

## **LED Traffic Signal Modules**

In the late 1990's manufacturers began examining the possibility of replacing the incandescent light bulbs in the traffic signal heads with a series of light emitting diodes (LEDs). Some of the first models focused on the red indications since red LEDs are brighter and more readily available. The early models boasted of reducing energy consumption from a 150 watt incandescent bulb to a mere 25 watt replacement module with approximately 100 to 120 LEDs. The replacement warranty was also impressive at 1 year as opposed to most incandescent bulbs which had no warranty and had a life expectancy of 0 to 1 year (some newer heartier designed incandescent bulbs now have replacement warranties of 2 years). The energy savings was great but the cost for the module was around \$400; the cost of the module was much higher than the cost of the electricity over the life of the module. Since then, there have been dramatic improvements in the technology. LEDs are brighter (requiring fewer) more reliable, longer lasting, more energy efficient and cost less just to name some of the improvements. Less energy usage is good for us all.

Since the type material used in the LEDs produce different colors and different intensities, the costs for the different color modules have a wide range and varying levels of economic savings, with the red being the best. A typical intersection having all red indications converted to LEDs will pay for itself in less than one year.

The timetable for conversion of all indications from incandescent to LEDs is from 2005 to 2008 with a replacement of over 3,000 incandescent bulbs. The new modules have a replacement warranty of 5 years; call-ins of burned out indications has dropped dramatically. The typical life of the modules is expected to go well beyond the warranty period and future modules promise to be even more efficient at a lower cost.

Safety is another reason for the conversion. Each time an indication must be replaced a signal crew must work in traffic; anytime an employee does not have to be in traffic, there is a safety benefit for the employee and the motorists. The LEDs are brighter and have a more uniform appearance than its predecessor (the incandescent bulb). They have a greater impact as they rapidly turn on and off as opposed to the fade in and fade out of incandescent bulbs.