

## Electronic Ballast Maintenance Cost Analysis

This analysis looks at the question of how expenditures for maintenance of fluorescent ballasts may be expected to vary during the system-wide conversion to electronic ballasts. It predicts the approximate year-to-year cost of replacement ballasts purchased by the Division of Maintenance (DOM), for the years 1980 to 2013. The results are quite dramatic in that DOM will need to spend significantly more labor and material on ballast replacements each year for the foreseeable future, from 2005 to 2013. Recent increases are not due to unusual failure rates of electronic ballasts or high costs of electronic ballasts as initially speculated. The lifetimes of electronic and magnetic ballasts are comparable and the current cost difference is less than \$3.00. In fact in 3- and 4-lamp applications it's now decidedly cheaper to buy one electronic ballast to do the job in lieu of the two magnetic ballasts that would be required. What's driving the increase is two trends over time:

1. The age cycle of when most electronic ballasts were installed as retrofits (1993 to 2003) by the Energy CIP means some are now reaching the end of expected life. This "baby boom" of ballasts are due to start "retiring" on us now and failures will accelerate with each additional year of age.
2. The steady increase in MCPS overall square footage, and therefore the total number of light fixtures and ballasts to be maintained, is driving up replacement numbers proportionately.

As the graph below shows, we've just passed through the minimum point of the cycle for ballast burnouts system-wide, between years 2000 to 2004, at a predicted annual cost as low as \$50,000 in parts. This projection matches with Mike Allnut's estimate that DOM is spending \$13,000 to \$14,000 per quarter on electronic ballasts this year.

The bad news is this cost can mathematically be expected to increase by \$7,000 to \$10,000 per year for the next several years, and staff labor to perform the replacements will increase proportionately. While we've gotten used to a low overall ballast failure over several years, that lull may be coming to an end. Now would be an excellent time to make the ballast replacement process as efficient as possible in preparation for the coming increases.

The good news is that even in 2013 DOM will be spending only about the same on electronic ballast maintenance (in constant 2005 dollars) that it must have spent in 1991 on magnetic ballast maintenance, even though MCPS square footage will be 36% greater in 2013. This break-even is possible because fewer electronic ballasts are needed to light a facility; electronics can handle up to 4 lamps per ballast but magnetic only 2. This is very important to keep in mind when comparing "ballast cost."

Electronic ballasts have been a great boon to MCPS both for energy conservation and reduced maintenance costs. The cost of maintaining ballast has been dramatically reduced as predicted, and will go back up as predicted. Not because electronic ballasts are more failure prone or the cost is high, but due to the history and mathematics of how the conversion was implemented. We should not disparage electronic ballasts or the decision to use them based on what we know is about to happen.

### MCPS Ballast Maintenance Predicted Cost By Year During Conversion to Electronic Ballasts

