

House District 14,15,16

Senate District 7

THE TWENTY-SEVENTH LEGISLATURE
HAWAII STATE LEGISLATURE
APPLICATION FOR GRANTS & SUBSIDIES
CHAPTER 42F, HAWAII REVISED STATUTES

Log No:

For Legislature's Use Only

Type of Grant or Subsidy Request:

GRANT REQUEST – OPERATING

GRANT REQUEST – CAPITAL

SUBSIDY REQUEST

"Grant" means an award of state funds by the legislature, by an appropriation to a specified recipient, to support the activities of the recipient and permit the community to benefit from those activities.

"Subsidy" means an award of state funds by the legislature, by an appropriation to a recipient specified in the appropriation, to reduce the costs incurred by the organization or individual in providing a service available to some or all members of the public.

"Recipient" means any organization or person receiving a grant or subsidy.

STATE DEPARTMENT OR AGENCY RELATED TO THIS REQUEST (LEAVE BLANK IF UNKNOWN): DBEDT

STATE PROGRAM I.D. NO. (LEAVE BLANK IF UNKNOWN): _____

1. APPLICANT INFORMATION:

Legal Name of Requesting Organization or Individual:
Kauai Economic Opportunity, Incorporated

Dbn:

Street Address: **2804 Wehe Road, Lihue, HI 96766**

Mailing Address: Same

2. CONTACT PERSON FOR MATTERS INVOLVING THIS APPLICATION:

Name LYNN KUA

Title Administrative Officer

Phone # 808-245-4077 ext. 225

Fax # 808-245-7476

e-mail keo@keoinc.org

3. TYPE OF BUSINESS ENTITY:

- NON PROFIT CORPORATION
- FOR PROFIT CORPORATION
- LIMITED LIABILITY COMPANY
- SOLE PROPRIETORSHIP/INDIVIDUAL

6. DESCRIPTIVE TITLE OF APPLICANT'S REQUEST:

**KEO
PHOTOVOLTAIC SYSTEM INSTALLATION
AT 8 PROGRAM SITES**

4. FEDERAL TAX ID #: [REDACTED]

5. STATE TAX ID #: [REDACTED]

7. AMOUNT OF STATE FUNDS REQUESTED:

FY 2014: \$ 222,384

8. STATUS OF SERVICE DESCRIBED IN THIS REQUEST:

- NEW SERVICE (PRESENTLY DOES NOT EXIST)
- EXISTING SERVICE (PRESENTLY IN OPERATION)

SPECIFY THE AMOUNT BY SOURCES OF FUNDS AVAILABLE AT THE TIME OF THIS REQUEST:

STATE \$ _____

FEDERAL \$ _____

COUNTY \$ _____

PRIVATE/OTHER \$ _____

[REDACTED]
NAME & TITLE

1/29/13
DATE SIGNED

COPY

Application for Grants and Subsidies

If any item is not applicable to the request, the applicant should enter "not applicable".

I. Background and Summary

This section shall clearly and concisely summarize and highlight the contents of the request in such a way as to provide the State Legislature with a broad understanding of the request. Include the following:

1. A brief description of the applicant's background;

Kauai Economic Opportunity, Incorporated (KEO) is a private non-profit agency, incorporated on March 16, 1965. The agency began as a local community action program under the support of the Office of Economic Opportunity (OEO). KEO is a multi-purpose organization with funding from a variety of sources. Over the past 47 years, the agency has fiscally administered millions of dollars of Federal, State, County, and private funds. The agency is the only human services organization on Kauai, whose purpose is to provide a wide range of services and activities that alleviate the conditions of poverty and allow low-income families and individuals to attain social and economic self-sufficiency.

KEO annually provides services to over 5,000 individuals and is currently administering more than 20 broad ranged programs that provide a variety of services to the low-income, children, elderly, homeless, immigrants, and the jobless. KEO has secured funds and has successfully acquired property to provide housing for the homeless and disabled, office and administrative facilities, Early Learning Center and food services. It is at most of those properties that KEO applies to install photovoltaic systems to transfer the exorbitant utility costs to program support costs.

As a private, non-profit agency, KEO has been able to operate with a reduced overhead and has been able to accomplish tasks that are difficult for government agencies. KEO has been creative in utilizing its resources, is cost conscious and maintains a high level of accountability of funds (stringent reporting requirements, contracts outside audits annually, and is periodically audited by the State of Hawaii).

2. The goals and objectives related to the request;

The goal of this project is to install solar photovoltaic systems (PVs) on the following buildings currently owned/utilized by KEO that will produce power to supply 90% of KEO's energy needs.

Building/Site	Avg. Monthly Electric Bill
1) Food Service Kitchen	\$1,750
2) Main Administrative Office	\$2,076
3) Mana`olana Homeless Emergency & Transitional Shelter/ Kitchen/Laundromat	\$2,667
4) Lihue Early Learning Center	\$379
5) Pa`a Hana Group Home for physically challenged	\$313
6) Komohana Group Home for homeless individuals	\$267
7) Kome Transitional House (new 3 bdrm- under rehabilitation)	\$350
8) Lawehana Transitional House (new 3 bdrm- under rehabilitation)	\$350
TOTAL MONTHLY ELECTRIC COST	\$8,152
ESTIMATED ANNUAL ELECTRIC	\$97,824

The objective is to become less dependent on fossil fuel and to reduce energy costs for our agency so that we can continue to efficiently assist more low-income individuals and families. KEO absolutely needs these savings. The energy costs presently "drains" the operational budget, therefore denying critical services for those in need.

