

HOW TO PURCHASE LED STREET LIGHT LUMINAIRES THROUGH LED STREET LIGHTS ACROSS B.C.

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

Step 1 – Business Case and Funding Application

You may need to develop a business case/funding application to obtain approval to convert to LED street lights. We can offer a few resources to help:

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).

And use BC Hydro's Power Smart Streetlighting Calculator located on our [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. This report can also be used for a preliminary Power Smart incentive application (see Step 4).

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. You can use a consultant of your own choice, or there are consultants available through the [Lighting Design Consultant Corporate Supply Arrangements](#).

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.](#)

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.

Step 4 – Apply for a Power Smart Incentive

To submit for a BC Hydro Power Smart incentive application, you will need to:

1. ensure that your project meets the minimum 20,000 kwh/year in electrical savings;
2. assuming this threshold is met, use the lighting energy saving calculator (available through your Key Account Manager or at the telephone numbers below) and project proposal (detailing the costs for materials and labour); and
3. submit to your BC Hydro Key Account Manager. If you do not have a Key Account Manager, please call 604-522-4713 in the Lower Mainland or toll free 1-866-522-4713.

Step 5 – Ordering through the Corporate Supply Arrangements (CSAs)

Corporate Supply Arrangements are “an offer from the successful supplier to provide the Goods to the Province and Public Sector Entities on an as, if and when requested basis at the prices set out in the CSA”. This means that the goods have met the requirements of a specification and been evaluated within a competitive process, and are available when purchasers are ready to purchase them (within the term of the CSA), at the prices quoted.

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.

If you want to learn more about how a CSA works, you’ll find a link to the whole document on the web page described below.

Using the CSAs

Visit the [Goods and Services Catalogue](#), or search the Internet for “BC Corporate Supply Arrangement”.

On the home page, in the right hand Useful Links box, check the “CSA Users List” to make sure your organization is listed. If so, then you are authorized to use the CSAs. If not, please contact Procurement@gov.bc.ca and we will send you an access agreement.

Use the alphabetical anchors or scroll down to find the CSA you are looking for:

- [Lighting Design Consultants](#)
- [LED Street Light Luminaires](#)

Each CSA page looks about the same, with some key information on it:

A link to contact the [Procurement Services Branch](#) to direct your inquiry to the commodity manager. The commodity manager can send you prices (as described below). Remember that contract management and warranty issues are between the purchaser and the supplier. If you need clarification or confirmation of any of the terms and conditions, or have any escalated concerns, the commodity manager will help you.

A list of suppliers, and for each a:

[Corporate Supply Arrangement](#) - Download this document to review the complete terms and conditions, and any value added services the supplier offers.

[Product Brochure](#) - A one or two page document outlining the product's specifications.

[Price Schedule](#) - Prices are password protected as they are confidential and *must not be shared with competing suppliers*. Core government employees on the government network can download them. Broader public sector entities can either contact the commodity manager (see below), who will confirm that you are an [eligible CSA user](#), and will send you the pricing schedule or, if you have a BCeID number which you have registered with the Procurement Services Branch you can access the pricing directly. See the [broader public sector access to pricing](#) webpage.

And

[Contact information](#) - when you order through a CSA you do it directly through the supplier. Just make contact and let them know you are ordering through the CSA. Suppliers will be able to guide you through their ordering process.

Corporate Supply Arrangements are provided by Shared Services BC through a cost-recovery model. Purchasers of LED street light luminaires have two optional ways of paying the Administrative fee to Shared Services BC:

1. A 1% administration fee. Suppliers will collect and remit the 1% on behalf of purchasers. The 1% is included in the prices quoted.
2. Purchasers who anticipate spending more than \$500,000 over the term of the CSA may wish to pay an up-front one-time fee of \$5,000 directly to Shared Services BC. If you are interested in this payment model please contact the commodity manager. Suppliers will be notified and will deduct 1% from the prices quoted.

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