

Lighting Roads with LEDs

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Road Lighting – the statistics (thanks to EECA)

New Zealand has

- around 82,500 km of roads
- approximately 370,000 street lights (~6% SH, ~30% AT)
- consumes ~116 GWh or 0.4PJ energy per annum
- High Pressure Sodium (HPS) (yellow light) ~80%
- street lights consume ~70% of urban TLA and ~40% of rural TLA energy costs
- energy savings of ~30 to 60% available HPS ⇒ LED.

Road Lighting – recent developments

Increasing interest in LED road lighting since 2008

Some major upgrade programmes undertaken:

- City of LA (140,000 luminaires over 5 years) – Done
- New York (250,000 over 5 years) – Started
- Auckland Transport (40,000 over 4 yrs)- Planned

and

- NZ Transport Agency - XX fittings by....?????
- Your RCA....???



Road Lighting – more favourable economics

Recent changes to EEM have helped

- Now 6% discount rate
- Anything else – ask Bernie !

Road Lighting – so how far have we come ? (City of LA)

2009

- Avg. Price = \$ 432
- Efficacy = 42 Lm/W
- Life = 80,000 hrs
- Warranty = 5 yrs

2010

- Avg. Price = \$ 298
- Efficacy = 61 Lm/W
- Life = 111,000 hrs
- Warranty = 6 yrs

2011

- Avg. Price = \$ 285
- Efficacy = 72 Lm/W
- Life >150,000 hrs
- Warranty = 6 yrs

2012

- Avg. Price = \$ 245
- Efficacy = 81 Lm/W
- Life >150,000 hrs
- Warranty = 7 yrs





Specification and Design of Road Lighting

Limited design guidance

- AS/NZS 1158 “Lighting of Roads & Public Spaces”
 - Is under review
 - Is not an easy read

So....

- NZTA undertook to develop a new specification with design guidance:

M30 Specification and Guidelines for Road Lighting Design

Specification and Design of Road Lighting

The document contains four parts:

- General – giving a basis for all road lighting design
- Design
- Luminaire Requirements – includes a list of accepted luminaires
- Construction and Installation

Draft will be available on NZTA Consultation Web page:

<http://www.nzta.govt.nz/consultation/index.html#current>



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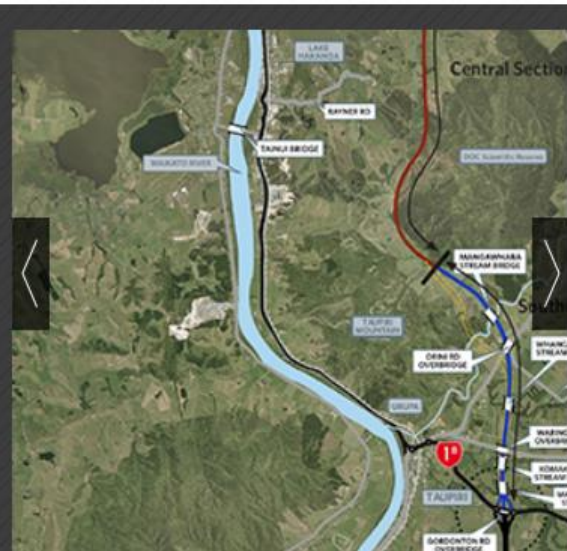
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Thu, 24 Jul 2014 | NZ Transport Agency: Waikato and Bay of Plenty

Funding approved for Huntly section of Waikato Expressway

» all media releases



Accelerated Regional Roading Package
Read more on the MOT's website.



Statement of Intent 2014-18

Our Statement of Intent 2014-18 is now available to view online.



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Specification and Guidelines for Road Lighting Design

► Questions and answers

Specification and Guidelines for Road Lighting Design

Updated: 1 August 2014

The Transport Agency has developed these guidelines to assist lighting asset owners, design consultants and suppliers capture the maximum benefits from newer lighting technologies, particularly LED road lighting.



Road lighting is a significant asset for all road authorities including the Transport Agency (through its Highways and Network Operations group).

To assist lighting asset owners, design consultants and suppliers capture the maximum benefits from newer lighting technologies, the Transport Agency has developed the M30 Specification and Guidelines for Road Lighting Design.

This document builds on the significant effort that Auckland Transport and Christchurch City Council have both put into this area of asset ownership and operation, particularly in the area of Light Emitting Diode (LED) road lighting luminaires and associated equipment.

The NZ Transport Agency considers, based on the view of industry experts, that light emitting diode (LED) lighting is now proven and technically mature. Investment in LED is low risk.

Care is nevertheless needed when purchasing LED lighting equipment to ensure that it is of suitable quality and performance that meets the requirements of AS/NZS1158 and international best practice – hence this document.

LED Upgrades – Improved safety in mixed use areas



Sandringham Rd (Auckland)
before....

LED Upgrades – Improved safety in mixed use areas



Sandringham Rd (Auckland)
before....

.... And after



LED Upgrades – Better line-marking contrast



6th Avenue Bridge (L.A.)
before LED conversion.....

LED Upgrades – Better line-marking contrast



6th Avenue Bridge (L.A.)
before LED conversion.....



.... And after

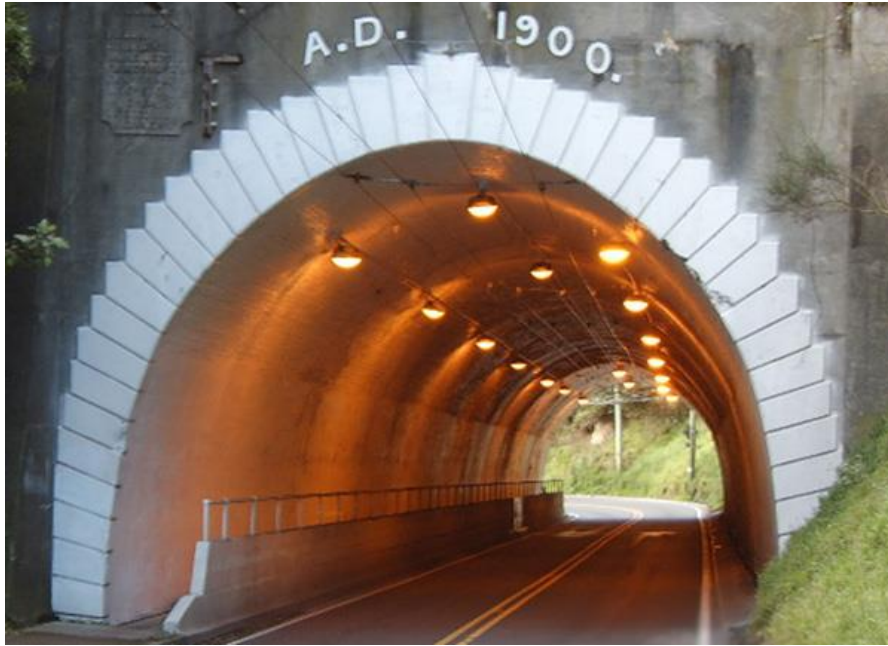
LED Upgrades – Improved tunnel lighting



Karori Tunnel (Wellington)
before....

.... And after

LED Upgrades – Improved tunnel lighting



Karori Tunnel (Wellington)
before....

.... And after





LED Upgrades – Benefits apply to rural roads as well

SH22 (Drury to Pukekohe)



LED Upgrades – Greatly reduced Upward Waste Light



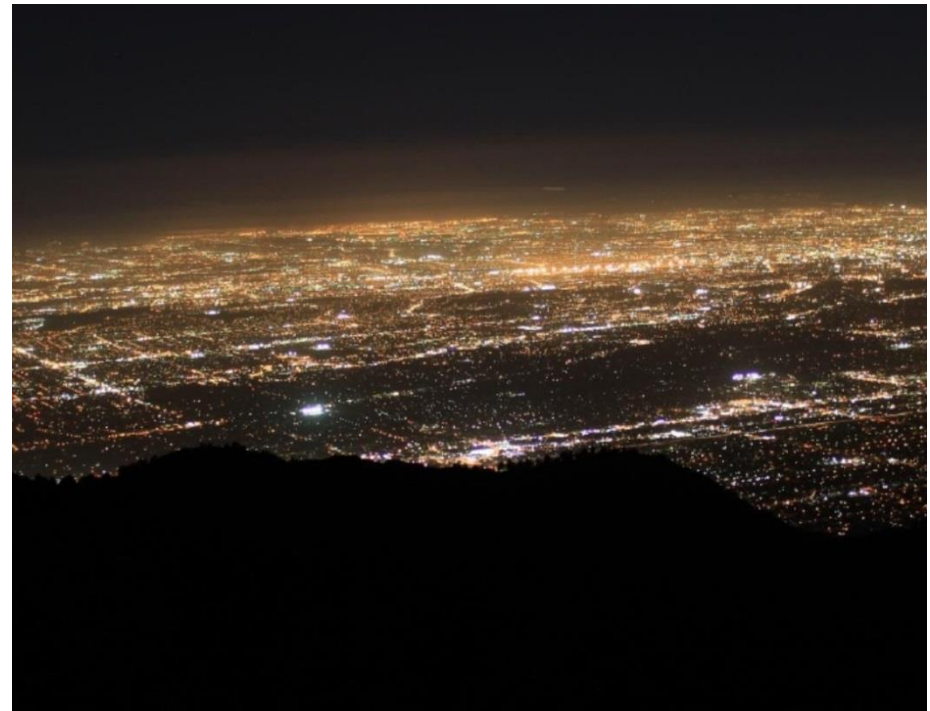
Los Angeles from Mt Wilson
before LED conversion.....