3. The public purpose and need to be served;

The high cost of electricity is draining energy & resources from KEO. The problem is becoming acute for our agency program budgets due to monthly cost upward of \$8,152 for electricity, which comes to almost \$100,000 annually.

Kaua'i's electricity costs, often the highest in the country, prevents our agencies ability to serve **more** low-income and needy individuals and families which include the homeless, elderly, disabled and youth (all ages of the community).

One way for KEO to reduce electricity costs is to invest in renewable energy upgrades such as solar photovoltaic panels. However, due to the high cost we do not have the ability to step off the grid and complete the installations.

Solar power in Hawaii isn't just a wise choice for residential consumers; it's a wise choice for KEO. Converting to a solar PV installation will let us take back control of our budget by offsetting or completely eliminating our electric bill. By converting to solar energy, we'll turn our state's most abundant renewable resource (the sun) into clean energy and help to reduce Hawaii's dependency on foreign, environmentally unfriendly oil.

4. Describe the target population to be served; and

This capital project will benefit the approximately 5,000 low-income and disadvantaged persons who we serve on Kauai.

5. Describe the geographic coverage.

The locations for the proposed installation of PV systems are Central and East Kauai where the buildings are located but the target population that we serve comes from throughout the island of Kauai

II. Service Summary and Outcomes

The Service Summary shall include a detailed discussion of the applicant's approach to the request. The applicant shall clearly and concisely specify the results, outcomes, and measures of effectiveness from this request. The applicant shall:

1. Describe the scope of work, tasks and responsibilities;

KEO is applying to the State of Hawaii for funding in the amount of \$163,225 to fund a capital project to install PV systems at the following locations where KEO provides services.

Site	Estimated Cost	Estimated Federal & State Credits	Estimated Net Cost	Annual Estimated Energy Savings
1) Food Service Kitchen	\$81,900	\$44,636	\$37,264	\$18,900
2) Main Administrative Office	\$97,150	\$52,947	\$44,203	\$22,421
3) Mana'olana Homeless Emergency & Transitional Shelter/Kitchen/Laundromat	\$78,000	\$42,510	\$35,490	\$28,804
4) Lihue Early Learning Center for children 3-5 yrs old	\$22,046	\$12,015	\$10,031	\$4,093
5) Pa'a Hana Group Home for physically challenged	\$18,606	\$10,140	\$8,466	\$3,380
6) Komohana Group Home for homeless individuals	\$16,100	\$8,775	\$7,325	\$2,884
7) Kome Transitional House (3bdrm for larger homeless family)	\$22,928	\$11,878	\$11,050	\$3,780
8) Lawehana Transitional House (3 bdrm for larger homeless family)	\$20,566	\$11,170	\$9,396	\$3,780
TOTAL	\$357,296	\$194,071	\$163,225	\$84,662

See attached estimates obtained through www.solar-estimate.org for each site.

Based on these estimates the rate of return appears substantial and accelerated. The lifetime of the photovoltaic system has been estimated although, not absolute, to serve the owner for possibly a 20 year period.

The scope of work and tasks for the PV systems includes planning, designing, construction and purchasing of equipment phases. Responsibilities include verifying that proper procedures for the installation are followed and that all product warranties are in place. We will also meet and comply with all of the standards for the award of grants and subsidies

pursuant to Section 42F-103, Hawai'i Revised Statutes as well as State of Hawaii procurement requirements.

2. Provide a projected annual timeline for accomplishing the results or outcomes of the service;

Projected Annual Timeline
July 2013 – June 2014

Activity Dates	Program Activities & Strategies	Program Outcomes
07/2013	*Planning and designing the PV systems	Bid specifications
08/2012	*Bid letters solicited through KIUC approved contractors for the PV systems. Hold informational meeting for interested contractors.	Bid letters will be received, screened and recommended for bid award.
09/2013	*Bid awarded to contractor.	Assurances and contracts executed. Notice to proceed issued
10/2013-11/2013	*Installation of PV systems KEO monitors installations and contractors execution of contract requirements.	Contractor installs systems at various sites.
12/2013-06/2014	*Monthly energy bills monitored	Lowered utility costs

3. Describe its quality assurance and evaluation plans for the request. Specify how the applicant plans to monitor, evaluate, and improve their results; and

KEO will maintain the integrity of its PV system through a team which will manage the quality assurance system for the PV system. The quality assurance system has several components including review of qualifications and credentials, paperwork audits, establishment of program standards and inspection. Inspections includes verification of contracted scope of work, accuracy of site analysis, comparison of installation to submitted design drawings and the delivered quality of the PV installation. KEO or its representatives will make a reasonable number of visits to each installation site before, during and/or after installation of a PV System.

Inspections may be conducted by a qualified independent third party chosen by KEO. The contractor/installer will be given the option of attending the field inspection. We will make an effort to accommodate the schedule of the contractor/installer.

KEO’s CEO, Fiscal Officer, and a fulltime Project Director (hired to manage the contract and oversee the installation of the PV units) will monitor the energy use and efficiency of the PV systems by monitoring the utility bills for up to one year.

