



A simplified schematic of PV-BIDPAT

The life cycle inventory model component of PV-BIDPAT consists of a set of modules that characterize a variety of BIPV technologies (amorphous, crystalline, and crystalline silicon, CdTe & CIS thin film - the technology library) and another set of modules representing the displaced building materials (fiberglass asphalt shingles, galvanized metal roofing, curtain wall panels, glazing components - the material library). In the current phase of the project, two UniSolar amorphous silicon roofing products and the appropriate displaced building materials will be studied, with more technology and material modules to be added in the future. There is also a module containing a regional characterization of conventional electricity generation ('the grid') as well as provision for specifying BIPV system parameters.

The life cycle cost model component of PV-BIDPAT comprises policy and economic modules to account for federal and state regulations and policies pertaining to electric utility companies, energy generation, and emissions. These modules allow for specifying first costs of the system under study and they assign monetary value to the social costs ('externalities') of pollutants and environmental damage. The life cycle cost model is designed to encourage and expedite evaluation of policy scenarios (net metering, emissions trading, rebates, and 'green rate' programs, for instance).

The output from PV-BIDPAT is in the form of several metrics. Pollution prevention factors, energy payback time, and electricity production efficiency are the primary metrics calculated by the inventory modules. The main metrics calculated in the cost modules are cost payback time and cost per kWh. Taken together, these metrics allow an equitable comparison of a particular BIPV installation with the conventional building materials and electricity generation that it displaces.