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1. EXECUTIVE SUMMARY

The main focus of the Energy Efficient Street Lights and Main Corporate Centre Bairnsdale CEEP Project 2204 was on upgrading the street lights on Council managed roads within the municipality.

In Victoria, Councils do not own the street lights. The lights, along with poles and wires, are owned and operated by distribution companies (Ausnet Services in the case of East Gippsland Shire Council). Councils pay for power, network costs and the operation, maintenance, repair/replacement (OMR) of the street lights. This is a major operational cost to Councils.

A large proportion of the street lights on Council's roads were 80 Watt mercury vapour lights (80W MV). The original plan was to replace approximately 2900 of these lights with low energy luminaires. At the time of the application the only alternatives were either compact fluorescent lights (CFL) or T5 fluorescent tubes (Twin T5's).

The original project budget was as follows;

<table>
<thead>
<tr>
<th>FUNDING SOURCE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEEP</td>
<td>$644,189</td>
</tr>
<tr>
<td>EGSC</td>
<td>$321,973</td>
</tr>
<tr>
<td>SUB TOTAL</td>
<td>$966,162</td>
</tr>
</tbody>
</table>

During the course of the project Ausnet Services approved the use of an LED streetlight. After careful analysis of the benefits East Gippsland Shire Council made the decision to employ this improved technology. However, this was not a straightforward process.

The analysis showed that, whilst LEDs offered only a slight improvement in energy efficiency, their major benefit compared to the CFLs and T5s was their lower maintenance costs. Savings projections were very sensitive to the OMR charged by the distribution network.

Initially the OMR charge was unknown and therefore a significant risk.

The OMR was later proposed at a level that made the change to LEDs marginal. Shortly afterwards the proposed OMR was reduced and it was at this point that the savings projections looked sufficient to justify the extra Council investment.

Council increased its contribution by $392,432 to enable the use of LEDs and went ahead with implementation.

The total actual expenditure for the CEEP 2204 project was $1,358,596.

The Australian Government contribution was $644,189.

The changeover of street lights is the single biggest activity East Gippsland Shire Council has done to reduce its energy use, energy costs and carbon emissions. The results of the changeover have been outstanding with huge financial savings to Council.

The calculated annual savings to Council is $248,917. The emissions reductions are just over 1000 Tonnes of CO₂ e per annum.

The actual impact of the project is best illustrated by graphing costs over time to clearly see the stages of the project (See Over)
The upgrades to the Corporate Centre, Bairnsdale lighting and air conditioning package units were a relatively small component of the project. Energy savings fell marginally short of the original targets but financial savings were still significant.

The project was widely promoted under the Bright Futures communication package. East Gippsland Shire Council was successful with three CEEP applications and the communications activities of each project were bundled together under the banner of Bright Futures East Gippsland. A broad ranging campaign has been implemented through many media. These activities help ensure the project meets the wider aims of the Community Energy Efficiency Program and acknowledge the major contribution of the Australian Government. Communications activities will continue to the end of June 2016.

East Gippsland Shire Council was able to deliver the Energy Efficient Street Lights and Main Corporate Centre Bairnsdale CEEP project 2204 using existing Council procedures and processes in a cost effective manner.

The project has set East Gippsland Shire Council as an example in leading in energy efficiency. It has demonstrated smart energy use and the communications activities encourage the better use of energy and promote energy efficiency within the community.

Note: The views expressed herein are not necessarily the views of the Commonwealth of Australia, and the Commonwealth does not accept responsibility for any information or advice contained herein.
2. ENERGY EFFICIENCY OBJECTIVES

The key objectives of the project were to:

- Reduce energy consumption, operating costs and carbon emissions of East Gippsland Shire Council’s P class street lighting across the municipality
- Reduce costs, energy use and emissions of main office lighting and heating, ventilation and air conditioning (HVAC)

The broader outcomes anticipated were improved street lighting performance.

There were specific CEEP program objectives and associated communication objectives.

2.1 CEEP program objectives

The overall objectives of the program are to improve the energy efficiency of non-residential council and community buildings, facilities and lighting; particularly where this would benefit low socio-economic and other disadvantaged communities or support energy efficiency in regional and rural councils.

The program aimed to:

- Demonstrate and encourage smarter energy use
- Encourage better use of energy and energy savings
- Build the capacity of the energy services sector and support competitive Australian manufacturers.

The program will also contribute to the national effort to reduce greenhouse gas emissions.

2.2 Communications objectives

The following communication objectives were set:

- To launch the Brighter Futures East Gippsland energy efficiency program
- To communicate the benefits of the energy efficiency project at the community facilities
- To promote the benefits of energy efficiency more widely – i.e. across the Community
- To promote widespread adoption of energy efficiency
- To share lessons from this project
- To demonstrate leadership around energy efficiency in the community (“leading by example”)
- To ensure that staff and the community are well informed of the purpose and the scope of this project
- To educate staff, user groups and the wider community including other councils and relevant local suppliers of the benefits of improved energy management practices
2.3 Alignment of project and program objectives

The project’s energy efficiency and communication objectives closely aligned with the CEEP program objectives so that successful project delivery would ensure progress toward the outcomes and objectives of the overall program.

The project demonstrates and encourages smarter energy use with the LED street lights, LED office lighting and modern air conditioning systems.

The project encourages better use of energy and energy savings by clearly linking better energy use with financial savings and reductions in emissions.

The specific works at the Bairnsdale Corporate Centre have helped build the capacity of local subcontractors in the area of low energy lighting.
3. PROJECT ENERGY EFFICIENCY ACTIVITIES

A large proportion of East Gippsland Shire Council’s streetlights have been upgraded from 80 W mercury vapour luminaires to 18 W LED luminaires (2629 in total)

Office lighting at the Corporate Centre, Bairnsdale was retrofitted with LED lights.

The main air conditioning package unit at the Corporate Centre, Bairnsdale was replaced with a modern, efficient package unit

3.1 Energy efficiency technologies

3.1.1 LED Street Lights

The bulk of the street lighting on council managed roads in Victoria consisted of 80-watt mercury vapour (80W MV) luminaires. Simply put this is an old technology. The Community Energy Efficiency Program (CEEP) has enabled most Councils in Victoria to replace these older technology lights with low energy alternatives.

Regulatory and ownership issues relating to street lights mean that new street lights must be approved by the distribution company that owns and operates the system. Approved low energy light options at the start of the project included the 32W compact fluorescent light (CFL) and a 28W Twin T5 fluorescent light only.

Midway through the project an 18W LED light was approved by Ausnet Services. This light offered the best energy saving. It should be noted that the energy savings for the LED are only marginally better than those of the CFL and the Twin T5’s.

Image showing the new LED Luminaire used the project

The main advantage of the LED over the other two low energy light types was the life span of the LED. This greater lifespan means less requirement for maintenance and replacement visits resulting in lower costs.
In addition to low energy and maintenance costs, other significant advantages of the LED are:

- Greater uniformity of light across and along the street
- Better colour rendering and visibility
- Less depreciation of the light output over time
- Lower glare
- Less light pollution (Spill light)

3.1.2 LED Office lighting retrofit

LED lighting technology was used in the retrofit of the Corporate Centre lighting systems because of its high energy efficiency, performance standards and low maintenance requirements.
The majority of the original office lighting consisted of twin T8 fluorescent tubes in recessed fittings. The fittings were non-standard as they acted as ducts for the air conditioning systems as well as light troffers.

Photo to show electrical contractor working on the retrofit of a twin T8 fitting-Note air con ducts in light fitting

Retrofit tubes were the best option. The old tubes were removed along with their electronic ballast. A single 1200mm T8 tube would use approximately 38 watts with its replacement LED using between 18 and 22 watts.

A small number of 600mm T8 tubes were retrofitted.