4. List the measure(s) of effectiveness that will be reported to the State agency through which grant funds are appropriated (the expending agency). The measure(s) will provide a standard and objective way for the State to assess the program's achievement or accomplishment. Please note that if the level of appropriation differs from the amount included in this application that the measure(s) of effectiveness will need to be updated and transmitted to the expending agency.

KEO will achieve the following primary results with the photovoltaic system installation project:

- Utility bills for the agency will decrease by 90%, an estimated \$84,662.

A monthly comparison report by energy use and cost from the previous year will be monitored and reported.

III. Financial

Budget

1. The applicant shall submit a budget utilizing the enclosed budget forms as applicable, to detail the cost of the request.

See Attached Budget Forms.

2. The applicant shall provide its anticipated quarterly funding requests for the fiscal year 2014.

Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total Grant
\$96,402	\$96,402	\$14,790	\$14,790	\$222,384

3. The applicant shall provide a listing of all other sources of funding that they are seeking for fiscal year 2014.

At this time we have not applied for funding from other sources.

4. The applicant shall provide a listing of all state and federal tax credits it has been granted within the prior three years. Additionally, the applicant shall provide a listing of all state and federal tax credits they have applied for or anticipate applying for pertaining to any capital project, if applicable.

KEO has not been granted any state or federal tax credits within the past 3 years, but we anticipate applying for State and Federal tax credits pertaining to this capital project.

IV. Experience and Capability

A. Necessary Skills and Experience

For nearly 48 years, KEO has provided a wide range of health, social service, educational and employment services that help to alleviate the conditions of poverty and allow disadvantaged individuals and families to attain social and economic self-sufficiency. KEO, further, during that period has extensive skills and experience in the acquisition, construction, and management of many projects including funding requirements of HUD, State of Hawaii, County of Kauai, and private funds. KEO has for more than 20 years administered the Low-Income Home Energy Assistance Program and the Weatherization Assistance Program including the certification of families to receive energy subsidy towards their electric and propane gas bills and KEO, in the last three (3) years conducted energy audits on approximately 90 homes, energized all homes in different degrees including installing appropriately 73 solar water heater systems on low-income families individuals homes. KEO currently administers and coordinates over 20 separate programs that target Kauai's low- income individuals and families. These programs include emergency assistance, homeless & housing, childcare, nutrition, and energy programs.

B. Facilities

All of KEO facilities are in compliance with the American Disability Act; accessible to the handicapped; near bus lines; and meet all applicable zoning, health and fire standards.

- 1) Food Service Kitchen – 3343 Kanakolu Street, Lihue, Hawaii 96766
Located in the center of Lihue, the Food Service Kitchen prepares more than 800 meals per day for KEO's Meals on Wheels or Home Delivered Meals program, Kupuna Congregate Meals program, Lihue and Kalaheo Early Learning Centers, Mana`olana Emergency Homeless Shelter as well as private contracts for the Medicaid Waiver program, Kauai Adult Day Care, Head Start, Lihue Hongwanji, AluLike, Punana Leo, Kauai Community College, Kawaikini Charter Schools and other private individuals. This location meets Dept. of Health requirements for preparing food. Current electric cost is \$1,750 monthly.
- 2) Main Administrative Office – 2804 Wehe Road, Lihue, Hawaii 96766
Services are provided at the KEO Administrative Main Office located in Lihue 7:45 a.m. to 4:30 p.m., Monday through Friday, except State holidays and at various sites throughout the island of Kauai. Current electric cost is \$2,076 monthly.

- 3) Mana`olana Homeless Emergency & Transitional Shelter/Kitchen/Laundromat - 2808 Wehe Road, Lihue, Hawaii 96766
The Mana`olana Homeless Emergency Shelter building provides shelter for the homeless 365 days per year. 19 homeless individuals are provided shelter, a dinner meal, bathroom and shower facilities each night. The transitional shelter buildings include 8 one-bedroom units for 21 individuals up to 24 months. Also on the Mana`olana site is a certified kitchen for meal service and a laundry facility. Current electric cost is \$2,667 monthly.
- 4) Lihue Early Learning Center – 4463 Pahee Street, Lihue, Hawaii 96766
The Early Learning Center provides licensed child care for 36 children from 2 years 9 months to 8 years old. Current electric cost is \$379 monthly.
- 5) Pa`a Hana Group Home – 1608 Papau Street, Kapaa, Hawaii 96746
This Group Home provides permanent housing for 5 physically challenged individuals who were previously homeless. Current electric cost is \$313 monthly.
- 6) Komohana Group Home – 1753 Makoi Street, Lihue, Hawaii 96766
This transitional housing site provides shelter for up to 5 homeless individuals who can reside there for up to 24 months. Current electric cost is \$267 monthly.
- 7) Kome Transitional House – 5178 Kome Street, Kapaa, Hawaii 96746
- 8) Lawehana Transitional House – 3934-D Lawehana Street, Lihue, Hawaii 96766
Both the Kome and Lawehana Transitional Homes are under rehabilitation after purchase from the County of Kauai. They each have 3 bedrooms which is suited for larger homeless families who will transition for up to 24 months towards permanent housing. Estimated electricity cost for the Kome and Lawehana Transitional Homes is \$700 monthly (\$350 each).

