time public safety, however, the level of improvement has not been quantified.

Environmental

21. Environmental benefits of this program are covered under Background and Discussion. In summary, acceptance of the Ausgrid proposal will lead to a reduction in the City's greenhouse gas emissions of about 3,500 tonnes a year. This reduction will be fully evident from the beginning of financial year 2020/21 and will contribute substantially to the achievement of the City's 2021 organisational targets.

Budget Implications

22. The City has modelled the costs and benefits of both upfront payment for new light fittings compared to regular annuity payments over 10 years for new light fittings. The discount rate used reflects the prevailing low cost of funds and it is considered advantageous for the City to pay for the cost of supplying and installing new fittings as the changeover occurs (ie upfront) and to also pay out the residual cost of existing fittings as the changeover to the new fittings occurs.
23. The upfront costs for the City are provided in Confidential Attachment B. As this project had not progressed to a point where the costs were able to be reliably estimated the cost of this project was not included in the City's 2018/19 operating budget when it was prepared.
24. The amount of required funds is dependent upon Ausgrid's capacity to install fittings and the outcome of final negotiations. When the final timing and amounts of these payments are known, additional funds may be sought from the 2018/19 operating budget's general contingency and/or from other identified operating savings. From the commencement of next financial year, payments will be included in future operating budgets. Approval of the amount of any budget adjustments for 2018/19 will be sought as part of a future quarterly reporting process.

Relevant Legislation

25. Other than the City, Ausgrid is the sole supplier of public lighting services in the City area. Accordingly, there would be an absence of competitive or reliable bidders, were the City to call tenders for more energy-efficient public lighting.
26. Under the terms of section 55 of the Local Government Act 1993, it is proposed that Council not call tenders but instead deal directly with Ausgrid to secure more energy-efficient public lighting.
27. Further, it is proposed that authority to negotiate and finalise terms of an agreement for energy-efficient public lighting be delegated to the Chief Executive Officer, and for the Chief Executive Officer to execute the agreement on behalf of Council.
28. Attachment B contains confidential commercial information which, if disclosed, would:
 - (a) confer a commercial advantage on a person with whom Council is conducting (or proposes to conduct) business; and
 - (b) prejudice the commercial position of the person who supplied it.
29. Discussion of the matter in an open meeting would, on balance, be contrary to the public interest because it would compromise Council's ability to negotiate fairly and commercially to achieve the best outcome for its ratepayers.

Public Consultation

30. Extensive public consultation was undertaken as part of the development of Sustainable Sydney 2030 and as part of the development of the Environmental Action Plan 2016-2021. A specific initiative set out in the Plan was to advocate for accelerated replacement of Ausgrid-owned street lighting.

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