

**Solar powered lighting for the Manor Lake entranceway signs - seeing your membership dues at work, and break-in period system adjustments**

At the May 18, 2011 General Meeting, MLCA members voted to approve the proposed budget to install professional grade photovoltaic (solar) / battery lighting systems for both Manor Lake signs located on the median islands at the Bauer and Rocking Spring entranceways. After Montgomery County approved our application for a right-of-way permit, installation of both systems was completed by Solar Electrics of Fairfax, VA in September. We now have illuminated entranceway signs - a well deserved enhancement to the face of Manor Lake!

This was the culmination of extensive research, beginning in 2006, by concerned Manor Lake residents on the various means available for delivering power to illuminate these walls during the nighttime hours. This investigation concluded that professionally sized integrated photovoltaic / battery systems would offer the most practical and cost effective means to provide the necessary power for the delivery of grid quality (meaning comparable to the quality of electrical service provided by our local utility) lighting to our entranceway signs. A traditional grid connected or wired system, whether from a county street lamp post or from a PEPCO utility pole to either wall, had been determined to be cost prohibitive, as well as unnecessary.

At this point, you may be thinking: if these are grid quality lighting systems, why did I see them not working at the Rocking Spring site for about five nights in December and about two nights in January? This will be explained in detail below, but first, by comparison to local electric utility service (in nearly any region), the overall "power on" time throughout a given year is still comparable, or will exceed, that of electrical grid service, when you consider common widespread outages that utility companies experience as a result of large storms during an average year. In addition, our new solar lighting systems do not grow dim with insufficient battery charge, as do cheaper solar systems purchased online or in a local hardware store. The systems we have installed at the Manor Lake entranceways will deliver light at full brightness at all times (grid quality), except on those rare occasions when the system voltage controller detects an approaching over-discharge state for the batteries, in which case it will intentionally shut off the lights. After a day or more of good exposure to the sun, full service is restored.

After you read the following explanation of what took place in December and January, you may be even more pleased with the quality of design, equipment, and customer service that your membership dollars purchased when the MLCA acquired these solar lighting systems. The system at the Rocking Spring site actually shut down on those nights by design, to protect the storage batteries from a potentially damaging over-discharge state. Recall that the days in December and January are among the shortest of the year, and the sun's path through the sky is at its lowest angle in this season. This limits the overall charge time, relative to other months of the year. Add to this that we had an unusual amount of cloudy weather in December, and that there is a slightly larger load at the Rocking Spring site (due to the memorial plaque light), and system charging reached temporary periods whereby it could not keep up with the load. This led to the protective shutdown. Solar Electrics was called, and they promptly responded by adjusting the system computer to include a scheduled "off" time between the hours of about 3

and 5 AM. With the short days of these winter months, this limits the “daily” load on the system, and allows the charging from the solar panel to keep up with the overall load. As the spring season approaches, this scheduled “off” time will not be necessary, and will be eliminated automatically by the system computer as the days lengthen and nights become shorter.

Separately, there is the question of the solar panel height at the Bauer Drive site. Although the top edge of the panel is in line with the top of the wall, meeting the original MLCA specifications for this project, it appears higher in position and somewhat more noticeable than the solar panel at the Rocking Spring site. Solar Electrics placed it at this height out of concern for the occasional shadow that comes from the horizontal signal light crossbar located just above the south end of the median strip. Since it appears that this shadow is still covering portions of the panel for brief periods during these winter days of low sun, without any negative impact on system performance, Solar Electrics agrees that we may be able to lower the panel by 6 – 12 inches to make it less visible to passing traffic. A cost estimate to make this adjustment in height has been requested of Solar Electrics, and we are awaiting their response. The cost estimate for this adjustment will be discussed with Manor Lake residents at our next community meeting.

Beyond these initial system “break-in period” issues, Manor Lake residents can be proud of their community participation, and of our MLCA board members and officers, for having approved and implemented this highly visible and valued beautification project for the face of our community. This was an exciting step and significant accomplishment for Manor Lake!

*Submitted by Bret Lyhus, Manor Lake resident and former officer and board member of the MLCA. Bret has worked in the energy industry for 20 years, including years working with various means of power generation, as well as in energy efficiency consulting. Bret currently works on energy and process efficiency solutions, as well as sustainability initiatives, for a large federal contractor.*