V. Personnel: Project Organization and Staffing

A. Proposed Staffing, Staff Qualifications, Supervision and Training

A fulltime Project Director will be hired to manage and oversee the contract which includes coordinating and planning the design and installation of the PV systems at each site. The Project Director will work with the Management Team who will be comprised of the respective Program Directors who are responsible for the buildings where each of the PV systems will be installed. The Management Team will also include the Administrative Officer who is in charge of the Main Building and the Fiscal Officer who will participate in all fiscal related activities/phases of the project including the monitoring of the energy costs once the units are installed.

The minimum education requirement for a Fiscal Officer, Administrative Officer or Program Director is a Bachelors Degree or comparable with at least one year of supervisory experience.

The Chief Executive Officer (CEO) is responsible for the administration of the overall legal, financial and program operations of the agency. The Fiscal Officer, Administrative Officer, and all Program Directors report directly to the CEO.

B. Organization Chart

The applicant shall illustrate the position of each staff and line of responsibility/supervision. If the request is part of a large, multi-purpose organization, include an organizational chart that illustrates the placement of this request.

See Attached Organization Chart

VI. Other

A. Litigation


KEO is not a party in any pending litigation and does not have any outstanding judgments.

B. Licensure or Accreditation

Not applicable.

BUDGET REQUEST BY SOURCE OF FUNDS
(Period: July 1, 2013 to June 30, 2014)

Applicant: Kauai Economic Opportunity, Incorporated

BUDGET CATEGORIES	Total State Funds Requested (a)	(b)	(c)	(d)
A. PERSONNEL COST				
1. Salaries	42,806			
2. Payroll Taxes & Assessments	5,205			
3. Fringe Benefits	11,148			
TOTAL PERSONNEL COST	59,159			
B. OTHER CURRENT EXPENSES				
1. Airfare, Inter-Island				
2. Insurance				
3. Lease/Rental of Equipment				
4. Lease/Rental of Space				
5. Staff Training				
6. Supplies				
7. Telecommunication				
8. Utilities				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
TOTAL OTHER CURRENT EXPENSES				
C. EQUIPMENT PURCHASES				
D. MOTOR VEHICLE PURCHASES				
E. CAPITAL	163,225			
TOTAL (A+B+C+D+E)	222,384			
SOURCES OF FUNDING		Budget Prepared By:		
(a) Total State Funds Requested	\$ 222,384			
(b)				
(c)				
(d)				
TOTAL BUDGET	222,384	MaBel Fujiuchi - Chief Executive Officer Name and Title (Please type or print)		

BUDGET JUSTIFICATION PERSONNEL - SALARIES AND WAGES

Applicant: Kauai Economic Opportunity, Incorporated

Period: July 1, 2013 to June 30, 2014

POSITION TITLE	FULL TIME EQUIVALENT	ANNUAL SALARY A	% OF TIME ALLOCATED TO GRANT REQUEST B	TOTAL STATE FUNDS REQUESTED (A x B)
CEO	1	101556	5.00%	\$ 5,078
Fiscal Officer	1	80112	5.00%	\$ 4,006
Administrative Officer	1	62703	5.00%	\$ 3,135
Accountant	1	25504	5.00%	\$ 1,275
Account/Administrative Clerk	1	38628	5.00%	\$ 1,931
Janitor	0.375	10740	5.00%	\$ 537
				\$ -
Project Director	1	\$26,844.00	100.00%	\$ 26,844
				\$ -
				\$ -
				\$ -
				\$ -
				\$ -
				\$ -
				\$ -
TOTAL:				42,806
JUSTIFICATION/COMMENTS:				

**BUDGET JUSTIFICATION
PERSONNEL: PAYROLL TAXES, ASSESSMENTS, AND FRINGE BENEFITS**

Applicant/Provider: kauai Economic Opportunity, Incorporated

Period: 7/1/13 to 6/30/14

Date Prepared: 1/29/13

Contract No.: _____
(As Applicable)

TYPE	BASIS OF ASSESSMENTS OR FRINGE BENEFITS	% OF PROG-OTHER SALARY	TOTAL
PAYROLL TAXES & ASSESSMENTS:			
Social Security	As required by law	7.65%	\$ 3,275
Unemployment Insurance (Federal)	As required by law	As required by law	\$ -
Unemployment Insurance (State)	As required by law	1.21%	\$ 518
Worker's Compensation	As required by law	2.50%	\$ 1,070
Temporary Disability Insurance	As required by law	0.80%	\$ 342
SUBTOTAL:			\$ 5,205
FRINGE BENEFITS:			
Health Insurance	550 per monthx12x 1.3FTE		\$ 8,580
Retirement		6.0%	\$ 2,568
SUBTOTAL:			\$ 11,148
TOTAL:			\$ 16,353

JUSTIFICATION/COMMENTS:

BUDGET JUSTIFICATION - EQUIPMENT AND MOTOR VEHICLES

Applicant: Kauai Economic Opportunity, Incorporated Period: July 1, 2013 to June 30, 2014

DESCRIPTION EQUIPMENT	NO. OF ITEMS	COST PER ITEM	TOTAL COST	TOTAL BUDGETED
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
TOTAL:				

JUSTIFICATION/COMMENTS:

Not Applicable

DESCRIPTION OF MOTOR VEHICLE	NO. OF VEHICLES	COST PER VEHICLE	TOTAL COST	TOTAL BUDGETED
			\$ -	
			\$ -	
			\$ -	
			\$ -	
			\$ -	
TOTAL:				

JUSTIFICATION/COMMENTS:

