

Bringing

Energy Efficient Street Lighting

to Western Sydney

WSR  C

WESTERN  SYDNEY
Light
years
ahead

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The Light Years Ahead project received Australian Government funding.

The following local councils also provided funding:
Blacktown, Blue Mountains, Fairfield, Hawkesbury,
Hills Shire, Holroyd, Liverpool, Parramatta and Penrith.

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Cover photo: Serge Golikov

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1. Lighting the Way

One of the largest ever energy reduction projects in Western Sydney, 14,491 high emission 80W mercury vapour street lights in 136 suburbs have been replaced with energy efficient LED lighting.

A WSROC project team, nine participating councils and the energy provider Endeavour Energy, exceeded their initial target of changing 12,770 mercury vapour lights to LED (light emitting diode) lighting in their Light Years Ahead project. This concerted effort exceeded the initial energy reduction target of 66 per cent energy reduction to 77 per cent.

The LED lights were installed between May 2015 and March 2016. This followed two years of intensive teamwork to develop a business case, apply for funding, negotiate with the energy provider, and map and plan the project.

The Investment

\$8 million total cost

\$5.2 million contributed by the Australian Government

\$2.8 million contributed by WSROC and nine participating councils

The Savings

4.4 million kWh per year energy reduction

77% reduction in electricity costs

\$19.4 million in energy savings for the nine councils over 20 years*

91,000 tonnes estimated reduction in emissions over 20 years

The Light Years Ahead project achieved emissions savings equivalent to:



Lighting approximately **100,000** Australian homes each year



Taking approximately **40,000** cars off the road each year



Heating and cooling over **46,000** Australian homes each year

*The life of the light

Over 80% per cent of people surveyed about Light Years Ahead supported the program, believed it was important for Western Sydney, and thought governments should be doing more of these sorts of things.



“Our kids were engaged and interested. I think the messages the students got were about sustainability and particularly about energy saving.”

School teacher attending the Light Years Ahead workshop at the Youth Eco Summit.

Project Partners



Light Years Ahead: A Western Sydney success story



Project delivered on time and on budget showing what can be done by a small group of dedicated people.



Excellent value for money for both participating councils and the Australian Government.



A coordinated regional approach to the program resulting in greater efficiencies in scale and delivery.



A positive community response to the project itself, and increased community interest in learning more about energy efficiency in their own homes.



A new framework established for coalitions of councils to pursue energy efficiency projects in partnership with their energy distributor.



A good practice model for other councils wishing to emulate in the Light Years Ahead project in their own local government areas.

2. The Need

Less energy used
by LED lights
reduces electricity
bills and decreases
greenhouse gas
emissions.



Street lighting accounts for around 55% of Western Sydney councils’ energy bills. These high costs make street lighting an important infrastructure area to review and find efficiencies.

Mercury vapour lights, many of which have been in place in Western Sydney since the 1970s, are costly to run and maintain.

Although both mercury vapour lights and LED lights used by Endeavour Energy meet Australian standards, LED lighting is the more energy efficient option.

“Very progressive thinking towards sustainability and budget saving.”

Community member

Mercury vapour lighting	LED lighting
Requires more power to produce light resulting in high greenhouse gas emissions and higher electricity costs	Requires less power to produce light resulting in reduced greenhouse gas emissions and energy use by consumers
Short life span of 3 to 4 years resulting in the need for frequent luminaire replacement	Longer life span of 10 to 20 years leading to reduced replacement costs
Need regular cleaning to remove dirt build-up on the visors, which reduces light output over time	Less maintenance required and lower failure rate of lights
Light output drops off quickly resulting in significant differences in light output at the beginning and end of a light’s service life, as well as from light to light in a given street	Less glare and greater uniformity of light across and along the street with less depreciation of light output over time
Yellower light resulting in perception of darker and therefore unsafe public places	Better visibility through enhanced colour rendering with a wider light arc resulting in public perception of increased safety
Careful and safe disposal of lights at the end of their life required to minimise the risk of introducing lead and mercury into the environment	Currently around 95% of LED light elements able to be easily and safely recycled. Recycling capability is likely to increase in the future

3. The Challenge

“I congratulate WSROC and all those involved on their collaborative and cohesive approach, and on the initiative shown in bringing this amazing project together.”

