



The Schuylkill
Center | for ENVIRONMENTAL
EDUCATION

Solar Array Update



The Schuylkill Center Solar Array and vegetation trial site. Photo by Joanne Donahue

On July 9th we toured The Schuylkill Center's PECO right-of-way in the area where the solar panels are being considered for installation. On the tour were Dr. Ann Rhoads from University of Pennsylvania's Morris Arboretum, Dr. Anne Bowers, and Dr. Rachel Wilson from Philadelphia University, Alex Brown, PECO right-of-way manager, and from The Center: Dennis Burton, Executive Director; Fran Lawn, Director of Land Restoration and Joanne Donohue, Assistant Director of Land Restoration.

We began the tour by reviewing the vegetation trials that were implemented in May underneath the existing solar panels near the main building. The trials include six species of grasses, sedges, and ferns that were seeded in or planted as plugs and will be monitored for survival rates. The objective of the trial is to determine what herbaceous species can survive in these conditions. Other vegetation that was not planted, germinating from nearby seed sources or dropped in by animals, are also being recorded and monitored. Dr. Rhoads observed that the seedling of at least one grape vine (*Vitis sp.*) had begun to grow. This led to further discussion about how to manage woody plant species growing underneath the

panels, which would require additional maintenance. We left this unresolved for the time being. After an overview of the vegetation trials, we discussed the feasibility of similar trials with larger arrays and how to control storm water runoff from the panels. To get a better sense of hydrological conditions we visited the site under the PECO lines.

At the site we surveyed the existing vegetation and found a mixture of native and non-native plant species. Of concern were two invasive species, Japanese Hops (*Humulus japonicus*) and Crown-vetch (*Coronilla varia*) that Alex Brown said appeared to be spreading since last observed under the lines. Other less aggressive non-native species of plants were observed amongst the native grasses and forbs but the group did not consider them a threat to the system as a whole. Alex said PECO would consider spot spraying as part of the project and possibly invest in some management of the area.

We also discussed whether to consider using the current management strategy for an area of PECO lines in Whitemarsh Township that uses three species of native grasses in combination with broad-leaf herbicides to discourage woody plant species from growing. The group as a whole agreed that the near monoculture of three species of grasses and the use of broad leaf herbicides would not be a good strategy for The Center's property since it would actually decrease viable habitat rather than maintain and improve habitat, which is the primary goal of the project.

The group then discussed the concerns of storm water management. We considered the pitch of the slope and the south facing angle needed to maximize energy output for the arrays. At issue was synchronizing the line of the slope, which runs southeast to northwest, with the angle of the arrays, which would run east to west in order to face due south. We generally agreed that well-constructed swales running perpendicular to the southeast-northwest slope, as well as the use of rain water retention areas underneath the solar panels, with diverse meadow vegetation in between the arrays, would be sufficient to prevent storm water erosion. This approach would increase the diversity of native vegetation and minimize herbicide use. Woody species management could be accomplished by mowing between the arrays, while invasive herbaceous species management could be done with limited spot spraying of herbicides. This management strategy would be similar to current management strategies without the pervasive herbicide applications now used.

The group agreed that this management strategy would require collaboration with a panel of qualified hydrologist, engineer, botanist, and wildlife biologist. The challenge would be to create a management strategy that allows mowers to move easily between the arrays and over the swales. Alex felt this could be accomplished with the collaboration of the panel. The group also considered the mix of vegetation that could best suppress invasives and attract diverse wildlife. Dr. Bower and Dr. Rhoads suggested a mix of forest edge species given that much of the right-of-way wildlife populates the edge habitat.

After more discussion the group generally agreed that the installation of solar arrays would be beneficial as a sustainable energy source by reducing the amount of carbon-based fuels, and additionally could help create better management practices for the many acres of existing and planned arrays worldwide. The group also generally agreed that this project should be an educational tool and programmed with displays and tours as a model for ecological management that coincides with the larger issues of urban sprawl, renewable energy needs, an industry that creates new jobs, and a reduction of our independence on foreign fuel.

In the final discussion of whether the PECO right-of-way was an appropriate location for installation of the solar arrays, the group generally agreed that though structurally feasible there would need to be very close collaboration with the panel and would depend upon a

certain amount of engineering ingenuity. At the end of the tour no one in the group concluded that the arrays shouldn't be installed along the PECO right-of-way, rather the general consensus was to install a smaller number of panels as a trial for a larger installation after reviewing the affects on the landscape of the smaller installation.

To that end, The Center has decided not to install the solar arrays pending further study and research of the various issues.