

BENCHMARKING & EVALUATION STUDY:

Local Government Street Light Bulk Change Projects



This paper summarises the findings of a retrospective benchmarking and evaluation study of street light bulk change projects delivered by Victorian councils. The aims of the study are to assist other councils make stronger business cases, more effectively manage the expectations of their stakeholders and fast track the roll-out of sustainable public lighting across the sector.

There are thirty councils who have completed bulk change projects in Victoria – twenty-two of these councils have changed all residential lights within their municipalities. This non-exhaustive study involved interviews the key project managers from ten randomly selected councils and examined issues such as project scope, finance, staffing requirements and the key barriers to implementation. This report summarises the key themes and benchmarking data (See Table 1) to emerge from the consultation process.

Scope of bulk changes

- The average project duration was 3.8 years, including all phases of project life cycle (i.e. business case development through to completion of installations). The period from investment decision to project completion was shorter at approximately 2.5 years
- Councils who reported longer project periods were often challenged by the business case development processes and had difficulty in securing sufficient financial support to initiate the retrofit project
- Many councils implemented their bulk changes in phases across multiple financial periods, mostly because of capital constraints and/or the need to deal with multiple distributions businesses and therefore 'smooth out' consequent transactions costs
- Two councils opted to vary the scope of their project from T5 lights to LEDs when the availability of replacement technologies changed within the project period. This required the councils to source additional funding to cover the higher material costs (although payback periods remained constant)

Project finances

- In nearly all instances councils were able to deliver projects on budget or under budget. The MAV procurement process and decreases in material costs (i.e. T5 lights have almost halved in the last five years) were cited as the most significant reasons for project underspend
- Costs for replacing street lights ranged between \$334 - \$475 per light (an average of \$404 per light) when accounting for all project costs occurred within the replacement program. Variations were due to a range of factors including the chosen replacement technology, network distribution area and the overall size of project
- The average payback period for projects was 7.4 years for the chosen sample of councils. Feedback from other industry stakeholders suggests that this figure is now closer to 5-6 years due to the significant decreases in material costs. In the instances where councils received grants, the payback periods was reduced by approximately 2-3 years

- Actual payback periods are typically shorter than the conservative estimates often provided in business case documents, with changes in tariffs and OMR charges often resulting in shorter return on investment
- Project costs varied between 0.4% -1.4% as a portion of total rates revenue (based on 2014 council rate data from MAV)

Staff resources and time investment

- Sustainability teams or asset/engineering teams typically lead the implementation of projects
- Projects typically required staff resources of ~0.2FTE, however, like most other projects, the workload was variable over time with a majority of resources required in the business case development phase (ie. seeking internal buy in) and then in the installation phase and dealings with the distributor
- Project managers indicated that ongoing communication and coordination tasks were not insignificant. These tasks were particularly more onerous for those who had received grants
- Other service areas of councils were also involved in the projects (such as finance, procurement, legal etc) however their time investment was most transactional and therefore quite limited (1-2 weeks in total)
- Some councils captured implementation efficiencies by partnering with other municipalities, particularly through the appointment of a shared project officer or via an existing structure, such as a Greenhouse Alliance. In one instance, a council appointed a public lighting officer (0.3FTE) to facilitate the project and act as a liaison between community, council and distributor
- In all but one case, council's resources were supplemented by external expertise/ consultants who often provided assistance with technical aspects of the project and often dealt with distributors on their behalf (i.e. Ironbark Sustainability)

Barriers

- A common frustration for councils was dealing with network distributors, particularly delays for approvals and council attempts to efficiently engage distributors who many perceive as having 'no clear concept or process for contracting with third parties'. This experience varied significantly between distribution networks
- Access to capital was also a barrier for councils – these councils reported a more significant upfront time investment in the business case development phase and securing buy-in for the project. Some of these councils reported that their success with implementing street light projects had assisted in developing a organisational culture more supportive of other energy efficiency initiatives
- Knowledge and skills are a constraint for councils in this sometimes technically challenging and complex area. Long project periods often are detrimental to the retention of corporate knowledge - these challenges reinforce the requirement for external specialist providers
- Demonstrating financial savings can also be complex for councils. This can be attributed to a range of factors including variable OMR costs for different technologies, changes in energy tariffs over time, cost sharing with VicRoads (in some instances) and the lag between installation and changes to billing

