

## HCC STEM Building Solar Photovoltaic (PV) Panels

Solar panels use light energy (called photons) from the sun to generate electricity through the photovoltaic (PV) effect. The photoelectric effect refers to the phenomenon in which electrons are emitted from the surface of a metal when light strikes it. Albert Einstein received a Nobel Prize for analyzing and characterizing this effect. These emitted electrons can be harvested to generate an electrical current and that is the photovoltaic effect.

Groups of solar energy cells are arranged in panels which are then grouped into an array. A 36-panel array is being installed on the 5th floor green roof. There will be four adjustable-angle solar arrays consisting of four PV panels each and one solar tracking array that will have six PV panels attached to it. The solar tracking array is currently being designed and will be installed in the upcoming months.

- The four adjustable angle solar arrays will be tied to the electrical grid providing power for the STEM building. These solar arrays will produce approximately six kilowatts of power, which will contribute to the overall power for the building.
- The solar tracking array will be a battery backup system producing one kilowatt of power.
- All of the solar arrays are being installed by the students in the Alternative Energy Technology Program under the supervision of their instructors.
- The Alternative Energy Technology Program will use the solar arrays as a teaching, research, and demonstration tool to educate its students in the design, maintenance, and installation of PV solar arrays.
- HCC has partnered with Maryland Solar, the group that is designing and constructing the large commercial solar array at the Maryland Corrections Facility in Hagerstown. Maryland Solar will be donating 30 thin film PV panels that will replace the current solar panels. The current solar panels will then be moved to the future Energy House that will be built on campus. Maryland Solar has also granted HCC the rights to monitor the power that will be produced by its project.