BUDGET JUSTIFICATION CAPITAL PROJECT DETAILS

Applicant: Kauai Economic Opportunity, Incorporated

Period: July 1, 2013 to June 30, 2014

FUNDING AMOUNT REQUESTED						
TOTAL PROJECT COST	ALL SOURCES OF FUNDS RECEIVED IN PRIOR YEARS		STATE FUNDS REQUESTED	OF FUNDS REQUESTED	FUNDING REQUIRED IN SUCCEEDING YEARS	
	FY: 2011-2012	FY: 2012-2013	FY:2013-2014	FY:2013-2014	FY:2014-2015	FY:2015-2016
PLANS						
LAND ACQUISITION						
DESIGN						
CONSTRUCTION			163225			
EQUIPMENT						
TOTAL:	0	0	163,225	0	0	0
JUSTIFICATION/COMMENTS:						
\$163,225 for the net cost of installing photovoltaic systems at 8 of KEO program sites.						

**DECLARATION STATEMENT OF
APPLICANTS FOR GRANTS AND SUBSIDIES PURSUANT TO
CHAPTER 42F, HAWAI'I REVISED STATUTES**

The undersigned authorized representative of the applicant certifies the following:

- 1) The applicant meets and will comply with all of the following standards for the award of grants and subsidies pursuant to Section 42F-103, Hawai'i Revised Statutes:
 - a) Is licensed or accredited, in accordance with federal, state, or county statutes, rules, or ordinances, to conduct the activities or provide the services for which a grant or subsidy is awarded;
 - b) Complies with all applicable federal and state laws prohibiting discrimination against any person on the basis of race, color, national origin, religion, creed, sex, age, sexual orientation, or disability;
 - c) Agrees not to use state funds for entertainment or lobbying activities; and
 - d) Allows the state agency to which funds for the grant or subsidy were appropriated for expenditure, legislative committees and their staff, and the auditor full access to their records, reports, files, and other related documents and information for purposes of monitoring, measuring the effectiveness, and ensuring the proper expenditure of the grant or subsidy.

- 2) The applicant meets the following requirements pursuant to Section 42F-103, Hawai'i Revised Statutes:
 - a) Is incorporated under the laws of the State; and
 - b) Has bylaws or policies that describe the manner in which the activities or services for which a grant or subsidy is awarded shall be conducted or provided.

- 3) If the applicant is a non-profit organization, it meets the following requirements pursuant to Section 42F-103, Hawai'i Revised Statutes:
 - a) Is determined and designated to be a non-profit organization by the Internal Revenue Service; and
 - b) Has a governing board whose members have no material conflict of interest and serve without compensation.

Pursuant to Section 42F-103, Hawai'i Revised Statutes, for grants or subsidies used for the acquisition of land, when the organization discontinues the activities or services on the land acquired for which the grant or subsidy was awarded and disposes of the land in fee simple or by lease, the organization shall negotiate with the expending agency for a lump sum or installment repayment to the State of the amount of the grant or subsidy used for the acquisition of the land.

Further, the undersigned authorized representative certifies that this statement is true and correct to the best of the applicant's knowledge.

Kauai Economic Opportunity, Incorporated



2013

(Date)

MaBel Ferreiro Fujiuchi

(Typed Name)

Chief Executive Officer

(Title)

KEO Board of Directors

**Chief Executive Officer
MaBel Fujiuchi**

**Fiscal Officer
Brigitte Correia**

**Administrative Officer
Lynn Kua**

Accountant (1)
Account Clerk (.5)

Administrative Clerk (.5)
Janitor (.375)

Intake Worker (1)

**Youth Services
Director
Al Nebre**

**Mediation
Director
Jessie Basquez**

**Elderly Nutrition, Food Service, WAP & PIN
Director
Celia Melchor-Questin**

**Homeles & Housing
Director
Stephanie Fernandes**

**CHILD CARE
Head Teacher (2)
Teacher (1)
Asst. Teacher (1)
Teachers Aide (3)**

**ELDERLY NUTRITION
Coordinator (1)
Meals Mgr (.875)
Meal Deliverers (8@.375)**

**FOOD SERVICE
Coordinator (1)
Cook (2)
Prep Cook (1)**

**WAP
Coordinator (.5)**

**HOMELESS OUTREACH
Case Manager (1)**

**EMERGENCY SHELTER & TRANSITIONAL HOUSING
Program Director (.5)
Coordinator (2@.80)
Maintenance Worker (.5)**

**TRANSITIONAL HOUSING & GROUP HOME
Coordinator (1)**

**HOMELESS EMERGENCY SOLUTIONS
Coordinator (1)**

Building Type: Commercial/Business
 State & County: **KEO Food Service Kitchen** HI - Kauai
 Utility: Kauai Island Utility Coop
 Utility Type: Electric Cooperative
 Your Average Monthly Electricity Bill: \$ 1,750 / Month
 (Assumed rate x average monthly usage)
 Tiered Rates Apply: No
 Time-of-Use Metering Offered: No
 Net-Metering Available: Yes - See Notes, below!



ESTIMATED SYSTEM SIZE

The system size best for your situation will vary based upon product, building, geographic and other variables. We encourage you to work with a Solar Pro who can better estimate the system size best for your situation. We estimate your building will need a system sized between 13.10 kW and 19.66 kW of peak power. This estimate assumes the mid-point of this range.