A small number of compact fluorescent oyster lights in rest rooms and corridors were replaced with equivalent LED oyster lights. Where appropriate these were fitted with occupancy sensors to further increase energy savings.
3.1.3 Energy Efficient Air Conditioning Package Unit

The main air conditioning package unit (heating and cooling) was replaced with a modern, efficient unit of equivalent capacity. The important features of the new unit where:

- High coefficient of performance (CoP)- 3.5 or greater
- Economy cycle- automatic motorised dampers controlling fresh, return and spill air in order to maximise free cooling when ambient temperatures allow
- Variable capacity compressors to better match thermal load and stop short cycling of the compressor.
- Variable speed fans to improve efficiency and match air flow to requirements.
- Reduced maintenance through elimination of v-belts.
- The installed unit had a manufacturer’s claim of a 44% increase in efficiency compared to a standard unit.

Photo to show new package unit being craned into place alongside the new spill air system

3.2 Implementation

A very important first step in the implementation of the project was the completion and approval of the project plan to the satisfaction of the funding body.

For the purposes of implementation this project was split into the major street lighting component and the smaller Corporate Centre lighting and HVAC upgrades.

The street lighting was implemented as an operational project because Council would not, at the end of the project, own the asset.

Corporate Centre lighting and HVAC upgrades were implemented as a capital project.
The main practical differences between operational projects and capital projects relates to the budgeting process, project supervision and the approval processes for expenditure. Council’s Procurement Policy is exactly the same for both operational and capital expenditure.

Implementation was undertaken making extensive use of the project plan with specific reference to the project milestone requirements. It would be difficult to overstate the value of the final approved project plan and the work that went into its development. Some delays were encountered during the project but the project plan remained the basis for implementation.

The project implementation schedule and budget combined with the timeframe and phasing sections of the project plan were overlain with EGSC’s procurement policy to timetable development of specifications and procurement processes. On ground implementation followed the procurement.

In the case of the Corporate Centre lighting and HVAC upgrades on-ground implementation was supervised by the project manager and the project supervisor with pre work site meetings and consultation with Corporate Centre staff, management and contractors.

The bulk changeover of streetlights was supervised by the project manager.

3.2.1 Corporate Centre lighting and HVAC upgrades

Air Conditioning Package Unit

Specifications of the replacement of the existing air conditioning package unit were drawn up based of an energy audit consultant report.

Request for quotations went out in April 2014 and the successful supplier was awarded the works shortly thereafter. Early October was chosen for the switch over so Spring time temperatures would not be so extreme as to seriously affect the ability of the office to continue to operate

Building management was consulted and all staff informed of the proposed works prior to starting.

Contractors were able to effect the changeover with very little impact on the building or its occupants and all works were complete by 21 October 2014.

A handover to the building maintenance officers was completed in November 2014 but not before many questions and complaints around appropriate temperatures and air movement speed had been fielded.

LED Office Lighting Retrofit

Specifications for the retrofit of the office lighting were drawn up based of an energy audit consultant report.

Request for quotations went out in September 2014 and, after consultation with building managers and staff, the electrical contractors started work in early November 2014. Works were completed quickly and with very little disturbance to staff. A certificate of electrical safety was received on 14 November 2014

Minimal follow up work was required as there were no complaints and no failures of fittings. As installed drawing were provided to maintenance staff as a handover so that subsequent warranty issues might be dealt with appropriately.

3.2.2 Street Light Replacement

In House Project Management
East Gippsland Shire Council had used the services of a prominent consultancy in the area of street lights in the development of the funding application. However, unlike many other Councils, EGSC made the decision to develop project plans and project manage the implementation in house.

**Network Modification Agreement**

Once the project plan was complete and approved the first major milestone to meet was to reach an agreement with Ausnet Services relating to the bulk change over to low energy lights. A Network Modification Agreement was negotiated and signed in May 2014.

A significant part of the agreement related to the type of lights to be used in the changeover. A limited number of light types were approved by the Distribution Network (Ausnet Services). The wording of agreement gave Council the flexibility of using any of the approved low energy light types rather than being tied to a specific make and model.

**Street Light Installation Tender**

A tender specification for the installation of lights was developed with the collaboration of other Gippsland Councils. Again, the specification allowed for the install of any of the approved low energy light types. An important pre-requisite of tenderers was that they were approved for the works by Ausnet Services (The owners of the network upon which the work was to be undertaken).

The tender was advertised on 16 Sept 2014 and closed 8 Oct 2014.

**Supply of Low Energy Street Lights and the Question of Light Type**

A large number of other Victorian Councils undertook similar street light projects and as a result the Municipal Association of Victoria (MAV) undertook a tender process for the supply of energy efficient street light hardware. This enabled East Gippsland Shire Council to choose lighting suppliers and products from the MAV Vendor Panel without needing to go to a further tender. The lights were able to be purchased through the existing MAV contract. This was a huge time saver for Councils and given the late approval of LEDs a significant factor in facilitating the use of this new technology.

The choice of light type for the street lighting project is probably the most significant part of the project’s delivery and justifies going into in detail.

As previously discussed, there were a limited number of approved low energy streetlights available for a bulk changeover project. The original grant application was based on the use of either a compact fluorescent light (CFL) or a twin T5 fluorescent tube type light (T5).

As of mid-April 2014 the new Street LED was approved by Ausnet Services and it wasn’t until later in the year that the operation, maintenance and repair (OMR) charge was announced followed by a further reduction in OMR.

The table below shows the 3 street light options compared to the existing 80W MV lamps

<table>
<thead>
<tr>
<th>Light Type</th>
<th>Actual Power Use (Watts)</th>
<th>OMR Charge Sper year</th>
<th>Purchase price per lamp</th>
<th>Total savings per year compared to 80W MV*</th>
<th>Total purchase price of 2900 lamps</th>
</tr>
</thead>
<tbody>
<tr>
<td>80W Mercury Vapour</td>
<td>95.8</td>
<td>$52.16</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>32W Compact Florescent</td>
<td>36.6</td>
<td>$38.11</td>
<td>Commercial in confidence</td>
<td>$186,132</td>
<td>Commercial in confidence</td>
</tr>
<tr>
<td>Light Type</td>
<td>Council Contribution</td>
<td>Annual Savings</td>
<td>Simple Payback</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>----------------------</td>
<td>----------------</td>
<td>----------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T5</td>
<td>$354,557</td>
<td>$186,474</td>
<td>1.90 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LED</td>
<td>$354,557 plus $407,395</td>
<td>$269,901</td>
<td>2.82 years</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Power and OMR savings based on changing 2900 light fittings*

In general LEDs use less power than CFL or T5s, last longer and need less maintenance but cost more to purchase. The magnitude of these differences was very important. The improved energy efficiency of the LED over the T5 is not great. The cost of maintenance of the StreetLED is about half that of the T5 but its purchase price is significantly higher.

At the time of the initial approval of the new LED street light the OMR cost was unknown and analysis revealed that the finances of the extra investment in LEDs was very sensitive to this cost. As such the risk of committing to LEDs was considered too great.

Ausnet Service (SP Ausnet at the time) later announced the OMR for LEDs at $30.90 per lamp per year. At this rate the savings compared to T5s were considered marginal. In late June Ausnet Services announced a reduction in OMR to $21.63 per lamp per year which meant increased savings.

The tender for the installation closed on 8 October 2014 and revealed potential for savings compared with the original budget.

EGSC’s Executive Group considered the question of light type on three separate occasions. The first two instances the T5 was the preferred option due to its price and performance but, in the end, as a result of the lower OMR and savings from the installation tender, Executive Group favoured the use of the LEDs. There was a proposal to finance the extra Council contribution through operational savings in other areas of council.

The payback period for the street light project is very good. Whilst the savings provided by LEDs is greater than that for TSs the payback period is extended because of the extra contribution required of Council.

The decision to award the contract for supply and provide the extra Council contribution to the project was the subject of a Council report. Council were prompt and unanimous in their approval of the use of LED lights and the extra expenditure incurred.

The process to change from the original project plan using Twin T5’s or CFL’s to LED’s took time and required that Milestone 6 of the project be delayed from Jan 2015 to May 2015. No other Milestones were impacted.

