

How to Purchase LED Street Light Luminaires through the LED CSA

The following guidance is provided to assist in purchasing LED street light luminaires through the LED Street Lights CSA. For further information please view the [10-minute pre-recorded webcast](#) on the LED Street Light program and visit the [LED CSA webpage](#).

Step 1 – Business Case

The benefits of converting to LED street lights are many: a less than nine year payback period, greater than 10% ROI, lower energy and carbon costs, lower maintenance and replacement costs, and better visibility.

Use BC Hydro's **Financial & Energy Savings Calculator** located on our [LED CSA webpage](#). You can enter your street light inventory, number and wattage of lamps to be switched and anticipated prices, and generate a report that shows you your specific pay-back period and return on investment.

And visit the [LightSavers Canada website](#) – there you'll find a wealth of case studies, including four Canadian cities that have already converted (keep in mind that a business case is sensitive to utility prices which vary from one jurisdiction to another).

Step 2 – Develop your Requirements

The guidelines in Section 2 and 3 were written by a lighting design consultant and are suggestions only. The application of these suggestions is the responsibility of the reader. The suggestions may not reflect specific local considerations or situations that are not widespread and therefore require special treatment. We recommend that you engage a lighting design consultant to assist you in developing your requirements and selecting the right product.

Inventory Assessment

An inventory assessment is recommended in order to optimize savings and to ensure proper lighting levels are achieved. Many roadways are over-lit and, as such, energy savings can result by simply reducing levels to the required standards. LEDs offer improved distribution of light over past luminaires such as High Pressure Sodium (HPS).

Design your Lighting Installation

When designing a lighting installation three factors must be met:

- Maintained Horizontal Average Illuminance or Luminance - The average amount of light on the road;
- Uniformity Ratio - The evenness of the lighting
- Veiling Luminance Ratio - A rating of glare.

These factors can be obtained via the current city lighting standards and applied to the various roadways. This should help determine what the existing levels are supposed to be, and where they may be deficient or over-

lighted. It may also be a good time for a city to update their lighting standards and policies to reflect current practices and standards. Tying this into the conversion program is wise. Beyond a conversion program, the city should consider LED lighting on new projects such as those born from development and local improvement. Updated standards would address this.

When designing with HPS light sources the governing factor is most often meeting the uniformity ratio which, to meet, often requires a higher than required maintained average horizontal illumination or luminance level on the roadway. For example, a local roadway which requires an average illumination of at least 4 Lux and a uniformity ratio not exceeding 6:1 average to minimum may end up with an illumination of 2-3 times what is required to meet the uniformity requirement. Uniformity is, however, often not the governing factor when designing with LEDs as the distribution is far more effective than with HPS. Many more optical light distribution options exist with LEDs than with HPS. Therefore, it is not simply a matter of replacing a 100W HPS with a 50W LED luminaire. Each road type should be assessed and light level calculations undertaken. This process can be simplified by grouping the road types and existing lighting inventory to reduce the effort.

Lighting requirements (road classification and pedestrian activity), road information (widths, number of lanes, sidewalk info.), pole locations (spacing), heights, and wattages can be obtained from the city's GIS database. If no database exists then a survey of existing lighting could be undertaken using aerial (Google™) maps and existing electrical design drawings. This process can be simplified, however some effort will be required.

Calculations

Once this information is obtained, calculations using computer roadway lighting calculation software should be undertaken. Each lighting design consultant will have their preferred software.

The Super-efficient Equipment and Appliance Deployment (SEAD) initiative offers a free online street lighting evaluation tool (endorsed by NRCan) that can also be used to properly define specific information required on road types, pole spacing, road geometrics, etc. [Access the SEAD tool on the SEAD website.](#)

Note that this is not a simple matter of imputing a few numbers and basic information to get the required results. It is recommended that a lighting design consultant be engaged to prepare this information. The overall effort spent on this task is directly tied into the level of accuracy required. It should rest with the lighting design consultant to determine which software they will use.

Sidewalk and walkway lighting calculations should also be undertaken, as LEDs with their excellent light distribution can leave sidewalks dark.

