3.09 Price Proposals

Enclosed are PRISM’s price proposals. The bid documents are not clear as to how the prices are to be presented. We have chosen to present these as follows; The Pricing sheet Column “Extended Price” includes the cost of the fixture and the required fuse assembly. Below that we have written in the labor costs which must be added to the extended Price column total to arrive at the total price excluding the photocell/control cost. The cost of the photocell or other control device is listed separately as required.

PRISM is agnostic to the manufacturers and products but rather prefers to educate the customer on the various options and the pros and cons of each so that they can make an informed decision. Below we look at a limited selection. If selected this would be expanded to include a wide variety of options to assist the Town with making an informed decision. These lights will last twenty years so it is important to be sure you will be happy with them over time.

Based on the RFP specifications and the stated preference for the use of borosilicate glass for the optics, our first proposal is for the Acuity series fixture which is the only major quality US manufacturer to use this material for their optics. It is the more expensive of the two offered options. It is interesting to note that they only use this glass optics on their fixtures that use chip on board technology where the LED chips are clustered into a single group. These are the ATBS, ATBM and ATBX series fixtures. Chip on board is a lower cost approach to getting greater overall light output at a lower overall cost. The single drawback to chip on board, provided the quality of the LED chip and adequate heat management, is glare. The Acuity family of fixtures using the borosilicate glass optics includes a visual comfort refractor option and so competes very favorably with addressing glare to both the Cree RSW and the Leotek Comfort View fixtures. It can come in a variety of outputs depending on the performance package ordered ranging from 1956 lumens to 7133 lumens. With the Visual comfort option, the lumen output is reduced to a range from 1686 to 6167 lumens. Acuity offers the Visual Comfort option for all of the ATBX, ATBM series and for the ATBS (except in their D configuration). They do not have this for other packages that do not use the chip on board approach. Acuity only offers the back light shields. They do offer the Field Adjustable Output selector.

The RFP does not specify color temperature except to say the offered fixture must be available in both 3000 and 4000 kelvin temperatures. Our proposals are all for lights in the 4000 Kelvin temperature range for several reasons

1. The required LEDs generally have to be in the 136 lumen per watt range to meet the specifications and 4000 K lights are more energy efficient than 3000 K lights.
2. Studies have documented that safety is improved under 4000K lights verses 3000K. These studies demonstrate that recognition times and as a result reaction times are faster under a 4000 K light than a 3000K light. As a result, our experience is that the Police, Fire and DPW workers prefer the 4000K lights.
3. The 4000K lights not only are more energy efficient but also have improved lumen output overtime and increased life expectancies.

At the same time we also recognize that the general public prefers the 3000K lamps and both the Dark Sky Association and AMA recommend the 3000 Kelvin or lower temperature lights. As a result some communities have opted to use the lower Kelvin temperatures in the neighborhoods and the higher Kelvin lights on the main roads and commercial shopping areas to provide a greater sense of brightness and perceived security. Both of our offerings do provide for both options but if 3000K is specified and the same RFP specifications were applied the selected fixtures would need to be different due to the higher wattages required for a 3000 Kelvin lamp to meet the specifications. This is also true if the community selected the glare reducing options.

The bid specifications list fixture lumens which are for the most part the nominal output of the existing lamp source but much higher than the fixture outputs due to internal losses. These levels are much higher than needed to achieve the desired luminance levels at nominal streetlight mounting heights. There is no explanation as to reason for these high output levels. PRISM often recommends that communities select a fixture where the desired operating level is in the mid-range of the lights capability. This allows the same light to be used in multiple applications and reduces the number of lights that have to be stocked for replacements and gives the community the option of responding to citizen requests to brighten or dim the light without having to swap the fixture. We suspect this is the reasoning behind the requested high level outputs. Absent added guidance the selected fixtures we are offering meet or exceed the minimum listed requirement. However, we believe this results in choices that may be contrary to the underlying objective. As an example let us look at the two most common fixtures the 70w and 50w HPS fixtures. The specifications call for an LED fixture that produces 3900 lumens and does not exceed thirty watts. To achieve the desired luminance levels assuming a nominal 25 foot mounting height would require a fixture producing roughly 2000-2200 lumens in a type two distribution. Looking at the Acuity fixtures using the borosilicate glass optics, the only way to meet that requirement is to select the ATBS that has a nominal output at 40 watts of 5,577 lumens and then use the FAO dialer to dial it back to 70%. Which results in the 3904 lumens at 28 watts. However, this fixture is already at a low power level and further dimming will potentially create power factor and in particular issues with harmonic distortion. A better overall solution which is also a much less expensive fixture is the ATBX series which is designed to operate from 2,030 lumens up to 7,246 and we could select the P40 performance package that would deliver 3790 lumens at 28 watts. At this performance package it is in the mid-range of its capability allowing for both dimming without issue and able to produce nearly the desired output of 3900 lumens. This fixture also offers the glare shields which would slightly reduce its light output but also reduce glare. It would easily operate in the range that will actually be needed in the field and at lower cost. The one drawback to the Acuity fixtures is the lack of all around shielding such as is offered by both Cree and Leotek. But because the specifications did not allow for deviation or describe a design objective giving some flexibility we are forced to be sure our product offering meets or exceeds the minimum requirements or be potentially disqualified. It also means that once the community is briefed on these factors that the likelihood they will change what they want is high. This opens the door to potentially intentionally underbidding the offered product knowing full well there will be a change and then the final product marked up.