TABLE 1: Summary of benchmarking data

SCOPE	Council A	Council B	Council C	Council D	Council E	Council F	Council G	Council H	Council I	Council J
Number of lights included in bulk change	2,815	3,792	6,306	1,350	7,186	1,800	4,118	1,340	1,068	5,218
Total number of street lights		5,300	7,443	1,350	11,000	8,100	9,076	1,340	1,068	8,681
Portion of lights changed		72%	85%	100%	65%	22%	45%	100%	100%	60%
Duration of project (years)	3.0	6.0	2.5	3.0	6.0	7.0	4.0	2.0	3.0	1.5
Technology installed	T5	T5	T5	LED	T5	CFL	T5	T5	LED	T5
FINANCE	Council A	Council B	Council C	Council D	Council E	Council F	Council G	Council H	Council I	Council J
Project budget (start)	\$ 1,029,489		\$ 2,735,472	\$ 701,000				\$ 606,821		\$ 1,961,058
Final expenditure (end)	\$ 947,564		\$ 2,707,202	\$ 641,000	\$ 2,400,000		\$ 1,758,288	\$ 534,221	\$ 488,000	\$ 1,959,289
Variance	-\$ 81,925		-\$ 28,270	-\$ 60,000				-\$ 72,600		-\$ 1,769
Cost per light (includes all project costs, not just materials)	\$ 337		\$ 429	\$ 475	\$ 334		\$ 427	\$ 399	\$ 457	\$ 375
Annual energy savings (\$)	\$ 85,000		\$ 380,000					\$ 70,000		\$ 350,000
Return on investment (Years)	9.0		7.2	6.0	8.0			8.0	6.1	7.5
Grant amount	\$ 291,747	\$ -	\$ 460,876	\$ 241,000	\$ -		\$ -	\$ 172,812	\$ 182,000	
Portion of project covered by grant	28%		17%	34%				28%	37%	
2014-15 Total Budget Rate Revenue	\$66,953,000	\$112,642,000	\$197,576,000	\$46,162,981	\$146,979,000	\$119,415,000	\$179,259,000	\$61,892,799	\$40,991,000	\$165,551,000
Portion of revenue allocated to street light change over	1.42%		1.37%	1.39%	1.63%		0.98%	0.86%	1.19%	1.18%
STAFF RESOURCES	Council A	Council B	Council C	Council D	Council E	Council F	Council G	Council H	Council I	Council J
Engineer / Assets		0.20	0.10		0.20	0.25	0.05			0.30
Sustainability / Environment	0.10	0.10	0.10	0.10	0.10		0.05	0.20	0.15	
Contracts / Purchasing										
Finance										
Other (external assistance e.g.. Ironbark)	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Total FTEs	0.10	0.30	0.20	0.10	0.30	0.25	0.10	0.20	0.15	0.30
TIME REQUIREMENT	Council A	Council B	Council C	Council D	Council E	Council F	Council G	Council H	Council I	Council J
Business case / development	10%	20%	10%	20%	55%	20%	10%	40%	30%	20%
Contracting / tendering	10%	10%	10%	5%	10%	10%	30%	20%	20%	20%
Technology analysis / detailed design	5%	20%	5%	5%	15%	20%	20%	5%	20%	20%
Distributor engagement / Installation	20%	50%	60%	50%	20%	50%	50%	10%	10%	40%
Managing grants	55%		15%	20%				25%	20%	
Total	100%	100%	100%	100%	100%	100%	110%	100%	100%	100%
BARRIERS	Council A	Council B	Council C	Council D	Council E	Council F	Council G	Council H	Council I	Council J
Access to capital		Yes		Yes	Yes	Yes		Yes	Yes	
Knowledge/skills/culture within council	Yes	Yes			Yes	Yes				
Distributor engagement			Yes	Yes			Yes	Yes	Yes	
Project Management										Yes
Other										