Lighting pole spacing typically varies on each road. Lighting design is usually undertaken for the worst-case luminaire pole spacing (pole to pole on one side of the road), however some judgment will be required to define what is common worst-case versus an infrequent worst-case.

Once the calculations are completed, they should be compiled into a spreadsheet along with all relevant data.

To verify the calculations, sample light level measurements can be undertaken on roadways and sidewalks, however this is not common practice.

Step 3 – Selecting the Right Product for You

With your calculations in hand, the SEAD tool can be used to select the most effective luminaire for each road type. Consultants available through the CSAs have been trained in use of the SEAD Tool. If you are using it yourself, there are instructions on the site.

Budget and Cost

Purchasers will typically want to define a budget and then, against that, review return on investment and payback period. The Transportation Association of Canada (TAC) Roadway Lighting Efficiency and Power Reduction Guide (2013) has some good guidance on how to define cost and budgeting information. Purchase the Guide through the [TAC webpage](#).

Ultimately it will be a balance between luminaire efficiency and cost that will determine your product selection.

View the CSA Product Brochures, Specifications and Suppliers Online

Each CSA supplier is listed on the LED CSA webpage along with the product brochures and detailed specifications.

Pricing

Pricing is password-protected as it is confidential and must not be shared with competing suppliers nor any other third-party. To obtain pricing, public sector organizations can either contact the [CSA commodity manager](#) who will first confirm that your organization holds a CSA Access Agreement with the Province, and will then send you the pricing schedules or, if you have a BCeID number which you have registered with the Procurement Services Branch you can access the pricing directly. To obtain a BCeID and register it to access pricing, refer to [Accessing Pricing](#).

Most public sector organizations are eligible to sign a CSA Access Agreement with the Province and most municipal and regional governments indeed already have done so. If your organization is not presently on the [list of eligible CSA users](#), refer to the [CSA Eligibility Guidelines](#) to find out if your organization is eligible to sign a CSA Access Agreement and how to do so.

View the Demonstration Samples of the CSA Product Lines

A functioning sample luminaire of each of the original product lines approved for purchase through the LED CSA are available for viewing by appointment in the Metro Vancouver area at DMD & Associates offices in Surrey. Please contact DMD prior to visiting to arrange a date and time for a viewing of the samples.

DMD & Associates Ltd.

Surrey BC

Contact Don McLean, Principal, at: 604-589-9010 ext 201 or don@dmdeng.com

Step 4 – Ordering through the LED CSA

The [LED CSA](#) is an offer from the successful suppliers to provide LED street light luminaires (to both the Province and Public Sector Entities) on an as, if and when requested basis at the prices set out in the CSA. The products have been evaluated against a list of requirements and through a competitive procurement process and also

evaluated by a third-party technical lighting consultant.

There is no need for your organization to run an additional procurement of your own in order to make a purchase through the LED CSA (provided your organization holds a CSA Access Agreement with the Province).

Municipalities and other public sector organizations should NOT use the LED CSA as if it were a qualified list, whereby a purchasing organization would then issue a tender or procurement solicitation to only those vendors on the CSA list to re-compete and submit new bids to the purchaser; the CSA is not a pre-qualified list of which other organizations may run a separate procurement, and doing so is likely violating trade agreements if a purchaser ONLY issues an offer to bid to the vendors on the CSA list. Public sector organizations may instead purchase luminaires from any of the vendors holding a CSA from the vendors directly with those vendors; no further procurement solicitation need be run. By issuing a Draw Down (purchase order, etc.) for goods through the LED CSA, a contract is automatically formed based on the terms and conditions of the Province's General Service Agreement. There is no contract formed until an order is placed. Suppliers agree to offer the goods on the terms and conditions of the CSA, but the contract is formed between the purchaser and the supplier, rather than the Province and the supplier (unless the Province is the purchaser). So contract performance and warranty issues flow through to the purchaser.

Refer to the [complete terms and conditions of the CSA](#) for further information on how the CSA works.

Corporate Supply Arrangements are provided by the BC Procurement Services Branch.

If you have further questions please contact the [Procurement Services Branch](#) to reach the Commodity Manager.