

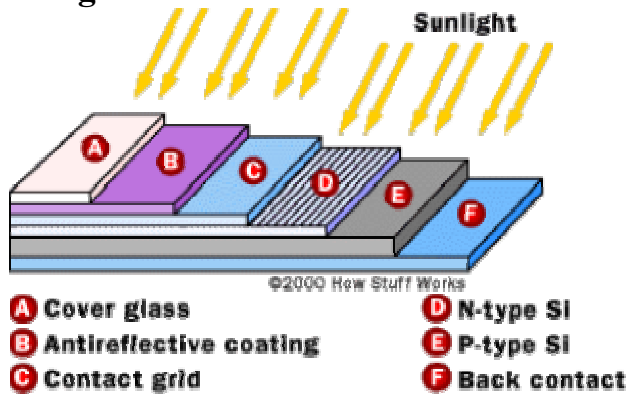
## Photovoltaic Cells (PV Cells)

photo – light

voltaic – electricity

**A PV cell converts sunlight directly into electricity**

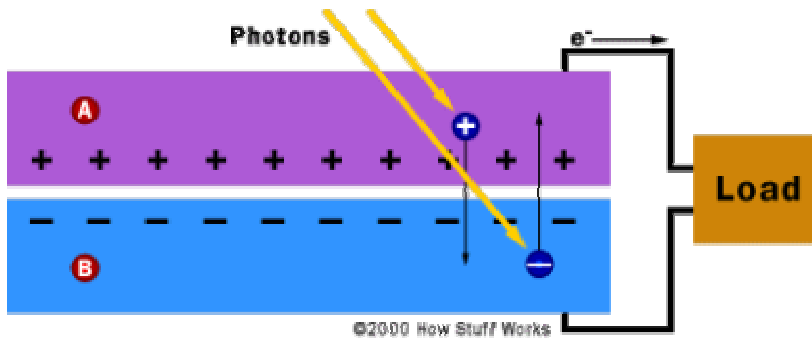
### Design



Notes about how a PV cell is designed:

- made of two layers of semiconductor cells, such as silicon (shown as layers D and E in the diagram above)
- contains an electric field because the two layers of silicon have different impurities added to them (one layer is N-type while the other is P-type)
- antireflection coating on top of PV cell reduces reflection losses (shown as layer B in the diagram above)
- current flows on metallic contacts (shown as layers C and F in the diagram)

## Functionality



**A** n-type Silicon

**B** p-type Silicon

### How a PV cell works

1. Light energy (photons) strikes the PV cell.
2. The silicon cells absorb some of the light energy.
3. The absorbed energy knocks some of silicon's electrons loose.
4. The electric field between the two layers of silicon forces electrons to flow in a certain direction, creating an electrical current.
5. Current flows through metal contacts on the top (contact grid) and bottom (back contact) of the silicon layers.
6. The metal contacts can direct the current through wires that are attached to a motor.