If the community is concerned with cost and prefers the Acuity product then Acuity does offer a non-borosilicate glass option which is their ATBMicro that covers the range of 2592 lumens up to 5653 lumens. So it would easily satisfy the needs for the 50 or 70w HPS lamps but would not necessarily meet the maximum wattage levels specified. This fixture only weighs eight pounds and is considerably cheaper. The table below illustrates the ranges available with this fixture selected at the 1050mA drive current and employing the Field Adjustable output control

|  |  |  |
| --- | --- | --- |
| FAO Setting 1 | 1639 lumens | 15 watts |
| FAO Setting 2 | 2324 Lumens | 21 watts |
| FAO Setting 3 | 2564 lumens | 23 watts |
| FAO Setting 8 | 4204 lumens | 37 watts |

As you can see at its highest setting, it produces more than the required lumens but does not meet the 30w maximum wattage. From an NGRID billing tariff standpoint it will fall in the 20 to 40 watt bucket and be billed at thirty watts as will a light that only uses 30watts. The only way to drop it into the 0-20 bucket is at its lowest setting which gives no added dimming capability. The impact is on the incentives. So a fixture that produces the desired 3900 lumens at 30 watts will earn $4.38 more incentives from NGRID than a 37 watt fixture and $2.80 more from OER. So if this fixture is more than $7.18 cheaper than it would be a better choice. Unfortunately the RFP does not allow for this latitude.

Acuity which is a subsidiary of AEL, is a high quality US manufacturer based in Ohio and whose roadway lighting products are assembled in Mexico. AEL has been supplying high quality roadway lighting products for over sixty years. The Acuity has demonstrated very high reliability rates on par or superior to other leading manufacturers. In addition, their performance in a side by side comparison with other manufacturers is exceptional. The ATBS series that uses the borosilicate glass optics is a chip on board technology which is a lower cost approach to very efficiently producing light but presents greater challenges for the optics and in particular glare. AEL, which also manufacturers Holophane lighting products, has extensive experience with glass products and AEL has stuck with glass because it is unaffected by UV light and exhibits lower life cycle costs. Holophane has a glass plant in Ohio where they produce other glass products for lighting. The specifications do not indicate either 3000K or 4000K lights but only indicate both options must be available. Based on this our proposal is using the 4000K lights as 4000k lights are more energy efficient and therefore improve the energy savings and potential incentives for the customer. However, some of these options in the 3000K temperature would not meet the minimum lumen /maximum wattage requirement of the RFP and would require a slightly higher wattage lamp.

Our second proposal is the Leotek GCJ series which uses individual optics for each LED to distribute the light and does provide more precise light distribution and lower glare factors. It is a less expensive option and will provide higher incentives. The Leotek is a more energy efficient light which will increase the incentives paid by both the OER and NGRID. It also has the advantage of all around shielding instead of only the back light shield. This option not offered by Acuity has proven invaluable I dealing with light trespass issues in other communities. Like the Acuity product it has the internal adjustability option and Leotek also makes a Comfort View version that reduces glare. As in the Acuity proposal we used the 4000K color temperature so the comparison is straightforward. The table below is a side by side comparison of the Acuity with the borosilicate glass verses the Leotek in terms of output and efficacy. The table below is a side by side comparison of The ATBMicro to the Leotek with each set at what we believe is the appropriate nominal operating level to provide the required luminance levels and to be perceived as equally or righter than the existing HPS lamp. Both fixtures offer the same approximate range of light levels and are what we believe would be the desired normal operating levels.

ACUITY LEOTEK



As you can see the Leotek not only has a much higher lumen per watt output but also would receive a much higher incentive and would fall in the 0 – 20 watt billing bucket saving money year over year for its life. It is also less expensive than the Acuity.

We were restricted to two offerings but do believe there are other fixtures that might be considered such as the Cree Traveyo series. This series is their low cost series that has just been upgraded and includes the dimming driver, the internal adjustability and outputs in the 130 + lumen per watt range. It has shown a superior light distribution pattern with clean cutoff which helps control light trespass. This will be the lowest cost option followed by the Acuity ATBX series.

An additional consideration might be the Dimulator control which allows a preset dimming schedule. These allow us to gain the $20 per unit added incentive from the OER as well as if incorporated into the design will allow us to increase the NGRID incentives as dimmed savings are incentivized at $.25 per kWh saved instead of the normal $.15 per kWh saved. In addition they can reduce future energy consumption by 26%. These controls have proven very reliable. They cost roughly $50 but when you consider the cost of a conventional photocell plus the added incentive and future energy savings they have an excellent return on investment. As an example looking at relative costs, added incentive and future energy savings at $.19 per kWh for the most common light the 105w Incandescent lamp;

Cost of Dim4 $50

Cost of photocell -$14.85

Net increased cost =$35.15

Less $20 incentive =$15.15

Less Added NGRID incentive of $5.00

Net added cost $10.15

Annual added energy savings $7.93

Return on investment is under two years and you are reducing light levels when most folks are in bed satisfying environmental and sleep interruption concerns. We believe this is a good investment if a Town does not want the intelligent control network.

We believe these types of analysis combined with pilot demonstrations are the optimum way to assist communities with making a fully informed decision. Overall our goal is to assist communities with making the best possible decision based on all factors and understanding their options and the associated costs and savings. We operate on a fixed margin of 12% and the community can be comfortable that we will not use change orders to increase profits.