

*A case study in LEDs
efficiency*

LED

Break through





LEDscape LED

The LEDscape LED installation employs 20 x 6 watt 4000 °K (LS321LED) and 8 x 3 watt 4000 °K (LS151LED) as well as 2 x 20 watt 4000 °K (LS853LED) fixtures. The wiring was unaltered and the transformers were changed to 24 volt DV power supplies. There is no appreciable voltage drop in the system.

The total supplied load is 220 watts including power supply losses.



Standard Halogen/Metal Halide

The Standard Halogen/Metal Halide installation employs 20 x 50 watt (LS321A) and 8 x 20 watt (LS381A) MR16 lamps as well as 2 x 20 watt 3000 °K (LS843) metal halide fixtures. The MR16 lamps are standard and there is virtually no voltage drop to the lamps as each fixture is wired in 3.3 mm² cable (max length of cable is 6 metres) supplied directly from a transformer. Transformer output is 12.2 volts (measured at the terminals) and supplied voltage at each fixture is 11.9 volts measured at the terminals.

The total supplied load is 1320 watts including transformer losses.

The pictures to the left show the same space illuminated with traditional light sources and LEDs.

Both images were taken at about the same time in the evening when the ambient light was approximately the same.

Energy, Cost and Maintenance Comparisons

Energy, Cost and Maintenance Comparison based on: 10 hrs a day, 7 days a week and 52 weeks a year.

Annual Power Consumption

Halogen and Metal Halide Installation:		LED Installation:	
Annual power consumption:	Annual cost @ \$0.24 per kWh (Unit):	Annual power consumption:	Annual cost @ \$0.24 per kWh (Unit):
4804 kWh (Units)	\$1,153	800 kWh (Units)	\$192

Annual Saving: \$961

Annual Maintenance Costs

Halogen and Metal Halide Installation:		LED Installation: (Based on 50,000 hours projected life)	
Annual maintenance costs:	Lamps per year @ \$40* per change X 30	Annual maintenance costs:	Lamps per year
	\$1,200		\$0

*Assumed \$40 cost including lamp average. Assuming 3500 hours for MR16 and 8000 hours for metal halide.

Annual saving: \$1,200

Total Annual operational savings on this installation using LEDs: \$2161

Lumascapes builds to a projected 50,000 hrs life which is equal to 12.75 years.
Operational saving over the projected life of the LED fixtures (12.75 years) Total:

\$27,552

Annual CO₂ Emissions*

Halogen and Metal Halide Installation:		LED Installation:	
Annual CO ₂ emissions:		Annual CO ₂ emissions:	
4.275 tonnes CO ₂		0.712 tonnes CO ₂	

Annual Saving: 3.563 tonnes CO₂

*Calculated using Department of Climate Change and Energy data

CO₂ Emission saving over the projected life of the LED fixtures (12.75 years) Total: 45.424 tonnes CO₂

Payback Time**

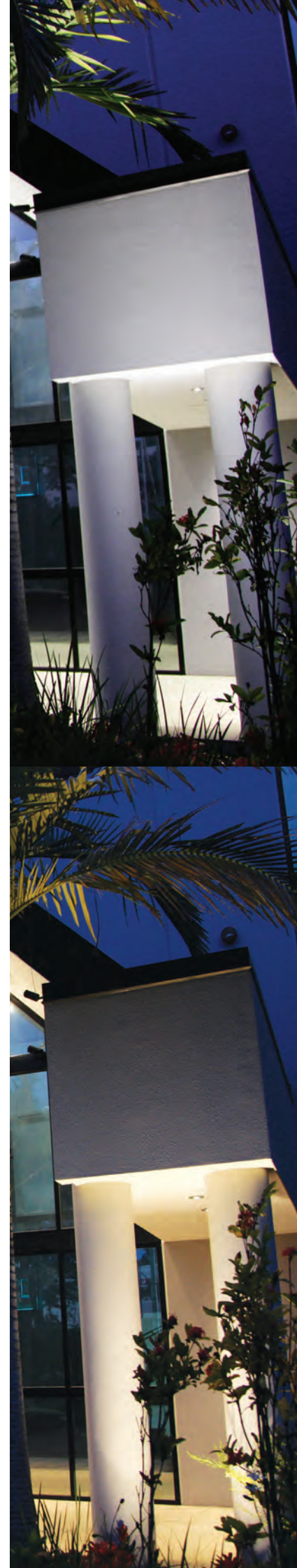
1.18 years on energy alone

Less than 6 months on energy and maintenance

Summary: Over the life of the product at current operational costs***, the "new LED technology" installation will cost \$27,552 less than "old technology". The installation of Lumascapes energy efficient LED lighting at this site has reduced the amount of CO₂ produced by 3.563 tonnes per year. That's a saving of more than 45 tonnes of CO₂ over the life of the luminaires.

**Based on purchase price difference between the two installations in the study.

***Electricity costs are set to skyrocket with the Carbon Trading Scheme and Privatisations.





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