

IDOT'S USE OF LED TRAFFIC SIGNAL MODULES

- LED MODULES IMPLEMENTATION ON PROGRAMMED CONSTRUCTION CONTRACTS

Over the last 3 years, approximately 50 new traffic signals have been installed annually and an additional 500 traffic signals have been modernized each year under the State Highway Improvement Program. This represents about 8% of nearly 7,000 signals on the state system. It is anticipated that the LED modules will be used on all future traffic signal projects. Therefore, within 3 years 24% of the signals will be converted to the LED modules.

- ANNUAL SAVINGS ON ENERGY AND MAINTENANCE

For a typical intersection, assuming the energy cost of 7.5 cents per KWH and the LED conversion cost of \$6,000, the payback period due to energy savings alone is 5 years. The payback period is reduced to 3.5 years when the savings due to lower maintenance costs are also considered. The LED modules are warranted for 5 years, but are expected to have a much longer service life.

Assuming that LED modules are implemented on nearly all future programmed traffic signal modernization projects, the estimated savings are as follows.

ANNUAL SAVINGS DUE TO LED MODULES USE ON PROGRAMMED CONSTRUCTION CONTRACTS (YEAR 2002 & ONWARDS)

Energy Savings per Signal (a)	Maintenance Savings per Signal (b)	Total Savings per Signal (a)+(b)	No. of New & Modernized Signals per Year (c)	Total Savings per Year (c) * [(a)+(b)]
\$1239.00 (or 16520 KWH)	\$435.00	\$1,674.00	550	\$920,700.00

s:\gen\wpdocs\traffic\yg\2002\1st quarter\idot led program rev. 2.doc\yg\G

d. Electrical Requirements. Energy consumption of LED modules shall be measured at standard and at elevated temperatures when the modules meet the minimum luminous intensity of the relevant ITE specifications. The wattage requirements for the LED modules shall be as follows.

Module Type	Maximum Watts (W) at 165 °F (74 °C)	Nominal Watts (W) at 77 °F (25 °C)
12 in. (300 mm) Red Circular	17	11
12 in. (300 mm) Yellow Circular	25	22
12 in. (300 mm) Green Circular	15	15
12 in. (300 mm) Red Arrow	12	9
12 in. (300 mm) Yellow Arrow	12	10
12 in. (300 mm) Green Arrow	11	11

} 16 = 11