

1. Energy for the home.

Current energy costs for a similar-sized home to the proposed home of **1,800** sq ft A/C living area
 (divide total bill by number of kWh)

A. Electricity Average bill **17,670** Price/kWh **17,670** kWh/year
 kWh/month

- or -
 Actual total kWh for 12 months **17,670** **Total Annual kWh for home** **17,670**

B. Heating **17,670** cf/gas **17,670** gal./propane
 (If applicable). We use this to calculate the energy needed for heating by reverse-cycle AC heat pump.
 - or - Average bill **17,670** **Total annual kWh-equivalent**

2. Energy for vehicles.

****MPG-e** —“Miles per Gallon – equivalent” —is how many miles the EV can travel (city and highway combined) on 33.7 kWh (equal to the energy in one gallon of gasoline). Various models of the same EV may have different MPG-e ratings.
 Source: U.S. Dept. of Energy Environmental Protection Agency [Source.](#)

Vehicle 1 sedan **25** MPG ** **15,000** miles/year ** used to identify similar-size Electric Vehicles.
 This category includes Chevy Bolt (115-118), Hyundai Ionique (98-114), Tesla 3 (130-132)
 Estimated MPG-e of typical EV replacement: **125** MPG-e = 27.0 kWh/100 miles.
kWh/year for 15,000 miles is 4,044

This category includes Chevy Bolt (115-118), Hyundai Ionique (98-114), Tesla 3 (130-132)

Vehicle 2 minivan **28** MPG ** **15,000** miles/year ** used to identify similar-size Electric Vehicles.
 Estimated MPG-e of typical EV replacement: **115** MPG-e = 29.3 kWh/100 miles.
kWh/year for 15,000 miles is 4,396

TOTAL ANNUAL kWh for home and vehicles: 26,110

3. SOLAR IRRADIANCE AT YOUR LOCATION. Data from **PORT ST LUCIE, FL** Lat, Lng: 27.29N, 80.38W

The amount of solar energy hitting your roof varies by location, season and time of day, and can vary year to year.

Solar irradiance data from U.S. Dept. of Energy National Renewable Energy Laboratory. [Source.](#)

30 years of data from another location **44** mi. away shows year-to-year sunshine variance of **-5.5% to +4.8%**

The chart shows kWh per day and month per square meter at this location, with full sunshine equal to 1kW/m².
 These numbers are equal to the kWh per day, month or year per 1kW of solar panels.

	PANELS FACE SOUTH, TILT 27°		PANELS FACE SOUTH, TILT 10°		
	DAILY	MONTHLY	DAILY	MONTHLY	
January	5.14	159	4.36	135	26,110 kWh Annual Load 1,959 kWh/kW of solar panels 13.33 net kW solar panels needed System losses 16% 25-year derating 4% Inverters 6% other 26% estimated losses 18.01 gross kW panels needed 400 watts per panel 45.02 net panels required
February	5.58	156	4.98	139	
March	5.97	185	5.77	179	
April	6.44	193	6.63	199	
May	5.93	184	6.48	201	
June	5.26	158	5.91	177	
July	5.48	170	6.04	187	
August	5.41	168	5.73	178	
September	5.32	160	5.30	159	
October	5.18	161	4.78	148	
November	5.17	155	4.45	134	
December	4.72	146	3.97	123	
Annual	5.47	1,995	5.37	1,959	

This is an estimate. Calculations are based on information provided by the client.

The final number of panels required will be determined by Energy Calculations for specific home, HVAC system calculations and specifications, and a final engineered solar plan with all components specified.

As for vehicles, "your mileage may vary."

Based on 400W panel size 74" x 41.1" plus interpanel spacing, your solar array is about **995** square feet, not including spaces around the edges of the roof and between rows.

South-facing panels tilted at 10° produce similar ANNUAL output to those at optimal higher tilt angles, but cast shorter shadows, allowing more tilted panels to fit in a given roof area. Note monthly variations.

For reference, changing 1 vehicle above to a full-size pickup (66 MPG-e) would add **6** panels for same miles.