**PVWatts**

Below are the inputs to which I ran through the PVWatts tool for my hometown in Pennsylvania. They are all the default values provided by the tool

|  |  |
| --- | --- |
| **Elev (m)** | 103 meters |
| **DC System Size (kW)** | 4 |
| **Module Type** | Standard |
| **Array Type** | Fixed / Open Rack |
| **Array Tilt (deg)** | 20 |
| **Array Azimuth (deg)** | 180 |
| **System Losses** | 14.08% |
| **Inverter Efficiency** | 96% |
| **DC to AC Size Ratio** | 1.2 |
| **Average Cost of Electricity Purchased from Utility** | $0.12 / kWh |
| **Capacity Factor** | 14.7% |

Below is the (monthly) output from PVWatts. Most of it makes sense at a general level, although the calculations for each metric and how they connect to the inputs are somewhat unclear. Specifically, how the inputs like *Array Type, Array Tilt,* and *Array Azimuth* impact the *Solar Radiation* output column below.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Month** | **AC System Output**  (kWh) | **Solar Radiation** (kWh/m^2/day) | **Plane of Array Irradiance** (W/m^2) | **DC array Output** (kWh) | **Value**  ($/kWh) |
| 1 | 299 | 2.91 | 90.2 | 313 | 38.55 |
| 2 | 368 | 4.09 | 114.4 | 385 | 47.49 |
| 3 | 468 | 4.76 | 147.7 | 489 | 60.38 |
| 4 | 505 | 5.66 | 169.8 | 527 | 65.13 |
| 5 | 523 | 5.79 | 179.5 | 546 | 67.4 |
| 6 | 524 | 6.10 | 183.1 | 547 | 67.61 |
| 7 | 553 | 6.31 | 195.7 | 577 | 71.32 |
| 8 | 507 | 5.76 | 178.5 | 530 | 65.38 |
| 9 | 452 | 5.31 | 159.4 | 472 | 58.29 |
| 10 | 387 | 4.16 | 129.1 | 405 | 49.98 |
| 11 | 292 | 3.13 | 93.8 | 306 | 37.65 |
| 12 | 265 | 2.63 | 81.5 | 278 | 34.21 |
| **Annual** | **5142** | **4.72** | **1723** | **5374** | **663.39** |