**Bulk Change Over**

The contract for the changeover was undertaken by a single contractor accredited for the public lighting works and the project management. This was significant as the main contractor, through the use of their propriety software system, was able to report direct back to Ausnet Services the numbers and locations of lights replaced.
The contractor’s software package allowed the Council Project Manager to follow the progress of the works in real time simply by logging onto the software portal at any time.

This direct reporting by the main contractor negated the need for a third party consultant or project manager relaying data from the contractor or council to Ausnet. This was an area of savings that was part of the reason EGSC were able to choose LED lights over T5s or CFLs.

The changeover was planned as a 2 stage process. Stage 1 starting in late April 2015 and consisting 1450 lights and Stage 2 consisting of 1450 lights and starting in July 2015 and finishing no later than December 2015.

Stage 1 went very well with the target numbers being met (1451 lights installed) in time for milestone reporting. However, a relatively large proportion of lights listed by Ausnet Services were found to be unsuitable for change over because they were either a decorative light type (13%) or not a street light (3% e.g. Jetty lights on jetties managed by another agency).

A further 1071 standard 80W MV lights were replaced in Stage 2 to complete all suitable standard lights. This left the project short of its minimum target of 2600 lights. In order to achieve the target 107 decorative 80W MV lights where replaced with colour matched, approved decorative LED lights.

The decorative LED’s had a delivery time from ordering of 6 weeks so in effect it meant a third stage to the process. In the event this worked well because there were a number of lights identified in Stages 1 and 2 with technical faults, traffic management requirements or access issues. The main contractor came back to install the decorative lights and attend to those other outstanding issues at the same time.

All complaints relating to the street light changeover were directed to the Project Manager. The main contractor was able to deal with these very promptly. During the project only two complaints were received.

On completion of the changeover works, final data was provided to Ausnet Services and the EGSC’s GIS officer, who was able to create a street light layer to help with future management of street light issues.

3.3 Site and technology implementation Issues

3.3.1 Package Units Versus Whole HVAC systems

The package unit is one component of a buildings HVAC system. The air handing system (including ducts, baffles and registers), and the control system form equally important parts. Major improvements with the package units could not fix problems with the other components of the system and seemed to exacerbate them.

Issues existed with the layout of the ducting within the Corporate Centre stemming from remodelling of the interior layout in the past. This, in addition to a very basic thermostatic control, meant that significant temperature variations occurred across the building and over the period of a day (spatial and temporal).

On completion of the install of the new package unit there was an increase in the number of complaints about temperature and comfort. Some staff made complaints to the OH&S officer on the basis that the new system was affecting their health as well as comfort.

Much work was done to adjust air speeds and measure temperatures. Whilst temperatures were found to fall within acceptable levels there was a general perception of the office being cooler than before.

This situation created some negative behaviours. Many staff members started to use small electric fan heater units at their desks. These additional heaters did not complement the main system and
might be seen as working against the overall comfort of the building negating the benefits of the new package unit.

A lesson from this might be that a whole of system upgrade should be considered at the planning stage of an efficiency project or that a significant contingency needs to be included in any plan to upgrade part of a heating system.

3.3.2 Swift development of LED lighting Technology

The rapid development of commercial and domestic LED lighting equipment over the project period resulted in some of the specifications presented in consultant reports being almost out of date. This was not through any omission or mistake by the consultant but to do with the delay between energy audits and implementation.

3.3.3 Protracted Period for Approval of LED Street Lighting Technology

LED street lighting technology has been available for several years. In Victoria the distribution networks have been slow to approve new lights. Distribution network approval is a reasonable and absolute requirement as these businesses own and operate the systems.

During the application and project planning period there were no LED lights approved in the Ausnet Services area. Plans and budgets were made for the other low energy light types.

In April 2014 Ausnet approved the StreetLED 18W street light. Section 3.2.2 describes the process that EGSC went through to change plans and budgets to allow the use of this improved technology.
4. PROJECT DEMONSTRATION AND COMMUNICATIONS ACTIVITIES

The East Gippsland Shire Council’s Bright Futures communications package comprised activities aimed at promoting the objectives of the CEEP program. EGSC was successful with three CEEP applications (CEEP 2204, CEEP 2205 and CEEP 2243) and the communications activities treated the three projects as a whole package with the costs of the activities being attributed across the three projects. The Bright Futures communications activities will continue to June.

The communication activities were phased according to the following project timeframes:

- Pre-Launch
- Bright Futures Launch
- During Installation
- Post Installation / Ongoing

4.1 Pre-Launch

Funding Announcement (August 2013)

A press release appeared in the local newspaper (The News, edition 28/08/2013 on page 7) and on the shire website announcing the successful attainment of CEEP funding.

See Attachment 1 – Funding announcement media release.

Communication Plan Development

A communication plan was developed as part of the overall project plan and submitted with the second milestone. The communications plan identified stakeholders and the methods by which they would be reached

Branding Development

Prior to the launch, branding was developed around the Bright Futures concept. It resulted in the following logos and branding designs:
4.2 Bright Futures Launch Event (activity 3.1.3.1)

The Bright Futures project was launched at the Shire site of the East Gippsland Field Days at 1.30pm on Friday 9 May 2014, and was open to the public.

*Launch promotion included:*

- Thirty-five formal invitations sent, including to the following dignitaries: The Hon Ian Macfarlane MP (Minister for Industry), Mr Mal Thorpe (Manager Community Energy Efficiency Program), Mr Darren Chester MP (Federal Member for Gippsland), Mr Tim Bull MP (Member for Gippsland East), and local Councillors and Directors of East Gippsland Shire Council, as well as members from the Environmental Sustainability Advisory Board.

- A media release appeared in the local newspaper before the event (April 2014) and on the shire website, inviting the public along with the promise of “giveaways, displays and a renewable energy trailer containing information about sustainable living and how to reduce your household electricity.” See Attachment 2 – Invitation to launch media release.

- Sustainability Gippsland website event promotion, see Bright Futures launch details on the Sustainability Gippsland website under events section see http://www.sustainabilitygippsland.com/event/launch-of-bright-futures-in-east-gippsland

The launch was announced over the loud speaker at the East Gippsland Field Days informing visitors on the launch details.
Left to right: Mr Michael Ozer (Chair of the Environmental Sustainability Advisory Board); Deputy Mayor Cr Peter Neal; Kate Nelson (Director Planning and Community) and Mr Darren Chester MP (Federal Member for Gippsland).

The Deputy Mayor Cr Peter Neal and Michael Ozer gave speeches and the key points included:

- Bright Futures East Gippsland is an energy efficiency program sponsored by the federal government. It encapsulates more than just energy efficiency projects for Shire assets. A key part of the program is to promote sustainability within the community and educate residents on how they too, can reduce energy use in their homes.

- Council was successful with three funding applications under the Australian Government’s Community Energy Efficiency Program, and will receive $1.7 million in total to undertake these projects.

- While the funding is being spent on Council infrastructure, this still benefits our ratepayers, as it will reduce our energy costs. It also has an environmental benefit, as we will be reducing our carbon emissions. Importantly it provides an example to households and businesses in the region to look at their energy use.

- We have looked at which parts of the council business use the most energy and have prioritised these for action. The biggest single thing we can do to reduce our energy use is change the old 80 watt street lights for energy efficient light types. The display on the Shire stand today shows the different types of streetlights that are available.

- The next biggest users of power for the Shire are the recreation centres at Bairnsdale and Lakes Entrance. The heating of swimming pools takes a lot of energy but gives us great opportunities to make savings.

- Looking forward to seeing these projects completed over the next 2 years, and to seeing how the community can be inspired to look at the savings they can make in their own homes.
• Encourage members of the public to talk to the shire sustainability staff about the project and to enter the quiz.

Energy efficiency quiz competition
As part of the launch there was a community energy efficiency competition. Attendees were asked to complete a questionnaire, with the chance to win one of three household energy meters.

