

From: ^PNNL MSSLC
 Sent: Thursday, April 23, 2015 9:58 AM
 Subject: Final results of MSSLC street light failure questionnaire

Hello MSSLC Members:

The MSSLC Failure Questionnaire wound up with 17 responses, accounting for more than 143,000 street and area light installations. The table below replaces the preliminary table circulated earlier, adding recent inputs and includes a couple of corrections to earlier reported inputs. A variety of system sizes from large to small are represented in the data sample, and geographic distribution is fairly dispersed as well with responses ranging over 11 different states, plus a few unknown locations.

Again, to our knowledge this is the first such public compilation to date documenting the reliability record of LED luminaires, as reported by actual installations. Note, however, that these results do not offer sufficient precision for a rigorous comparison with incumbent technologies, as they were obtained through voluntary reporting by a self-selected group (i.e., the MSSLC membership), and did not involve side-by-side comparisons of the different technologies' survival rates under the same environmental and operating conditions, etc. (Nor did this effort involve the costs or timeframe that such a comparison entails.) Also, these results reflect the performance of products still in their relatively early stages of development; some reported failures may stem from component issues that have since been corrected and in fact a few respondents reported as much. Yet the results are still of significant value in documenting experience with these products in actual field installations.

The table provides final results from the questionnaire and includes categories and sub-categories of data where obtained. Sub-categories are indicated by indented values in each column.

	Street Lights		Area Lights	
	Number ^a	Percent ^a	Number ^a	Percent ^a
Number of LED Products Installed	139,655		3,763	
Out of Box Failures	219	0.16%	25	0.66%
- Shipping/Installation Damage	43	19.6%	3	10.0%
- Internal Electrical Issues	126	57.5%	23	90.0%
Longer-term Failures	1113	0.80%	18	0.48%
- Human-caused ^b	221	19.9%	2	13.3%
- Nature-caused ^b	90	8.1%	8	46.7%
- Component failure ^c	799	71.8%	18	100.0%
• Individual LEDs failed to light	67	8.3%	4	24.4%
• Power supply	537	67.2%	6	31.1%
• Photocell	85	10.6%	2	13.3%
• Other	125	15.7%	4	20.0%
TOTALS	1,332	0.95%	43	1.14%

^a Numbers and percentages in a given category may not add due to: respondents not always providing a breakdown on every reported failure; single failures possibly falling into multiple categories; and rounding error.

^b Human-caused failures include those from issues such as vandalism, accidents, pinched wiring causing failure after some period of operation, etc. Natural causes include lightning strikes, wind, moisture, etc.

^c Not mutually exclusive with the previous two categories.

The overall failure rate for all LED street and area lighting luminaires reported sums to 1,375 failed units out of 143,418 installed, or 0.96% of the installed total. Removing all human-caused failures (e.g., accidents, shipping damage) drops this number to 1,106, or 0.77% of the installed total.

For convenience, the following paragraph is repeated from the earlier email reporting the preliminary results: A small amount of additional information was provided by some of the respondents in an Other Comments field. Two respondents reported that the bulk of their issues occurred with early units and the rate of failures has further dropped in the time since. One respondent reported that the most common problem in their case had to do with the photo control receptacle (but no further detail provided). One respondent mentioned wire routing concerns when the driver is mounted on the door; in their case "internal connection" was listed as being responsible for 30% of the "longer-term failures" they reported.

In addition, one later respondent noted that there were issues with the contractor not installing shunt caps properly, and recommends that sites carefully inspect for this before accepting the work as completed.

We hope you have found this information of interest and value. Thanks to the MSSLC members who contributed!



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