Low-Cost Solar Trees

This project involves the development of a novel low-cost “solar tree” based on **optimal use of a bifacial solar module** (> 3 × reduction in $/W cost).
A **reflective film that is low-cost, large-scale, and lightweight** is used as a **nonimaging optic** that concentrates sunlight onto a bifacial solar panel.
The use of the lightweight film reflector allows for a **lighter load on the post** for a given solar power capacity, thereby **reducing the cost** (> 2 × reduction in $/W cost) of the system, allowing a thin post or a moveable tripod structure to be implemented (i.e., **low installation cost**).
Furthermore, the low-concentration optical system allows for **passive solar tracking**.
By having such a low-cost and easily deployed (i.e., **low installation cost**) solar tree, solar power can be easily deployed to provide power in the unconventional situations, e.g., along water canals, found in rural settings.