CITE - Calgary
Advances in Energy Efficient Street Lighting

Don McLean
DMD & Associates Ltd.
www.dmdeng.com

Today's Presentation

Overview of Transportation Association of Canada – Lighting Reduction and Energy Efficiency Guide

Review some key elements and parts of the Guide

TAC Light Level Efficiency and Power Reduction Guide - Background

- Technology and products have been developed quicker than standards and application. Need for National Publication.
- Need for a sound basis of science, research and logic.
- Defines a complete process to assess and deploy energy efficient street lighting.
- Guide will be used by cities, lighting designers and suppliers.

TAC Light Level Efficiency and Power Reduction Guide – Outline (1 of 2)

TAC Light Level Efficiency and Power Reduction Guide – Outline (2 of 2)

Retrofit and Deployment

- **Inventory and Design** – Define what exists poles, spacing, road types, widths, sidewalks, lighting criteria, etc. Use city GIS system. Many roads are over lit to achieve the required uniformity. LED's improve the uniformity. Proper analysis and assessment of optical systems (by lighting calcs) is how you achieve 50%-60% energy savings. Lighting calcs to define luminaire distribution and wattage and to make sure required lighting levels are achieved.

- **ROI** – Define and review ROI and benefit. Define budget and funding.

- **Specifications** – Develop

- **Procurement** – Issue specs and review submittals to define bet value. Review of photometric's, products, test results and data required.

- **Test and Commission** – Required for adaptive controls

- **Monitor and Review** – During construction

- **Public and Communications Program** – Pre and post Construction. Recommend public education and information program as per the City of Calgary (EnviroSmart) Program.

Acknowledgments

The Roadway Lighting Efficiency and Power Reduction Guide was developed with funding provided by several agencies:

- Alberta Transportation
- British Columbia Ministry of Transportation and Infrastructure
- Ministry of Transportation Ontario
- Ministère des Transports du Quebéc
- City of Calgary
- City of Edmonton
- Halifax Regional Municipality
- Ville de Montréal
- City of Ottawa
- Corporation of the Town of Oakville
- Regional Municipality of York
- South Coast British Columbia Transportation Authority

Project Steering Committee

The report was developed under supervision of a project steering committee of volunteer memebers:

- Gord Cebryk (Chair)
- Martin Aitkenhead
- Canace Bain
- Richard Chow
- Shawn Dillon
- Steven Drew
- Yves Gaudreault
- Taso Koutroulakis
- Quang Thin
- William Ross Quackenbush
- Simon Tam
- Phillippe Vézina
- Sandra Majkic

Consultant Team

DMD & Associates Ltd. (Prime Consultant)

- Don McLean, Project Manager and Lead Author
- Daniel Wong, PEng, PE, Quality Control and Review
- Donato Speidel, Review

Parsons Brinckerhoff

- Paul Lutkevich, PE

Virginia Tech Transportation Institute

- Dr. Ronald Gibbons

Abstract

The purpose of this guide is to:

- review options and provide guidelines for light level reductions and energy efficiency
- provide information about how to apply energy efficient roadway lighting, while reducing power consumption and cost
- provide a "tool box" of information that aims to allow city administrators, designers, consultants, and suppliers to assess, evaluate, select, and deploy energy efficient roadway lighting.

Abstract Continued

- Information was gathered from research and studies conducted all over the world
- From these findings it was concluded that energy-saving lighting technologies and controls have significant energy savings benefits
- Due to lack of information regarding energy-saving lighting technologies, many jurisdictions have resisted adopting them, as there is a lack of understanding about their risks and benefits
- This guide aims to provide this previously lacking information