

Photovoltaics For Your Kihei Home

For Kihei Community Association

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Solar Electric

Photovoltaics or PV

- Makes electricity directly from the sun
- Photovoltaic Cells make this possible
- State & federal tax credits are available to you if you have a tax liability

Photovoltaics (PV)

- PV panels (called modules) generate DC power
- The DC power can be:
 1. Stored in batteries and converted to AC later
 2. Converted to AC and used or transferred to MECO
- The most popular type of system is #2, grid-tied (net metered)

Solar Electric Systems



Net Metered System

- Most systems have no batteries
- The DC power is:
 - Converted to AC
 - Fed into the house load center on circuit breakers
- When more power is made than used during the day, the meter runs backward
- At night the meter runs forward

Net Metered System



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Net Metering Inverter



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Connection to Load Center



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Net Metering Billing

- You are billed on the net usage (amount used minus amount generated).
- The lowest your bill can go is the “minimum charge,” \$18 a month for residences.
- If you use over \$18 worth of electricity some months, it can be offset by excess electricity generated in other months.

PV System Design

- Find the average usage per day from a MECO bill for the last year
- Divide that by 77% (system efficiency)
- Divide that by the sun hours for your area
 - 5.8 for Kihei, Lahaina, Paia, 4.5 for up country
 - Each area of Maui has a sun hour rating
- That gives you the size system you need in kW
- Multiply by \$7,000 to get the approximate cost.

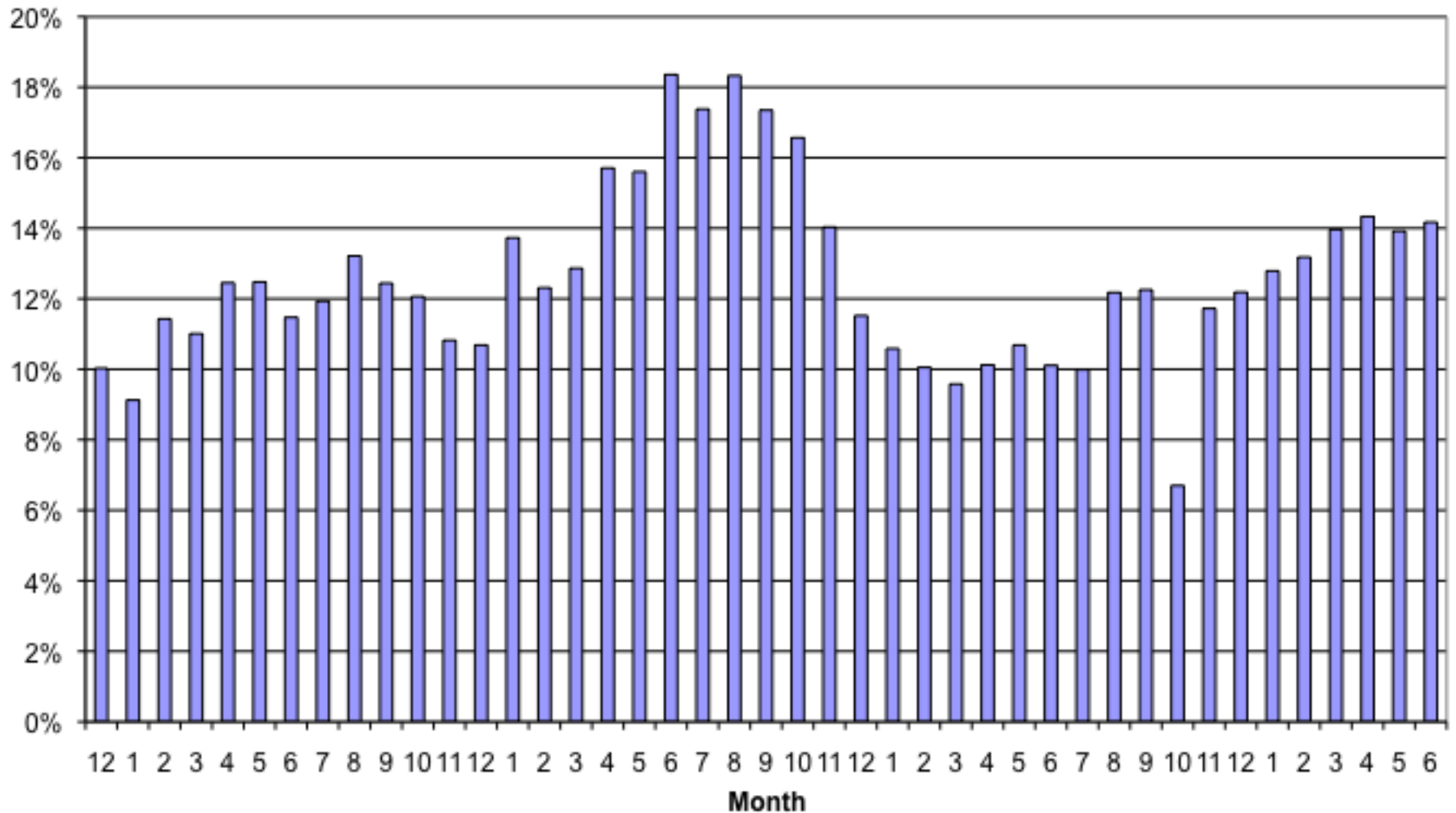
Kihei PV Design Example

- Yearly Average Usage per Day = 14 kWh
- Divide that by 77% = 18 kWh/day
- Divide that by 5.8 for Kihei = 3.1 kW
- Cost is \$7,000 X 3.1 = \$22,000

PV Economics

For Our System in Kihei

1787 Kai Maka Return on Investment With a 3 kW PV System



PV Economics For 2010

- Purchase Price \$21,000
- Less Tax Credits (65%) -\$13,650
- Net Cost \$7,350
- Yearly Savings \$1,533
- Payback in Years 0
- Annual Return on Investment 20%

PV System Design

- Bill reduction primarily depends on the size of the system and the amount of sun in your part of the island.
- A 3 kW system in Kihei will save about \$125 a month in 2010 and cost approximately \$21,000 (\$7,350 after tax credits).
- A 6 kW system in Kihei will save about \$250 a month in 2010 and cost approximately \$42,000 (\$15,000 after tax credits) and require 600 square feet of roof space.
- Upcountry systems will save about 20% less.

Batteries For Off Grid System

- Batteries are needed if there is no power available from MECO
- Batteries provide power at night & during cloudy days
- Cost increases by about \$3,000 a kW
- Maintenance increases:
 - Adding water, equalizing monthly, replacement every 5-10 years

Batteries



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