Louise Markus former member for Macquarie

Changing out-dated and costly mercury vapour streetlights to more efficient and effective LED technology sounded simple enough in theory. In reality, it raised several challenges that took vision, commitment and perseverance to resolve.

Who owns the lights?

Street lighting in Sydney is a complex issue. Utilities like Endeavour Energy own most of the streetlights (the assets), select the type of light to be used, and are responsible for servicing them. Councils are responsible for providing street lighting to their community and reporting any problems with the lights to the energy provider. Councils also pay the electricity bills.

Yet, unlike any other procurement contract related to infrastructure, councils have limited grounds to challenge levels of service, negotiate pricing and question charges. There is no clear governance, no binding service contracts or regulations and only a voluntary NSW Public Lighting Code (due for review for 2016).



Who's going to pay for it?

Although attractive long-term energy savings would justify the initial cost, the project needed major financial input and time commitment to get off the ground.

WSROC applied for external funding to assist with the capital costs. The project received \$5.2 million funding from the Australian Government in early 2014. Participating Western Sydney councils and WSROC itself contributed a further \$2.8 million.

Another issue to consider was the retirement charge that would need to be paid to the energy provider for mercury vapour lights that had not reached the end of their life. This was taken into consideration when mapping which lights would be replaced. Wherever possible, lights that would have a low retirement fee were the ones selected for replacement.

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Who's going to manage the project?

A small but dedicated WSROC project team of a project coordinator, project manager, and media and communications officer was assembled to coordinate the project. The project team's role was to liaise between the councils and Endeavour Energy, prepare grant reports and communicate the project to councils, the community and others.

The project team engaged specialist consultants to develop a business case, map out the installation program and help negotiate with Endeavour Energy about the selection and servicing of new lights.

Representatives from nine participating councils formed a multi-disciplinary reference group made up of 17 members. This group included asset managers, environmental sustainability officers, infrastructure managers and engineers. The reference group provided advice to the WSROC project team and communicated council decisions about budget and the selection of lights to be upgraded. The reference group was also the first point of contact for public enquiries.



A challenge becomes an opportunity

The Light Years Ahead project gave councils and energy providers an opportunity to work together to find a cost effective and environmentally responsible solution that would serve the community for years to come.

A clear financial business case. The business case developed for the Light Years Ahead project resulted in a greater understanding of the commercial dynamics involved with public lighting. This model can now be used for future projects.

A tangible financial benefit. The Light Years Ahead project showed that a measurable benefit can be achieved from a sustainability project. This has led to greater council support and quicker approval for other sustainability initiatives.

Extensive collaboration. The Light Years Ahead project gave council staff an opportunity to work closely with their colleagues in other sections of their council. The project also allowed staff to work collaboratively with their peers in other councils as well as with the WSROC team.

Fast-tracked technology. The WSROC project team negotiated with Endeavour Energy to accelerate laboratory and field testing of the more energy efficient 18 watt light to replace the already approved 25 watt light. As a result, the 18 watt light was approved earlier and the Light Years Ahead project was able to exceed initial energy saving targets.

A successful collaboration and negotiation between WSROC, nine councils and Endeavour Energy resulted in the installation of 14,491 LED lights in Western Sydney reducing energy consumption by 77%.

“You’ve got to have support from the leadership for these sorts of initiatives. All the consultation and coordination made sure that this happened.”

Council stakeholder

4. The Project

For some time, councils had been looking for ways to reduce their electricity costs. As early as 2010, WSROC met with councils to discuss opportunities to tackle public street lighting costs. But the high capital investment required was prohibitive.