The survey asked questions related to the street light display at the Field Days, and related this project back to household energy use, by asking the following:

Tick the top 3 things you could do in your house to save energy and cut your energy bills:
- Install ceiling insulation (and consider wall and underfloor insulation)
- Keep warm air in the house in winter and cool air in during summer
- Set the thermostat a little lower in winter and a little higher in summer
- Make sure your fridge door seals are tight and turn off any extra fridges if not needed
- Only heat and light the rooms you use
- Think about using energy efficient lights such as LED’s and change away from halogen down-lights
- Switch appliances off at the wall when not in use
- Use a cold wash cycle to wash clothes and dry on the line
- Have free standby controllers fitted

Overall there were only 13 entries over the two days, and the successful candidates were sent letters and their household energy meters on 16 May 2014.

Giveaways & displays
The following Bright Futures giveaways, items and displays were featured at the launch and other events throughout the project (as detailed below):

Temporary tattoos x 500

Summary Flyer x 500
See Attachment 3 – Summary Flyer.

Key rings / torches x 300
Street light display and retractable banners (x2)

**Post launch media**

An article featured in the local newspapers (Bairnsdale Advertiser, Snowy River Mail and Lakes Post on 12 May 2015 page 3) and on the East Gippsland Shire Council website after the event.

See Attachment 4 – Post launch media coverage.

### 4.3 During Installation

**Renewable Energy Demonstration Trailer (REDT)**

Renewable Energy Demonstration Trailer (REDT) appeared at the following events and engaged a number of community members about energy efficiency at home:

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
<th>No. people engaged</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Gippsland Field Days</td>
<td>9 &amp; 10 May 2014 (launch)</td>
<td>Close to 70 people</td>
</tr>
<tr>
<td>Raymond Island Sustainability Festival</td>
<td>20 September 2014</td>
<td>25 people</td>
</tr>
<tr>
<td>Seniors Week, Bairnsdale Sporting &amp; Convention Centre</td>
<td>6 to 10 October 2014</td>
<td>18</td>
</tr>
<tr>
<td>Paynesville Library Mini Expo</td>
<td>Sunday 12 October 2014</td>
<td>23</td>
</tr>
<tr>
<td>Event</td>
<td>Date</td>
<td>Participants</td>
</tr>
<tr>
<td>------------------------------</td>
<td>---------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Orbost Agricultural Show</td>
<td>9 March 2015</td>
<td>40</td>
</tr>
<tr>
<td>Orbost Secondary College</td>
<td>Tues 10 March 2015 (am)</td>
<td>60</td>
</tr>
<tr>
<td>Marlo Primary School</td>
<td>Tues 10 March 2015 (pm)</td>
<td>22</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>258</strong></td>
</tr>
</tbody>
</table>

The REDT displayed the Bright Futures banner and promotional products (temporary tattoos, summary brochure & keyrings) at each of these events.

At the Orbost Agricultural Show there was an LED sample street light and people were handed out the Bright Futures postcards, with the energy helpline details.


Marlo Primary School students had an afternoon session with Ian Southall on Tuesday 10 March 2015.
Students of Marlo Primary School showing Ian Southall their model of an energy efficient building with renewable energy.

Ian Southall consulting the community about energy efficiency options at the Orbost Agricultural Show (9 March 2015).

Postcards for Energy Helpline

There were 600 postcards printed on 100% recycled content card, using natural dyes and powered by Solar PV. The postcards were printed in 3 different colours (200 of each colour) and were distributed widely from 15 February 2015 onwards at selected events and in all library and service centre foyers, namely:

- Bairnsdale Corporate Centre: 273 Main Street
- Bairnsdale library: 22 Service Street
- Lakes Entrance: 18 Mechanics Street
- Omeo: 179 Day Avenue
- Orbost: 1 Ruskin Street
- Paynesville: 55 The Esplanade
- Mallacoota: 70 Maurice Avenue
High electricity bills?  
Need independent advice?

Residents and small business owners in East Gippsland Shire can call 9385 8555 for a free 20 minute consultation on energy concerns, building plans or ways to be energy efficient. Make sure you have an electricity bill handy!

For more information visit positivecharge.com.au/eastgippsland
An initiative of East Gippsland Shire Council's Bright Futures project.

A bright future for East Gippsland

The Bright Futures project is aiming to save around $500,000 yearly through energy efficiency.
This project is jointly funded by the Australian Government, and East Gippsland Shire Council.
For more information visit eastgippsland.vic.gov.au/brightfutures or call 5153 9500.

Disclaimer: "The views expressed herein are not necessarily the views of the Commonwealth of Australia, and the Commonwealth does not accept responsibility for any information or advice contained herein."

Postcards were distributed as follows:

- Over 80 handed out to patrons of the Orbost Agricultural Show on 9 March 2015
- Fifty given to school students at Marlo and Orbost Secondary college on 10 March 2015
- Fifty distributed at East Gippsland Field Days (Friday 1 and Saturday 2 May 2015)
- Placed on seats at the launch of the new East Gippsland Environmental Sustainability Strategy 2014-17 event – that coincided with earth hour and an environmental short film festival (there were about 40 people in attendance) on Saturday 28 March 2015
- Thirty handed out to school kids at Mallacoota Kitchen to Compost Launch (2015)
- Handed out to cafes in Bairnsdale to display and giveaway
Postcards being handed out at the Orbost Agricultural Show, with the REDT in the background on 9 March 2015.

Websites

Bright Futures information has appeared on the following three websites:

East Gippsland Shire Councils website - for the life of the project, the following pages have been updated as required:

Specific to the Lakes Entrance Aquadome the following site was created for the public to access updates, from 26 August 2013 onwards:
http://www.eastgippsland.vic.gov.au/Plans_and_Projects/Bright_Futures_energy_efficiency_Project/Lakes_Entrance_Aquadome

The general Bright Futures webpage was created on 26/08/2013:

The Ask the energy experts helpline landing pages went live from 25/11/14
http://www.eastgippsland.vic.gov.au/Plans_and_Projects/Bright_Futures_energy_efficiency_Project/Positive_Charge_energy_helpline

The link to the landing page of the Energy Helpline has appeared on the East Gippsland Shire Councils main webpage since January 2015. See below.
The energy helpline has appeared on the East Gippsland Shire Councils front page since January 2015.

Sustainability Gippsland created a Bright Futures page. It was used to promote:

Bright Futures launch (April 2014) [http://www.sustainabilitygippsland.com/event/launch-of-bright-futures-in-east-gippsland](http://www.sustainabilitygippsland.com/event/launch-of-bright-futures-in-east-gippsland) and

“Easy Ways to Save on your Energy Bills” workshops in East Gippsland under the events section [http://www.sustainabilitygippsland.com/group/bright-futures-in-east-gippsland](http://www.sustainabilitygippsland.com/group/bright-futures-in-east-gippsland). The Energy Info Hub travelled to East Gippsland to show people easy ways to save on their energy bills. The interactive sessions were free on November 10, 11 & 12 in Bairnsdale, Orbost & Paynesville.


**Presentations & Events**

Events and Presentations comprised;

1. Presentation - Bairnsdale Chamber of Commerce and Industry. 6 Aug 2014 Bairnsdale
2. Presentation - Bairnsdale Regional Health Service (BRHS) Environmental Sustainability Committee. 15 Oct 2014 Bairnsdale.
3. Event - East Gippsland Environment Strategy 2014-17’ launch & Earth Hour Short-Film Festival in the Bairnsdale Library forecourt
4. Presentation - Mitchell River Rotary meeting on Monday 4 May 2015 - Bairnsdale
5. Presentation - ‘Community Conversations on Climate Change’ presentation Oct 14 2015-Warragul
6. Presentation - ‘Community Conversations on Climate Change’ presentation Oct 25 2015-Stratford
Bairnsdale Chamber of Commerce and Industry

Bairnsdale Chamber of Commerce and Industry presentation was given by the Project Manager Sustainability, Lester Wharfe and the Sustainability Officer, Rebecca Lamble on 6 August 2014. Outline of the presentation:

- Introduction
- The Process of Energy Efficiency in your business (Lester)
- Example of the process - Community Energy Efficiency Program (CEEP) funding for the Lakes Entrance Aquadome (Lester)
- Opportunities (Beck)
- Sustainability Gippsland – free business listing
- Funding Opportunities
- Sustainability Victoria opportunities
- Expression of interest to participate in energy efficiency project?