LED Upgrades – Greatly reduced Upward Waste Light



Los Angeles from Mt Wilson
before LED conversion.....

.... And after





Thank you.....

Questions ?

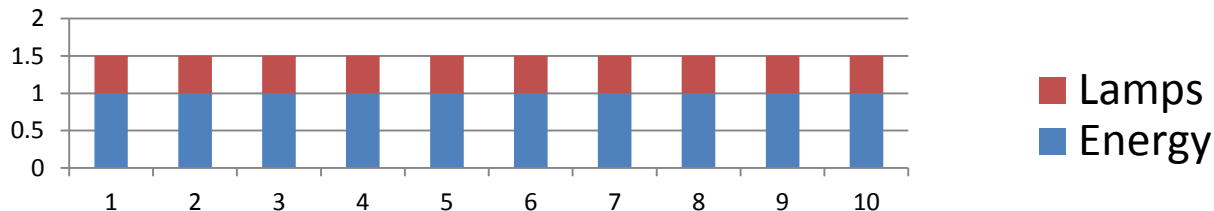


Melling Bridge, Hutt City

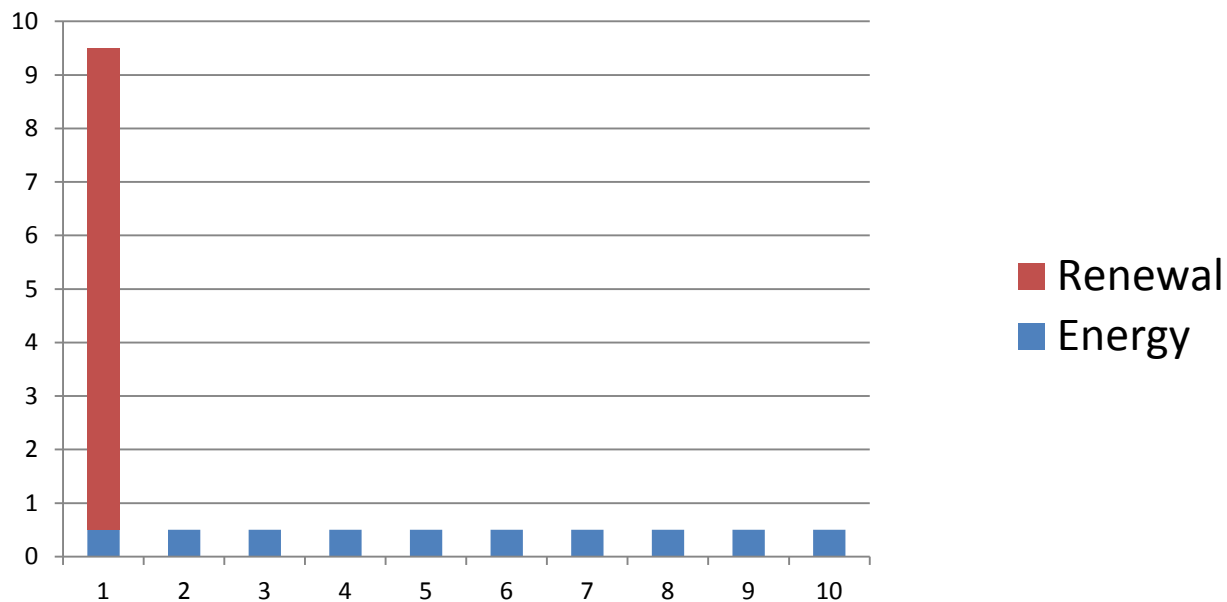
Accelerated renewal of luminaries / replacement with LED

- In many instances “It’s a no-brainer!!”
- We the Transport Agency want to co-invest in accelerated lighting renewals programmes
- How can we help – how can we help to ensure the best possible value for money - what are the issues we can help to address?
- The lines company opportunity?
- But there will be no free lunches

Option – Maintain an HPS installation



Option – Replace now with LED



Cumulative investment comparison