Solar Rating: **Great** **NOTE**
 5.24 kWh/sq-m/day
 Solar System Capacity Required: **NOTE**
 16.38 kW of peak power (DC watts)
 Roof Area Needed: **NOTE**
 1,638 sq-ft
 Equivalent Annual Production: 22,203 kWh electricity

ESTIMATED SYSTEM COST

This is only an estimate based upon many assumptions. Installation costs can vary considerably. We encourage you to work with a Solar Pro who can provide you with a more detailed cost estimate. We estimate that a 16 kW peak DC power system will cost between \$65,520 and \$98,280. This estimate assumes the mid-point of this cost range.



Assumed Installation Gross Cost: **\$81,900**
 "Gross Cost" is the cost before any rebates, incentives, tax credits, etc. are applied. See the Cost Notes, below!
 assuming \$5 **NOTE**
 per watt DC

FINANCIAL INCENTIVES

Financial incentives shown are totals across all years. So, if an incentive spans multiple years then the value shown is the total of all years. For details, please refer to the table below "Cash Flow by Year and Cumulative Across Years"

Federal Tax Credit (30% of Gross Cost at Installation) » link \$ 24,570
 HI Tax Credit (Commercial PV: 35%, \$ 500k Max.) » link \$ 20,066
 Modified Accelerated Cost Recovery System (MACRS) **YES** **NOTE**
 Depreciation (5 yr) » link

ESTIMATED NET COST: **\$ 37,264** **NOTE**

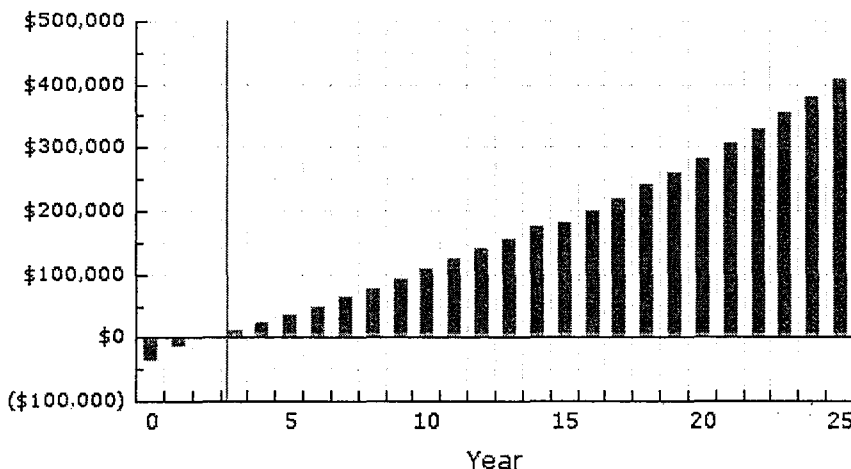
Cash & Loan Amounts: \$ 37,264 Cash
 \$ 0 Borrowed

Loan Monthly Payment (6.5% apr, 30 years): \$ 0

CASH FLOW

KEO Food Service Kitchen

Cumulative Cash Flow



Cash Flow Breakeven is where the chart crosses the \$0 point - this is when your investment has paid itself back in cash.

The chart above is a summary of the net cash flow you can expect over time. Net Cash Flow is the total cash after all costs (out-flows of cash) are reduced by financial incentives, annual utility savings and tax effects (in-flows of cash).

Average values are used together with your assumed income tax rate (37%). Any property appreciation has not been included, as this is generally not a cash flow (it's an investment). The loan modeled, if any, is included. Because this is a business, we have assumed utility savings do not result in loss of some expense write offs against income. And Modified Accelerated Cost Recovery System (MACRS) Depreciation applies (an income tax benefit). Because individual tax situations vary, we have not included Federal income tax liabilities that may result from having received non-federal incentives, if any (e.g. state rebate programs) as they are usually not taxed as earned income.

SAVINGS & BENEFITS

First-year Utility Savings:	\$10,500	More
Average Monthly Utility Savings: <i>over 25-year expected life of system</i>	\$1,469	More
Average Annual Utility Savings: <i>over 25-year expected life of system</i>	\$17,624	More
25-year Utility Savings:	\$440,597	More
Levelized Cost of your Solar Energy: \$37,264 cost / 555,075 kWh electricity replaced by solar	\$0.07 per kWh	More
Return on Investment (ROI):	1101%	More
Internal Rate of Return (IRR):	43.9%	More
Net Present Value (NPV):	\$200,270	More
Profitability Index:	6.4	More
Greenhouse Gas (CO2) Saved: <i>over 25-year system life</i>	455 tons 910,000 auto miles	More

Cash Flow by Year and Cumulative Across Years

This cash flow table includes tax effects applied to utility savings and loan interest payments (if any). For commercial (business) situations we assume utility savings do not result in loss of some expense write offs against income. "Tax Savings from MACRS depreciation" (below) is the net cash saved on income taxes after the depreciation expense is written off. So the amount that was depreciated would be the cash value shown divided by the Income Tax Rate (more info.). Because individual tax situations vary, we have not included Federal income tax liabilities that may result from having received non-federal incentives, if any (e.g. state rebate programs) as they are usually not taxed as earned income. Any income from your system (e.g. performance-based incentives and "SREC's") may be taxed as income (also not shown).

