

SOLAR ENERGY CONSIDERATIONS FOR CHURCHES

Special Considerations:

1. Non-profit Entity vs Taxpaying Entity
2. Non-Traditional Energy User
3. Your Power Needs – Electricity/Gas

Understanding Your Electricity Bill

1. Standard vs Demand Charges
2. Annual Forfeitures / Reconciliations

Options for Solar Power

1. Solar Heating (Hot Water) / Air Conditioning
2. Photovoltaic On-Grid (Net metering)
3. Photovoltaic Off-Grid (Batteries)
4. Photovoltaic Feed-In Tariff

Resources

1. Vendors
2. Non-profit
3. Electric Companies
4. Other Church or Non-profit Organization Users
5. Legal Counsel

Selecting A PV System

1. Cost/Savings Analysis
 - a. Power Purchase Agreement / Discounted Payments no cash outlay
 - b. Outright Purchase / Loan
 - c. Lease / Rent to own
2. Equipment Considerations
 - a) Inverters/Panels/Mounts/Monitoring
 - b) Warranties & Insurance
3. Request For Proposals (RFP)

UNDERSTANDING YOUR ELECTRIC BILL

A. REGULAR FEE SCHEDULES

1) Basic Schedule (eg. "R") – Bill is calculated using **KWHs**:

- USAGE (**KWH**) = Difference between current and last reading
- AMOUNT YOU PAY = **KWH** x RATE

2) Demand Schedule (eg. "J"): Bill is calculated using **KWHs** and **KWs**

- USAGE (see above)
- DEMAND = (**KW**) within a 15-minute period. Ratchet measured and resets to "0" the beginning of each month.
- DEMAND charges calculated at a rate of \$11.69 per KW plus a monthly service charge of \$82. Billable amount is based on the highest KW charge incurred in the rolling six-month period.
- Bill = (USAGE x Rate) + (Demand Charges)

B. NET METERING CONTRACT SCHEDULES

- Meter records **KWH** delivered (**DEL**) by HECO and **KWH** it receives (**REC**) from the customer.
- **NET** is the difference between what HECO delivered to the customer vs what it received from the customer and results in a credit or billable usage.
- **NET** credits are applied against customer charges and forfeited after a year if unused.
- **NET** credits cannot be applied to DEMAND CHARGES and should not be used in calculating PV system size requirements.

Photovoltaic Cost Comparison

- 1) Take No Action
- 2) Power Purchase Agreement – PPA
- 3) Purchase A System
- 4) Lease A System

Scenarios based on a current monthly electricity bill of: \$1,000 projected 20 years.

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|------------------|---------------------|----------------|-----------|----|------------|
| NO ACTION | CURRENT BILL | \$1,000 | YEARS | 20 | \$240,000. |
| | MNTHLY PYMNT | \$1,000 | | | |
| PPA | DISCOUNT RATE | 20% | YEARS | 20 | \$192,000. |
| | DISCOUNT AMNT | \$200 | YRS 16-20 | | |
| | MNTHLY PYMNT | \$800 | | | |
| PURCHASE | FINANCE | \$120,000 | YEARS | 15 | \$170,811. |
| | INT RATE | 5% | | | |
| | YEARS | 15 | | | |
| | MNTHLY PYMNT | \$949 | | | |

BASIC CONSIDERATIONS:

- 1) **PPAs** usually have contractual increases but pay for all the maintenance of the system.
- 2) **PPAs** typically “locked” to the system on your property. At the end of a PPA you would need to purchase the system at “market” price or revert to the Power Company (HECO) rate structure at that time.
- 3) **Purchasing** makes you the owner and responsible for all costs associated with the equipment. Most warranties cover products for 15 years on inverters and 20+ years for the panels.
- 4) **Leases** are generally for a shorter time period making it an option for organizations wishing to acquire ownership quicker and can meet the lease terms that may include origination fees and buyout fees.

Determining The Right PV Option

1. Form a Special Committee with members such as:
 - a. Treasurer or one familiar with church finances (both operating and assets) and at least one member of the church's governing leadership.
 - b. Spreadsheet enthusiast.
 - c. Buildings Chair and/or others with construction or facilities management experience.
 - d. Individuals familiar with financing and leasing.
 - e. Others interested in Photovoltaics or other sustainable energy topics.
2. Familiarize the group with Photovoltaic basics and determine any factors such as an aging roof or electrical system that might need to be considered in your projections.
3. Review different approaches the church can consider for acquiring a PV system. If nothing else, start with what can be accomplished with the amount being paid for electricity and also check insurance implications.
4. Consider all possible locations for the PV system – unobstructed roof areas facing east are the most ideal.
5. Research other installations (churches, individuals, other non-profits) and gather as much information as possible. Develop a preferred list of PV suppliers.
6. Prepare an Request for Proposals (RFP):
 - a. Preferred location and any particular circumstances of your church
 - b. Currently electricity costs (provide your Electric bill)
 - c. Financing capability (anything from your monthly electricity payment and upward.)
 - d. Basis of evaluating your review – for example cash-flow, best cost in fifteen years, equipment, etc.
 - e. Timeframe for your review and selection process.
7. Stick to your RFP and honor your respondents equally.
8. Conduct interviews with your short listed vendors.
9. Thank you letters.