Bairnsdale Regional Health Service (BRHS) Environmental Sustainability Committee

Rebecca Lamble presented as guest speaker at the Bairnsdale Regional Health Service (BRHS) Environmental Sustainability Committee meeting on 15 October 2015 resulting from the media releases in the local newspaper. As a result the Sustainability Officer has been asked to be a permanent member on the hospitals environment committee.

East Gippsland Environment Strategy 2014-17’ launch & Earth Hour Short-Film Festival

The ‘East Gippsland Environment Strategy 2014-17’ launch & Earth Hour Short-Film Festival in the Bairnsdale Library forecourt. Eric Sjerp (Environmental Sustainability Advisory Board), Mayor Cr Peter Neal (Mayor) and Mr Gary Gaffney (CEO) all spoke about what has been achieved and the current focus on Bright Futures.
Launch of the new *East Gippsland Environmental Sustainability Strategy 2014-17* events, that coincided with earth hour and an environmental short film festival (there were approximately 40 people in attendance) on Saturday 28 March 2015. Information about Bright Futures was presented by the Mayor and CEO.

Left to right: Sustainability Officer, Eric Sjerp (technical expert), Rob Dimsey (DELWP), Project Manager Sustainability, Cr Peter Neal (Mayor), Rob Wilersdorf (EGCMA), Russ Peel (technical expert) and Sustainability & Capacity Building Coordinator.
Mitchell River Rotary meeting
Rebecca Lamble presented as guest speaker at the Mitchell River Rotary meeting on Monday 4 May 2015 at 7pm. Approximately 20 community members were in attendance. A powerpoint presentation was delivered about environmental outcomes from the previous strategy, and the current and future focus on Bright Futures.

‘Community Conversations on Climate Change’
Sustainability Victoria hosted a series of ‘Community Conversations on Climate Change’ across regional Victoria, and East Gippsland Shire Officers presented information about Bright Futures including the video at the two Gippsland sessions:

- Wednesday October 14 2015 at the Federation Training Conference Tea Rooms at Warragul Train Station, WARRAGUL
- Monday 26th of October 2015 at Segue Community Hub & Art’s Café 66 Tyers Street, STRATFORD

The purpose of these events was to bring together representatives from across the community sector (community groups, not-for-profits, schools, local government) to connect with each other, share lessons and exchange knowledge about leading climate change projects in the region and from across the state, and to inform Sustainability Victoria’s future program design and community engagement offer.

As a result the Bright Futures video is now located in Climate Change Conversations website http://participate.sustainability.vic.gov.au/climatechangeconversations/documents

Meet A Sustainability Expert
Meet A Sustainability Expert event at the Bairnsdale Library was held on 20 November 2015 to launch the new Smart Living booklets and engage people in sustainability activities.

Free Lunchtime Screenings (in Bairnsdale library forecourt)
Community lunchtime screenings were organised during spring 2014, for the public to bring their lunch and watch the following environmental short films:
Bring your lunch, sit in the new library plaza and enjoy the free screenings.

The videos will cover themes including waste, energy efficiency, bottled water, and gardening (composting and worm farms).

**Wednesday 3 September 12.30pm**
Draught Proofing (3 mins)
Business Energy Advice (10 mins)

**Wednesday 1 October 12.30pm**
Waste Not (26 mins)

**Wednesday 5 November 12.30pm**
It Doesn't Make Sense to Buy Bottled Water (1 min)
The Story of Bottled Water (21 mins)

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**Community Connect**

The following feature appeared on page 5 of the Community Connect Summer edition. It can also be found on the following website link:

Video of Bright Futures summary
The video of before and after the installation of works can be viewed here: http://www.eastgippsland.vic.gov.au/About_Us/Our_Environment/Bright_Futures_East_Gippsland

4.4 Post Installation / Ongoing

Smart Living booklet
The design of the 70 page Smart Living booklet was funded as part of this project. It was launched in September/October 2015 and made available on the Council website.
Energy Breakthrough

East Gippsland Shire Council supported four local schools to attend the Energy Breakthrough event in Maryborough in late 2015. Students attending learnt all about the science of energy. The Bright Futures logo was displayed on T shirts and the human powered vehicles.

Website

The Bright Futures landing page will continue on the East Gippsland Shire Council website until end of June 2016
5. **OUTCOMES AND BENEFITS OF THE PROJECT**

5.1 **Meeting Objectives**

The Energy Efficient Street Lights and Main Corporate Centre CEEP project has met its main objective of reducing energy consumption, operating costs and carbon emissions of East Gippsland Shire Council’s P class street lights. This has been achieved in a low socio-economic, regional community, a key target area of Community Energy Efficiency Program.

Upgrades to lighting and air conditioning at Corporate Centre, Bairnsdale have fallen just under the energy efficiency targets but have certainly reduced costs and improved the performance of the building.

The street light changeover has been very prominent in East Gippsland as is has occurred across every township in the municipality. It has been a very public demonstration of smarter energy use.

The Bright Futures communications activities promoted the streetlight changeover and the works at the Corporate Centre. These activities provided the wider public with the links to encourage the uptake of better energy use and savings.

5.2 **Energy Efficiency Outcomes**

The street light changeover has met and slightly exceeded its original energy efficiency target. Fewer lights were changed over than originally planned (2629 rather than 2900) but EGSC was able to use LED light rather than the older T5 or CFL alternatives.

On an individual light basis there is a 77% energy saving. Across the whole portfolio of unmetered public lighting the project achieved a 32% reduction in energy use. This equates to 843,268 kWh saving per year.

This is the biggest single energy use reduction project EGSC has ever undertaken and will provide ongoing emissions reduction in the region of 1002 tonnes CO₂ e per annum.

Energy figures are calculated as the lighting system is unmetered. The energy use reductions are clearly illustrated in billing data which shows the dramatic reductions in use after each stage of the project.

The energy upgrades to the main Corporate Centre fell slightly short of their energy efficiency targets and the building remains a high energy user. Lack of sub-metering data and the overall large energy usage of the site made identifying the actual impact of the two actions difficult. It is likely that the lighting upgrades achieved or exceeded their predicted impacts whilst the upgrade to the air conditioning package unit may not have provided the savings expected. The package unit is only a component of the whole HVAC system and the replacement of the package unit did not solve some of the existing issues with the rest of the system.

5.3 **Other Benefits**

5.3.1 **Substantial financial Savings**

The energy savings discussed above have led to huge financial savings in EGSC power bill for public lighting. The other major component of the cost of streetlights is the operation, maintenance repair and replacement cost (OMR) charged to EGSC by the distribution company, Ausnet Services.

The scale of savings can be seen in the table below comparing the calculated cost for the 2629 -80W MV light with the replacement LEDs.
<table>
<thead>
<tr>
<th></th>
<th>80W MV</th>
<th>LED</th>
<th>Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total power cost of lighting</td>
<td>$219,066</td>
<td>$50,413</td>
<td>$168,654</td>
</tr>
<tr>
<td>Total OMR cost of lighting</td>
<td>$137,129</td>
<td>$56,865</td>
<td>$80,263</td>
</tr>
<tr>
<td>Total power and OMR charge</td>
<td>$356,195</td>
<td>$107,278</td>
<td>$248,917</td>
</tr>
</tbody>
</table>

The simple payback of the project overall is just less than 5.5 years. Not including the Australian Government contribution, the simple payback to Council is less than three years.

5.3.2 Street Light Performance

In addition the energy efficiency and reduced maintenance cost, the LED street lights offer the following benefits compared to other street light types:

- Greater uniformity of light across and along the street
- Better colour rendering and visibility
- Less depreciation of the light output over time and
- Lower glare, and
- Less light pollution (Spill light)

From a streetscape viewpoint the new StreetLED lights offer a contemporary look not out of place in all but the most historic of streetscapes.

