

## BUCKLAND LED STREETLIGHT CONVERSION

1. Buckland has purchased from Eversource 94 Streetlights and will use funding from DOER Green Communities and the Metropolitan Area Planning Commission to replace existing fixtures with LeoTek LEDs. The Town has worked extensively with George Woodbury of LightSmart consulting to provide a lighting design system for the Town of Buckland.
2. Buckland's current system produces 762,800 lumens and consumes 9,926 watts of energy. The new system will produce 302,174 lumens and use 2051 watts of energy. This is possible because the LED light is much more efficient at directing the light where it is needed and because we adjust the light level to account for the human eye perception that the higher color rendering LED is brighter even when the lumens are identical.
3. The fixtures specified are all 3000 Kelvin which was the recommendation of the American Medical Association even though their claims have been widely debunked as any impact on melatonin production affected by night time lighting is dependent on dosage levels and studies at Rensselaer Polytechnical Institutes Lighting Research Center show that streetlights have no impact because the dosage levels are too low. (Not even sure what that all means, but I have included it and looking for bonus points from the Board of Health). Other studies have shown that the 4000 Kelvin lights actually provide for faster recognition times and faster reaction times. This becomes more important for higher speed roads with high levels of auto pedestrian reaction. The general public prefers the warmer color temperature (3000 Kelvin) and given the Buckland's rural nature we are using the warmer color temperature. (sorry Chief, public opinion beats public safety on this one)
4. These fixtures are equipped with a photocell that will automatically dim the lights at 11 PM until 5 AM nightly by 50%. This will further reduce the wattage of the fixtures and will result in an added savings of an estimated 26% on the Towns energy bill for the lights. Light Smart projects have applied this dimming schedule to more than 35,000 lights in other towns in Massachusetts and Rhode Island and to their knowledge there hasn't been an issue or complaint.
5. The fixtures selected are control ready and could adapt to intelligent controls systems if the Town desired. The higher wattage fixtures installed at the same locations where higher wattage fixtures were located previously or identified by the Town as being areas of concern for added safety all are internally adjustable and can be either brightened or dimmed based on any identified need. In addition, all of the lights can receive a snap in shield to address and light trespass issues. The lowest wattage fixtures are at their lowest setting but can be dimmed by the control. In order to adjust them the dimming control would have to be switched to one that defaults to a lower initial operating level. The maximum dimming permitted without creating problems for these lights is 50%.
6. This project will reduce the total light output by 61% and the total energy consumption by 85% while at the same time providing the same overall lighting levels on the roadway. Meaning that if we have not received complaints about lighting on Ashfield, Conway and State streets now then we probably will not get them after the conversion.
7. The light distribution pattern selected is type two which is an elongated elliptical pattern designed to concentrate the light on the roadway and reduce light trespass.