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Humble Service Wisdom = Works!

I. Nomenclature

- A. Silicon crystals i.e., "wafers" connected together electrically
form a Solar Module
- B. Solar Panels – 2 or more Solar Modules connected
mechanically & electrically
- C. Solar Array – 2 or more Solar Panels connected
mechanically & electrically

II. Solar Modules

A. Poly crystalline = Multiple silicon crystals

1. Less expensive to manufacture and purchase

B. Mono crystalline = One silicon crystal

1. More expensive to manufacture and purchase
2. Higher efficiency
3. Better performance in low light (solar irradiance) and less than optimal array orientation

III. Charge Controllers

A. Connect Array to Batteries

B. Regulate battery Charging

C. On Off Load Control I.E. Lights

IV. Inverters – DC to AC Inversion

A. Direct Current (DC) to Alternating Current (AC)

1. Off Grid Inverters
2. Rated in Capacity Watts
 - a. Input Voltage from battery either 12, 24, 48 vdc

- b. Output 120 or 240 vac
- c. Pure Sine wave output
- d. The Inverters Output ties to Load Center or has outlets

V. Design Considerations

A. Solar

- 1. Array Orientation and tilt angle
 - a. Due South orientation
 - b. Latitude, 34.5 + 15 Degrees, – 15 Degrees tilt angle
- 2. Avoid shading from 9AM- 3PM
- 3. Distance from Array to Charge Controller, short as Possible
- 4. Array Capacity

VI. Structural

- 1. Mounting
 - a. Ground
 - b. Roof
- 1. Condition of the Roof, Structural Integrity

VII. Electrical

1. Inverter Location
2. Charge Controller Location
2. Battery Bank Location
3. Balance of System Components
 - A. Wire, Disconnects, Fusing and Breakers

Notes: