TO: TOWN COUNCIL

FROM: ELECTRIC UTILITY TASK GROUP

SUBJECT: ANALYSIS OF ECONOMICS OF STREETLIGHTING

DATE: OCT. 21, 2013

As requested by the Town Council we have re-evaluated the economics of converting the 75 streetlights on Block Island to LED lighting. John Warfel reports the following:

The question whether we should replace conventional (HID or HPS) streetlights with LED is a "no-brainer." Communities around the world with lower electricity rates than ours have been converting to LED street lighting for years. LED technology is also improving rapidly and costs are also dropping. LED lights have the advantage of using about one-third the energy as HPS lights, last a lot longer, are dimmable, and cause less light pollution.

Block Island has about 75 streetlights that use 150w HPS lamps that are housed in a conventional cobrahead fixture. If we assume that the streetlights are on ten hours a day we come up with a total of 41,062.5 kWh/year. Switching to LED lights would save approximately 27,375 kWh/year. If dimmable technology is used we can expect to save an additional 20-30% in energy over conventional photocell operation. In addition, LED lamps can last over 100,000 hours as compared to HPS which last about 2,000 hours.

The best procedure for converting our streetlights will take some thought. LED conversion kits are made to fit into conventional cobrahead fixtures but it might be more cost effective to replace the existing cobrahead with a specially made LED cobrahead that would not have to be touched for 10 years.

The first step in this process would probably be an analysis of the condition of the present streetlight hardware and a recommendation for where additional lighting might be helpful. I counted three different types of streetlight heads, but there might be more. There is also quite a variety of LED streetlights and research to find the best product for our conditions would be necessary.

Upgrading our streetlights would allow us to save energy, but in addition would provide the opportunity to target areas in need of better lighting and enable us to control that lighting in a smarter and more energy efficient way.

Using a conservative approach to estimating the savings, let's start with the 41,062.5 kWh/yr and claim a 60% savings, which results in a 24,637 kWh/yr reduction. We are now

using 16,425 kWh/yr for street lights. If we use dimmable technology we can expect to save an additional 20-30% more. If we take the conservative 20% we can expect to reduce our consumption by 3,285 kWh/yr which brings us to a total of 13,140 kWh/yr for street lighting. If we use a conservative 10-yr life for LED's we can expect to save 279,225 kWh of electricity over 10 years.

We can estimate what we would save in dollars if we convert to LED lights but remember that these are estimates. The street lights are not metered and BIPCO charges the town a flat rate of $13,564 a year for street lighting. If we use our estimated 41,062.5kWh/yr energy usage and divide it into our charge of $13,564 we get a kWh cost of $.33. If we use our reduced kWh consumption with LED (13,149 kWh) we get an annual cost of $4,340, which saves us $9,223 per year. If we calculate savings using a conservative 10-year lifespan we come up with total savings of $92,144 over 10 years. It might be worth noting that street lights are on considerably longer in the winter when the demand on BIPCO is less as compared to the summer when the demand is greater.

In 2010 Boston started a LED street light conversion program. Boston has 64,000 street lights which use 65,000,000 kWh/yr and cost about $8 million to operate. They figure the payback to be 2-3 years without rebates.

Cree Lighting has a program that offers replacement cobrahead street lights for $99 each. After watching the video of the Cree cobrahead installation I would estimate that it would take one hour to swap out a light.