9.3 System Wire Sizing Exercise

Problem: Using the sample PV system below, calculate the **current (amps) in** the various portions of the system by answering each of the questions. This system consists of the following specifications and equipment:

- DC system voltage = 24 volts.
- Ten 100-watt modules, each with nominal module voltage of 12 volts. The short circuit current (Isc) of each is 7.2 amps and the maximum power current (Imp) of each is 6.2 amps.
- Eight batteries, each is 6 volts and rated at 350 amp-hours.
- One charge controller that is 24 volts and rated for 60 amps.
- One 2500-watt inverter with an input DC voltage of 24 volts and an output AC voltage of 120 volts.
- Total connected DC load is 500 watts at 24 volts.

1. First draw the system

Determine the **amps** in various circuits on the DC side of a PV system that powers both DC and AC loads.

2. Between panels and controller
3. Between controller and batteries
4. Between batteries and DC load
5. Between batteries and inverter