

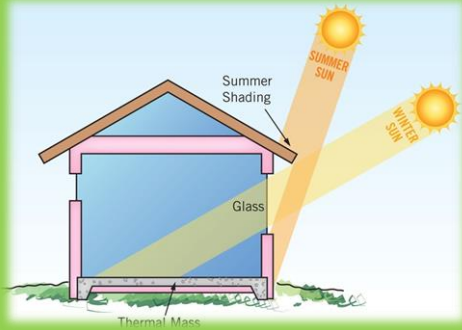
# Solar Students



## History

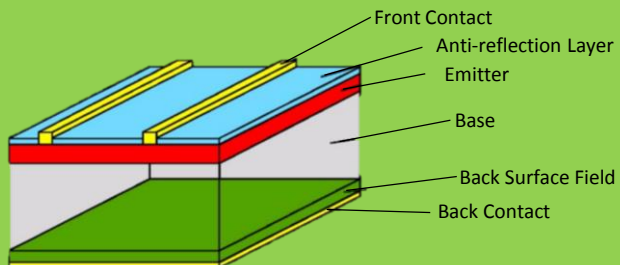
### Passive solar

- Using natural sunlight to heat and light up structures.
- Architects hundreds of years ago always designed with the sun and environment in mind.
- Less popular now due to coal, oil, and gas.



## What are Solar Panels?

- Two or more thin layers of semiconducting material. (Usually made of silicon)
- Also known as PV modules and were invented about 100 years ago.
- Work using a process called the photovoltaic effect.
- Converts natural sunlight into usable energy.



## Types of PV Solar Panels

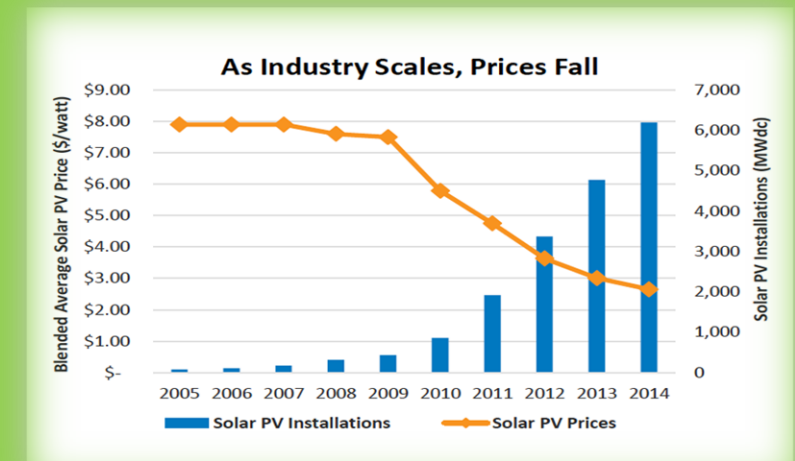
| Types of solar panels:       | KD135GX-LP | KD180GX-LP | KD205GX-LP |
|------------------------------|------------|------------|------------|
| Number of Cells              | 36         | 48         | 54         |
| Peak Power (watts)           | 135        | 180        | 205        |
| Peak power voltage (volts)   | 17.7       | 23.6       | 26.6       |
| Peak power current (amps)    | 7.63       | 7.63       | 7.71       |
| Open circuit voltage (volts) | 22.1       | 29.5       | 33.2       |
| Short circuit current (amps) | 8.37       | 8.35       | 8.36       |
| Max. System Voltage (volts)  | 600        | 600        | 600        |
| Length (inch)                | 59.1       | 52.8       | 59.1       |
| Width (inch)                 | 26.3       | 39.0       | 39.0       |
| Depth (inch)                 | 1.4        | 1.4        | 1.4        |
| Weight (lbs)                 | 28.6       | 36.3       | 40.7       |
| Price (\$)                   | 890        | 1188       | 1353       |

## Advantages

- Direct conversion of solar radiation into electricity
- Doesn't have mechanical moving parts (no noise)
- Doesn't produce high temperatures
- PV modules have a long life and do not create pollution
- The sun is a free source of energy (abundant & limitless)
- PV can also produce as little as microwatts and up to megawatts
- Easily able to add more solar panels to increase output
- Very reliable and require minimum maintenance
- Can be set as stand-alone systems
- CHEAP!!!!

## Why Schools?

- Buildings require vast amounts of electricity due to the amount of square footage
- Can benefit the most off of solar panels (due to lighting a large amount of space often)
- Typically have a large amount of roof space (perfect for the placement solar panels)
- Hundreds and sometimes thousands of solar panels can be easily placed
- Most efficient due to the amount of solar panels that can be placed
- Improves overall image
- Help achieve sustainable and predictable energy cost
- Makes use of roofing space



# References

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