Year of Operation:	at Install	1	2	3	4	5
Gross Cost	(\$81,900)					
Federal Tax Credit (30% of Gross Cost at Installation)	\$24,570	\$0	\$0	\$0	\$0	\$0
HI Tax Credit (Commercial PV: 35%, \$ 500k Max.)	\$20,066	\$0	\$0	\$0	\$0	\$0
Tax savings from MACRS Depreciation	\$0	\$11,000	\$2,933	\$1,760	\$1,056	\$1,056
Utility Savings	\$0	\$10,897	\$11,309	\$11,736	\$12,180	\$12,640
ANNUAL CASH FLOW	\$-37,264	\$21,897	\$14,242	\$13,496	\$13,236	\$13,696
Cumulative Cash Flow	\$-37,264	\$-15,367	\$-1,125	\$12,371	\$25,607	\$39,303

Breakeven

Year of Operation:	6	7	8	9	10	11
Gross Cost						
Federal Tax Credit (30% of Gross Cost at Installation)	\$0	\$0	\$0	\$0	\$0	\$0
HI Tax Credit (Commercial PV: 35%, \$ 500k Max.)	\$0	\$0	\$0	\$0	\$0	\$0
Tax savings from MACRS Depreciation	\$1,056	\$0	\$0	\$0	\$0	\$0
Utility Savings	\$13,118	\$13,614	\$14,129	\$14,663	\$15,217	\$15,792
ANNUAL CASH FLOW	\$13,646	\$13,614	\$14,129	\$14,663	\$15,217	\$15,792
Cumulative Cash Flow	\$52,949	\$66,563	\$80,692	\$95,355	\$110,572	\$126,364

Year of Operation:	12	13	14	15	16	17
Gross Cost				(\$11,466)		
				Inverter		
				Replaced		
Federal Tax Credit (30% of Gross Cost at Installation)	\$0	\$0	\$0	\$0	\$0	\$0
HI Tax Credit (Commercial PV: 35%, \$ 500k Max.)	\$0	\$0	\$0	\$0	\$0	\$0
Tax savings from MACRS Depreciation	\$0	\$0	\$0	\$0	\$0	\$0
Utility Savings	\$16,389	\$17,009	\$17,651	\$18,319	\$19,011	\$19,730
ANNUAL CASH FLOW	\$16,389	\$17,009	\$17,651	\$6,853	\$19,011	\$19,730
Cumulative Cash Flow	\$142,753	\$159,762	\$177,413	\$184,266	\$203,277	\$223,007

Year of Operation:	18	19	20	21	22	23	24	25
Gross Cost								
Federal Tax Credit (30% of Gross Cost at Installation)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

HI Tax Credit (Commercial PV: 35%, \$ 500k Max.)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Tax savings from MACRS Depreciation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Utility Savings	\$20,476	\$21,250	\$22,053	\$22,886	\$23,751	\$24,649	\$25,581	\$26,548
ANNUAL CASH FLOW	\$20,476	\$21,250	\$22,053	\$22,886	\$23,751	\$24,649	\$25,581	\$26,548
Cumulative Cash Flow	\$243,483	\$264,733	\$286,786	\$309,672	\$333,423	\$358,072	\$383,653	\$410,201

FAQ's: Frequently Asked Questions for HI:

- Where can I find more information about Hawaii Renewable energy programs and incentives?

Notes & Assumptions: Solar Electric (PV) Systems

*** HOW TO REDUCE THE SYSTEM SIZE NEEDED & INCREASE SAVINGS**

The estimate provided above assumes "base" electric rates apply. Other taxes and surcharges may be applied to your utility bill. We suggest you review a recent utility bill and change the "Assumed Electric Rate", above, as needed to better match your situation.

You may have other metered-rate options with your utility. Options such as Tiered billing rates, Time-Of-Use (TOU) metering, and Net-Metering, if available, can help reduce the system size you need to provide a "net-zero" energy bill. Sometimes people also reduce the size of their solar system to accommodate planned improvements in their building's energy efficiency, or to match a budget and/or the available space for installing a solar system.

Energy production from a solar electric (PV) system is a function of several factors, including the following. Our assumptions are:

Factor	Assumption
Solar resources	Assumed solar availability: As per Solar Radiance chart
Soiling or contamination of the PV panels	Clean, washed frequently: 100% design sunlight transmission
Temperature	25C, calm wind
System configuration (battery or non-battery)	Non-battery
Orientation to the sun	South facing, tilted at latitude, full sun
Shading	None
PV Energy delivered as % of manufacturer's rating	95%
Soiling, wiring & power point tracking losses	9% (91% delivered)
Inverter Efficiency	90%
<u>Total Energy Delivered</u>	<u>95% x 91% x 90% = 78%</u>

Energy Efficiency: Improving your building's energy efficiency will reduce the system size you need to attain a "net-zero" energy bill.

KEU Food Service Kitchen

Tiered Rates: Often people are paying a "Tiered" rate for their electricity. This is a higher rate (higher than the "Base" rate) for electricity charged when a home or building uses more than a "Base" amount allocated for the building. Installing a solar system will reduce your electrical demand from the utility. This can result in a lower utility rate because you stay within the "Base" rate level. In this case, the more expensive "Tiered" rate electricity is eliminated, reducing your average electricity rate.