5.3.3 LED office light performance and longevity

The LED office lighting has a reduced maintenance requirement. Whilst this has yet to become evident in costs there is great confidence this will affect future maintenance and repair bills on site. The new LED lighting is covered by a 3 year return to site warranty so should they fail the repair is at no cost to EGSC.

The quality of lighting in the office has improved. There is an even colour temperature and less decline in performance over time.

5.3.4 Credibility in Energy Management

The implementation of the three CEEP projects in East Gippsland has increased the credibility of the Sustainability unit with Council and the Council within the wider community. Completed energy projects with tangible environmental and financial benefits help promote new projects and programs.

The sustainability unit has been able to put new utility efficiency and renewable energy projects into operational and capital budget programs. East Gippsland Shire Council is the lead partner in an application for a State funded renewable energy project for the region.
6. DEMONSTRATION AND COMMUNICATION OUTCOMES

6.1 Impact of Bright Futures energy efficiency activities on the community

It was not possible to truly evaluate the impact of Bright Futures on the community. The only real way to determine the community impact would be to look at the overall energy use across the entire shire from industry, business and the general community, before and after the project. Unfortunately, the various motivations for undertaking energy efficiency vary from cost saving, to an ethical desire to reduce carbon emissions. It would be difficult to extricate the messaging of Bright Futures from other media and opportunities from other state and federal programs.

Anecdotal evidence suggests the popularity of the Renewable Energy Demonstration Trailer has been a key way to promote and provide independent energy efficiency information, without fear of selling a product.

The Bright Futures program has elevated the sustainability role Council plays – and 7 phone calls were received about free light bulbs and other ways to access energy efficiency products, usually provided as part of the VEET scheme.

6.2 Reaching the community with communications activities

The following list provides an indication of the reach of the Bright Futures communication activities;

- Website – 706 page views
- Media releases – unknown reach (local newspapers only)
- PowerPoint presentations – 4 presentations to 76 attendees
- Renewable Energy Demonstration Trailer – 258 people
- East Gippsland Field Days – 70 people (2014 and 2015)
- Energy Helpline / Positive Charge Subscriptions – 14 residents

6.3 Community feedback

General feedback has been extremely positive. The project aligns with a major Council objective of ‘leading by example’, and energy efficiency is receiving more recognition with the way Council does business. Energy efficiency is now in the Council Plan, and is being actively recognised across the organisation.

6.4 Broader uptake of energy efficiency activities

Subsequent to the successful announcement of CEEP funding and commencement of the Bright Futures energy efficiency works, East Gippsland Shire Council undertook to pursue other energy efficiency projects, valued at over $100,000. The local livestock exchange upgraded their metal halide lighting to LEDs and lighting upgrades were implemented in 2 Council offices. Bright Futures has been a significant way to demonstrate the benefits across the organisation and throughout the community.
Uptake of improved energy management practices in the broader community has not been possible to monitor. However, EGSC are working and sharing ideas with the Bairnsdale Regional Health Service (BHRS) as a result of the Bright Futures media releases in the local newspapers. BHRS also are undertaking energy efficiency projects. Through the ResourceSmart Schools Facilitator role EGSC is continuing to advise local schools on how undertake energy audits and make savings through energy efficiency.

6.5 Opportunities for local industry and business

The establishment of the energy helpline was for both residents and local businesses. The energy helpline has been promoted through the Economic Developments local newsletter. The presentation at the Bairnsdale Chamber of Industry and Commerce demonstration to those local businesses how to approach energy efficiency projects, and the multiple benefits – reduced operating costs and emission reductions (which also demonstrate corporate responsibility).
7. BUDGET

7.1 Budget Summary

A full transaction report and financial summary can be found in Attachment 6.

The total actual expenditure for the CEEP 2204 project was $1,358,569.

There was an overspend of $392,432. The overspend resulted from the use of LED streetlights rather than the CFL or T5 that had been originally budgeted for. The overspend was carefully considered by council officers and approved by a meeting of Council prior to it occurring.

The CEEP contribution was $644,189.

East Gippsland Shire Council increased its contribution to cover the overspend. The total Council contribution was $714,380.

<table>
<thead>
<tr>
<th>Budget Summary Table</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Activity</strong></td>
</tr>
<tr>
<td>Project Management Plan</td>
</tr>
<tr>
<td>Project Control (Baseline &amp; Ongoing Energy Consumption Monitoring)</td>
</tr>
<tr>
<td>Communications Activities / Bright Futures in East Gippsland</td>
</tr>
<tr>
<td>Close Out Documentation</td>
</tr>
<tr>
<td>Engage &amp; Obtain Agreement with SP Ausnet</td>
</tr>
<tr>
<td>Stage 1 &amp; Stage 2 Street Light Replacement Specification</td>
</tr>
<tr>
<td>Stage 1 &amp; Stage 2 Street Light Replacement Supply</td>
</tr>
<tr>
<td>Stage 1 &amp; Stage 2 Street Light Replacement Install</td>
</tr>
<tr>
<td>EGSC Bairnsdale Corporate Centre HVAC Specification</td>
</tr>
<tr>
<td>EGSC Bairnsdale Corporate Centre HVAC Design, Supply, Install &amp; Commission</td>
</tr>
<tr>
<td>EGSC Bairnsdale Corporate Centre Light Replacement Specification</td>
</tr>
<tr>
<td>EGSC Corporate Centre Light Replacement Design, Supply, Install &amp; Commission</td>
</tr>
<tr>
<td>TOTAL</td>
</tr>
</tbody>
</table>

The overspend occurred almost entirely in the area of supply of streetlight and represents the difference in price of the new LED street light compared to a T5 alternative.

The original budget for the supply of street lights was $496,440, whilst actual expenditure was $977,048.

This additional expenditure was enabled by a decision of Council to approve additional expenditure of up to $407,000. Savings made in other areas of the project helped minimise the financial impact on Council.

Significant savings were made in the installation (installation was a separate contract to supply) of the lights with a surplus of $33,942 over the original budget.

Other savings were made in areas were consultants might have been engaged but the activities were achieved internally. These included:

- Development of specifications
- Negotiations with Ausnet Services
- Project management and control
- Close out documentation

Minor overspends occurred in our communication activities and the install of the new HVAC package unit at the Corporate Centre Bairnsdale.
7.2 Value for Money

The project achieved value for money by adhering to EGSC procurement policy whereby all purchasing was undertaken in a competitive environment.

The Municipal Association of Victoria’s (MAV) vendor panel for street lighting hardware was an important mechanism allowing EGSC to achieve best value for money in an area of major expenditure. The existence of the panel negated the need for EGSC to run its own separate tender and ensured best purchasing power.

8. PROJECT OPERATION MECHANISMS AND PROCESSES

8.1 Project responsibilities

Project management was managed internally with the following general responsibilities

- **Director Community and Strategic Development** overall responsibility for the project
- **Manager Strategic Planning** oversight of the project and inform Executive Group of the progress
- **Project Manager (Sustainability)** delivery of the project, reporting requirements, liaison with stakeholders, contract supervision and liaison (Streetlight install contract)
- **Project Supervisor (Buildings) on site** contract supervision and liaison (Corporate Centre upgrades only)
- **The Sustainability Officer** support with coordination of Bright Futures East Gippsland communication program and the monitoring and evaluation components.
8.2 Project processes

The management of the project utilised existing Council structures, processes and reporting frameworks. EGSC is well placed to manage infrastructure projects with a dedicated projects team working with strategic planning staff, finance staff and operational staff. EGSC’s governance directorate had oversight of the processes throughout the project with particular emphasis on procurement and Council reports.

Project management was managed largely within Council allowing the development of skills and industry knowledge. This in turn negated a reliance on outside consultancy services leaving EGSC better able to manage its street lighting in the future. A further benefit is an increased capacity to manage additional related projects.

8.3 Procurement and implementation

The Municipal Association of Victoria’s (MAV) vendor panel for street lighting hardware was utilised for the procurement of new street lights. This negated the need for EGSC to go to a full public tender. MAV had already undertaken a tender process and EGSC were able to choose the appropriate product from the panel list and enter into an existing contract with the supplier.