In 2013 the Australian Government's Community Energy Efficiency Program provided funding for WSROC and councils to undertake the project. By March 2016, Western Sydney had 14,491 new LED lights.

2012-2013

MILESTONE 1 Project scoped

Prepare business case and apply for Australian Government funding.

2013

MILESTONE 2 Funding received

Finalise funding contracts.

2014

MILESTONE 3

Project plan developed

Develop and approve project plan.

MILESTONE 4

Project teams formed

Form WSROC project team and council reference group, and engage technical consultants.

MILESTONE 5

Negotiations with energy provider

Negotiate with Endeavour Energy to participate in the project and approve the more energy efficient 18 watt LED light.

MILESTONE 6

Light changeover mapped

Map lights to ensure minimal mercury vapour light retirement costs while achieving lighting consistency within streets.

2015-2016

MILESTONE 7

Brand developed

Create logo and other branding elements.

MILESTONE 8

Light replacement started

Changeover first street lights.

MILESTONE 9

Project launched and communications activities begun

Launch events for nine participating councils. Launch website and deliver clear and consistent marketing material via social media, existing community events, mainstream media, education activities and community newsletters.

2016

MILESTONE 10

LED lights installed

Install lights between May 2015 and May 2016 and divert a total of 5,040 tonnes of waste from landfill to recycling.

Future directions

Scope continuation of Light Years Ahead project.

5. The Future



The Light Years Ahead project has been a positive start with significant energy savings. But this is just the beginning.

Public lighting plays a key role in designing smarter cities. Due to technology advancement and increased competition, the cost of LED lighting has reduced dramatically over the past 5 years. Efficiencies are predicted to increase even further over the next decade.

Yet without actively trialing and pushing for new technologies, essential opportunities will be lost – councils and the community will be denied the opportunity to make major energy savings and emission reductions.

WSROC's commitment to changing the landscape of public lighting

- More LED street lights planned for Western Sydney.
- A WSROC energy efficiency program to investigate building upgrades and renewable energy for council assets.
- Continued advocacy for greater transparency in street lighting legislation.

High maintenance charges can make or break a business case and possibly deter councils from implementing projects such as Light Years Ahead. In NSW, LED maintenance charges are disproportionately high, given that LED lights require less maintenance than mercury vapour lights. Reducing maintenance charges for new energy efficient lights like LEDs is a key example of desperately-needed change.

We also need to ensure more effective and binding service-level agreements, as well as greater pricing transparency between councils and energy providers.



Information booth in Parramatta, Australia Day 2016. Photo: Jay La

If we are to make a long-term and lasting difference in public lighting, governments, energy providers and councils need to work together.

6. Message from the President

*“Cutting emissions
is everyone’s
responsibility;
the community,
businesses and all levels
of government.”*

Tony Hadchiti

The Light Years Ahead project received overwhelming support from our Western Sydney community and is an inspiration to other councils wishing to undertake similar projects.



Tony Hadchiti WSROC President. Photo: Serge Golikov

Our community is concerned about energy emissions and feel that governments can do more. Our residents are demanding bipartisan discussions and leadership in the area of energy and renewables. Residents also expressed disappointment in relation to barriers in investments in new technologies (such as household electricity storage systems) and the removal of rebates for solar.

Cutting emissions is everyone's responsibility; the community, businesses and all levels of government. I urge local councils to lead by example and appoint energy efficiency champions to ensure projects like Light Years Ahead continue across all regions and pave the way for further efficiencies.

I am proud that WSROC has led the way with the Light Years Ahead project, but this is just the first step towards something even bigger. WSROC and its councils will carry on spreading energy-saving messages to Western Sydney residents. We will continue to talk to all levels of government, as well as energy providers, to advocate for a more sustainable public lighting landscape.

We will not stop searching for other sustainability options and we will continue with our mission to create an energy efficient Western Sydney – and possibly Australia.

Councillor Tony Hadchiti

WSROC President

Contact us

To find out more about
the Western Sydney Light
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