Despite not having to run a tender process the level of expenditure necessitated a complete Council report to be prepared and be considered by a full Council Meeting.

For the other major cost item of the street light installation contract (greater than $150,000) a public tender process was followed. This involved all levels of the project team. The project manager developed specifications for installation of street lighting hardware in consultation with other councils and AusNet Services. The tender evaluation panel, acting as a steering group, assessed options and made recommendations for further oversight by EGSC Executive Group and ultimately Councillors themselves. The development of a formal Council report necessitates a rigorous appraisal of the procurement process, the available options and the rationale of the final recommendation.

Implementation fell to the Project manager with liaison with council stakeholders and contractors.

Components of the project falling in the $10,000 to $75,000 brackets including: HVAC and Lighting upgrades to the Corporate Centre employed a request for quotation process as per EGSC's procurement policy. Specifications were developed by the Project Manager with input from other council staff as required. Quotations were evaluated by the project manager with input from other members of the project team. The purchase order approval was routed through appropriately delegated officers up to the Manager Capital Projects

Implementation fell to the Project manager and project supervisor with liaison with council stakeholders and contractors.

Items up to the value of $10,000 were procured as per EGSC’s procurement policy requiring 3 quotes and a purchase order. The purchase order approval was routed through appropriately delegated officers. Implementation of these smaller items fell to either the project manager or the project supervisor.

Contract management was the responsibility of the Project Manager and Project Supervisor with input for the Contract Coordinator and Manager of Strategic Planning.

Communications activities were managed by the Project Manager with support from the Sustainability officer and utilising EGSC’s communications unit.
9. CONCLUSION

The Energy Efficient Street Lights and Main Corporate Centre Bairnsdale CEEP Project 2204 was successful in achieving a major ongoing reduction in energy consumption, operational costs and emissions associated with community infrastructure in a regional and low socio-economic region of Victoria.

The communications activities of the Bright Futures program ensured that this demonstration of smart energy use was apparent to the general public.

The changeover of P class street lights was the biggest single action East Gippsland Shire Council could do to reduce its own energy use, operational costs and emissions. This was enabled through the CEEP program.

The emissions reduction equates to 1002 Tonnes of CO\textsubscript{2} e per annum. The costs savings are calculated at just short of $250,000 per annum.

Energy savings at the Corporate Centre are smaller than expected but this more to do with the difficulty of measurement as any other factor. The scale of the saving with the streetlights is very large compared to that applicable to the Corporate Centre upgrades.

EGSC was able to implement the project utilising existing project processes and procedures.

During the period of the project a new and more efficient light type was approved for use by Ausnet Services, the Distribution Network business. EGSC carefully assessed the additional value of these LED street lights and found that whilst they offered a slight improvement in energy efficiency their major benefit compared to the CFLs and T5s was their lower maintenance costs.

When Ausnet Services announced the price of maintenance of the lights (OMR), EGSC was able to revisit its decision, change its plans and identify additional budget of close to $400,000 to enable the project to proceed with the best technology available.

The change to LEDs caused a delay in Milestone 6 of the project but this was made up and the final project was delivered on time and, with the exception of additional Council expenditure on LED lights, within the original budgets. Savings made in the implementation of the project contributed to the ability to fund the extra cost of the LEDs.

The Bright Futures communication package promoted the project and energy efficiency within the community through an extensive range of media. The communications activities helped ensure the project met the broader aims of the Community Energy Efficiency Program, acknowledged the significant contribution of the Australian Government and positioned EGSC as a leader in energy efficiency.
10. DECLARATION

DECLARATION

The Authorised Officer of the organisation makes the following declarations:

☐ I declare that I am authorised to submit this Final Report (including any attachments) on behalf of ____________________________ (Name of organisation)

☐ I declare that the information provided in this Final Report is true and accurate.

☐ I understand, and acknowledge that giving false or misleading information in this Final Report is an offence under the Criminal Code Act 1995.

☐ I understand that final payment will only be made in accordance with the Funding Agreement including on satisfactory completion of Milestones.

Authorised Officer Signature: ____________________________ Date: 16/6/2016

Name: ____________________________

Position: ____________________________ Organisation: ____________________________

Witness Signature: ____________________________ Date: 16/6/2016

Name: ____________________________

Position: ____________________________ Organisation: ____________________________

The use and disclosure of information provided in this Final Report is regulated by the relevant provisions and penalties of the Public Service Act 1999, the Privacy Act 1988, the Freedom of Information Act 1982, the Crimes Act 1914 and the general laws of the Commonwealth of Australia.

Information contained in the Final Report may be disclosed by the Department for purposes such as promoting the program and reporting on its operation and policy development. This information may also be used in answering questions in Parliament and its committees. In addition, the selected project information will be made publicly available. Public announcements may include the name of the grant recipient and of any project partners; title and description of the project and its outcomes; and amount of funding awarded.
### 11. PROJECT ENERGY EFFICIENCY IMPROVEMENT REPORT

#### 11.1 Summary Table Street Lights

<table>
<thead>
<tr>
<th>Building, Facility or Site 1</th>
<th>Bulk Street Light Replacement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of Building, Facility or Site</td>
<td>East Gippsland Shire wide- post codes 3864 3865 3875 3878 3880 3882 3885 3886 3887 3888 3889 3890 3891 3892 3893 3895 3896 3898 3900 3902 3903 3904 3909</td>
</tr>
<tr>
<td>Location (address)</td>
<td>Residential street lights</td>
</tr>
<tr>
<td>Type of building, facility or site</td>
<td>Upgrade 80W mercury vapour street lights to energy efficient fittings (between 2,600-2,955)</td>
</tr>
<tr>
<td>Activity Type and Measure</td>
<td>Number of lights x wattage x 365 days x 11.94 (hours of operation) / 1000 = kWh</td>
</tr>
<tr>
<td>Energy Efficiency Estimate Method</td>
<td>Baseline energy usage = 1,231,154 kWh per annum Predicted energy usage = 389,993 kWh per annum</td>
</tr>
<tr>
<td>Baseline Energy Usage</td>
<td>(1,231,154 x 3.6 = 4,432,154 MJ per annum / 1360km) = 3,259 MJ per Km per annum</td>
</tr>
<tr>
<td>Baseline Energy Efficiency</td>
<td>TARGET (389,993 x 3.6 = 1,403,975 MJ per annum / 1360) = 1,032 MJ per Km per annum ACTUAL 2629 80W MV replaced by LEDs</td>
</tr>
<tr>
<td>Energy Improvement Efficiency</td>
<td>Total energy savings 843268 kWh per annum (See calculations below) 1,231,154 minus 843,268 equals 387886 kWh per annum 387886 x 3.6 = 1396389.6 MJ per annum 1396389.6 / 1360km = 1027 MJ per Km per annum</td>
</tr>
<tr>
<td>Reporting Data (Measuring Energy Efficiency and Additional Data)</td>
<td>Kms of category P roads = 1360 km Number of P lights = 2,955 Actual Changed =2629 Hours of operation per day = 11.94 for 365 days a year Wattage = 30.5 based on T5 fittings Actual 22 W for LED Baseline = 4,432,154 MJ per annum</td>
</tr>
<tr>
<td>Cost of Activity</td>
<td>$792,180 Actual $1,279,803</td>
</tr>
<tr>
<td>Estimate Cost Savings</td>
<td>$166,782 Calculated full year savings $248,917</td>
</tr>
</tbody>
</table>

Savings are calculated as per the following table
<table>
<thead>
<tr>
<th><strong>Description</strong></th>
<th><strong>80 W MV</strong></th>
<th><strong>LED</strong></th>
<th><strong>Savings</strong></th>
<th><strong>Comment</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Watts of public lighting - Watts</td>
<td>80</td>
<td>18</td>
<td></td>
<td>Light wattage</td>
</tr>
<tr>
<td>Total power consumption - Watts</td>
<td>95.60</td>
<td>22.00</td>
<td>73.60</td>
<td>Actual wattage</td>
</tr>
<tr>
<td>Number of lights to be upgraded</td>
<td>2,629</td>
<td>2,629</td>
<td></td>
<td>Number of lights changed</td>
</tr>
<tr>
<td>Annual average hours operation per day - hours</td>
<td>11.94</td>
<td>11.94</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy cost ($) per kWh</td>
<td>$0.200</td>
<td>$0.200</td>
<td></td>
<td>Based on Nov 2013 prices from tax invoice</td>
</tr>
<tr>
<td>OMR Cost per lamp (per month) - payable to SP-AusNet</td>
<td>$4.3</td>
<td>$1.8</td>
<td>actual figures</td>
<td></td>
</tr>
<tr>
<td>Number of days</td>
<td>365</td>
<td>365</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total power consumption per annum - KWh</td>
<td>1,095,332</td>
<td>252,064</td>
<td>843,268</td>
<td>KWh consumption per annum</td>
</tr>
<tr>
<td>Total power cost of lighting</td>
<td>$219,066</td>
<td>$50,413</td>
<td>168,654</td>
<td></td>
</tr>
<tr>
<td>Total OMR cost of lighting</td>
<td>$137,129</td>
<td>$56,865</td>
<td>80,263</td>
<td></td>
</tr>
<tr>
<td>Total power and OMR charge</td>
<td>$356,195</td>
<td>$107,278</td>
<td>248,917</td>
<td></td>
</tr>
</tbody>
</table>

The summary table above assumed the changeover of 2955 lights (80W MV) with T5 replacements. The baseline energy was calculated for 2955 80W MV lights.

The project achieved a changeover of 2629 lights but to lower energy LEDs.

The target of reducing the energy use of streetlights per Km of road was exceeded.

<table>
<thead>
<tr>
<th></th>
<th><strong>Baseline</strong></th>
<th><strong>Target</strong></th>
<th><strong>Actual</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>MJ per Km per annum</td>
<td>3259</td>
<td>1032</td>
<td>1027</td>
</tr>
<tr>
<td>Energy use GJ per annum</td>
<td>4432</td>
<td>1404</td>
<td>1396</td>
</tr>
</tbody>
</table>

The energy use and associated cost savings have been dramatic and can be illustrated by the following graph. (See over)
Street Light Costs
East Gippsland Shire Council

OMR charges
Electricity Charges

July 2014
August 2014
Sept 2014
Oct 2014
Nov 2014
Dec 2014
Jan 2015
Feb 2015
March 2015
April 2015
May 2015
June 2015
July 2015
August 2015
Sept 2015
Oct 2015
Nov 2015
Dec 2015
Jan 2016
Feb 2016
March 2016

$70,000.00
$60,000.00
$50,000.00
$40,000.00
$30,000.00
$20,000.00
$10,000.00
$0.00
The impact of stage 1 of the project occurred in June 2015. The effect of stage 2 can be seen in August 2015 and there was a final effect in Jan 2016 with the last few lights being registered as changed on the Ausnet database.

The street Light cost graph has been taken from actual billing data. The billing data includes costs for all the P class lights plus all the other lights in the East Gippsland Shire Council portfolio. There are a significant number of other lights including all the larger light classes e.g. 226 high pressure sodium 250W lights and 284 high pressure sodium 150W lights.

On an individual light basis the energy saving from changing an 80W MV light to an 18W LED is 77%

The impact of the project across the whole of EGSC’s unmetered public lighting portfolio is approximately 32%

The annual savings in carbon emissions is calculated at 1003.49 tonnes CO₂ e using the emissions factor of 1.19 kg CO₂ e/kWh taken from the Australian Governments publication “National Greenhouse Accounts Factors” 2014.

In terms of energy use reduction, operational cost savings and emissions reduction this is the biggest single project ever undertaken by East Gippsland Shire Council.

### 11.2 Summary Table Corporate Centre Upgrades Bairnsdale

<table>
<thead>
<tr>
<th>Name of Building, Facility or Site 2</th>
<th>Main Corporate Centre, Bairnsdale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location (address)</td>
<td>273 Main Street, Bairnsdale</td>
</tr>
<tr>
<td>Type of building, facility or site</td>
<td>Office building and council chambers</td>
</tr>
<tr>
<td>Activity Type and Measure</td>
<td>Upgrade HVAC and LED lighting</td>
</tr>
</tbody>
</table>

*Energy Efficiency Estimate Method*

Ironbark Sustainability consultancy has undertaken the energy efficiency calculations for this office.

A level 2 energy audit by Carbonetix was undertaken on 12/06/2012 and provided the basis for the energy calculations for the Corporate Centre, Bairnsdale. As there has been no change in operating hours or occupancy levels, the energy consumption (sourced from 100% mains grid electricity i.e., no gas used) data is expected to still be reliable. Total electricity consumption data has been verified for the past 12 months by Utilicor and is similar (e.g., in 2012/13 consumption was 283,395 kWh, which is 12,536 kWh less than the year before).

| Baseline Energy Usage                   | 1,083,352 MJ per annum |
| Baseline Energy Efficiency              | 704 MJ/m2               |
| Energy Improvement Efficiency           | Target: 559 MJ/m2       |
|                                       | Results (2014/15): 606 MJ/m2 |
| Reporting Data (Measuring Energy Efficiency and Additional Data) | Baseline before = 300,931 kWh x 3.6 = 1,083,352 MJ per annum |
|                                        | After Target = 239,303 kWh x 3.6 = 861,491 MJ per annum |
|                                        | After (2014/15) = 259,078 kWh x 3.6 = 932,681 MJ per annum |
annum
Office area = 1,540 m²
FTE = 42
Average occupancy levels = 100%
Average daily hours of operation = 10
Building construction date = approx 1990
No change to occupancy or activity levels in the last 5 years.

<table>
<thead>
<tr>
<th>Cost of Activity</th>
<th>$84,512</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual Cost of Activity</td>
<td>$73793</td>
</tr>
<tr>
<td>Estimate Cost Savings</td>
<td>$12,137</td>
</tr>
</tbody>
</table>

The three graphs below provide a better illustration of energy saving at the Bairnsdale Corporate Centre than the summary table above.

CEEP2204 Corp Centre Energy Target MJ/Yr

<table>
<thead>
<tr>
<th>MJ per year</th>
<th>2011/12</th>
<th>2013/14</th>
<th>2014/15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual</td>
<td>1,083,352</td>
<td>965,292</td>
<td>932,682</td>
</tr>
<tr>
<td>Target</td>
<td>1,083,352</td>
<td>972,421</td>
<td>861,491</td>
</tr>
</tbody>
</table>
The graphs show whilst energy efficiencies have been made we have not met our predicted targets.

Without the sub metering data for the lighting and HVAC systems modified it is not possible to definitively state if the upgrades have performed as predicted. The analysis below uses gross electricity billing data and so individual savings due to lighting and HVAC upgrades are masked the overall figures. The energy use at the site is still high and the lighting and HVAC for only part of the overall picture.

The Package unit replaced in the project is one of five air conditioning units operating in the building and constitutes 52% of the total capacity in the building.

Energy data for the HVAC system over short periods is particularly susceptible to seasonal and overall variations in weather conditions.

The light upgrades are likely to have performed as or better than originally predicted because the savings are based on a relatively simple premise. More lights were replaced than originally planned.
and operating hours at the Corporate Centre have not changed therefore savings should be greater than planned.

The area of concern is the HVAC system. As discussed in section 3.3.1 – Only the package unit component of the HVAC system was replaced and this could not solve some of the issues with the remainder of the HVAC system. Some of the expected improvements of the new package unit might have been negated by the existing issues and the negative behaviours that occurred after the install.

Whilst energy consumption and emissions have not fallen by the target amounts operating costs have dropped significantly. The graph below illustrates this-

The drop in usage is relatively small but the reduction in cost is significant and very welcome. However, it should be noted that these cost reductions are more to do with a significant change in tariff impacting network costs and a change in retailer affecting energy cost.