TOU Metering: Many utilities offer Time-of-Use (TOU) meters. This allows the price of electricity to vary by time of day (called "Peak" or "Off-Peak" periods) and by season (usually "Winter" versus "Summer" rates). If TOU metering is offered by your utility, a solar system may result in additional savings. This is because peak (more expensive electricity) rates often occur during the daytime. This is usually when a solar system is producing the most output, thus reducing your demand for peak-rate electricity from the utility.

Most utilities do charge for the purchase and installation of a time-of-use meter (normally a few hundred dollars). We have assumed the cost for this is part of the "Estimated Installation cost" shown above.

Net-Metering: With Net-Metering, surplus electricity generated by your renewable energy system will be credited back to your utility account. So if your solar system makes more electricity than you are using, the "meter spins backwards". You are not actually "selling" electricity, since in most states the utility will not reimburse you for excess electricity. But, if your utility offers "Net-Metering" you may be able to get credit for electricity provided back to the grid during peak periods. Combined with TOU metering, Net-Metering can result in multiplied savings since your electricity account may be gaining electricity credits during the time of peak utility rates -- Think of a hot, sunny summer day ... your solar system is producing power, spinning your electric meter backwards, and supplying the grid with electricity to run other people's air conditioners -- you're "spinning back" cost at peak rates! That's the savings power of Net-metering, combined with TOU rates.

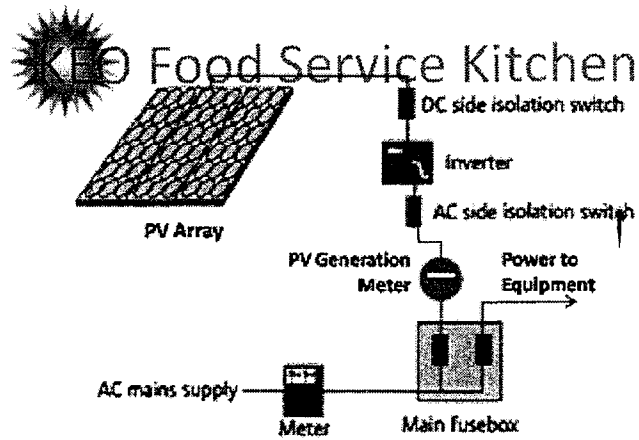
Solar Power "Fixes" Energy Costs: The cost of sunshine is free. While the sun rises every morning, the cost of sunshine does not. Utility rates, on the other hand, tend to rise steadily in cost. So, the value of your savings from a solar system are likely to increase as time goes on. If you are on a fixed income (e.g. nearing or in retirement) this may be of particular interest to you.

THE COST TO GO SOLAR

This is only an estimate based upon many assumptions and limited data entered by you: Installation costs can vary considerably. The cost to purchase and install a complete grid-tied solar photovoltaic (PV) system on a residential home is typically as further defined in the table, below. This includes the PV array, inverter and associated balance of system costs. It does not include the cost of options you may select, such as battery backup power storage, or the costs of building preparation work, like new shingles. Costs can also be higher if you add other features or have special installation needs (such as application over tile roofing) or you choose to use special mounting systems (such as sun tracking systems). Other factors may also affect price, including, but not limited to, your location, the building condition, type and location, its wiring, and warranties offered.

Assumed Cost, per Watt DC

Item	System Size 1 kW	System Size 10 kW
Assumed Total	\$7 per watt DC (+/- 20%)	\$5 per watt DC (+/- 20%)



OTHER ASSUMPTIONS

This summary is based upon many assumptions and the limited data you entered. An actual site assessment by a qualified solar system retailer or contractor will be needed to determine the actual costs and benefits of installing a solar electric system.

HELPFUL PDF's & Links



Payback & Other Financial Test for Solar on Your Home

The Dept. of Energy's: **PVWatts Online PV Calculator**

Natural Resources Canada's: **RETScreen Renewable Energy Calculators**

This estimate is made available to you by: Solar-Estimate.org

KEO Main Administrative Office

Your Solar Electric Estimate

YOUR SOLAR RATING



The solar rating of your area is **Great** for adopting a solar system. (5.24 kWh/m² per day).

You may want to change some of the information to better match your situation.

Customize Your Assumptions

Price Installed \$ per watt DC.

Provide % of my electricity, on average, over the course of a year.

Electric Rate: \$ /kWh [More](#)

Monthly Electric Usage: kWh/Month [More](#)

Utility Annual Inflation Rate: %

Utility Savings Method: [help](#)

Federal ITC Based Upon: [help](#)

Federal Income Tax Rate: [help](#)

State Income Tax Rate: % (Low: 1.40% - High: 8.25%) [help](#)

Loan Modeling: Borrow % of \$44,203 estimated cost
at % interest (apr) re-paid over years

[» Update My Assumptions](#)

If you agree **this is a smart investment**, we encourage you to work with a Professional to help you install your very own system.

Click on the [More](#) buttons to learn about our assumptions and other important information used to generate your estimate. Also, please review the Notes below.

Help us improve. We rely on feedback from our users to help keep our service accurate and useful:
» [Send us your Feedback](#)

Your Solar Electric Estimate by the Numbers

Building Type: **Commercial/Business**
KEO Main Administrative Office
 State & County: HI - Kauai
 Utility: Kauai Island Utility Coop
 Utility Type: Electric Cooperative
 Your Average Monthly Electricity Bill: \$ 2,076 / Month
 (Assumed rate x average monthly usage)
 Tiered Rates Apply: No
 Time-of-Use Metering Offered: No
 Net-Metering Available: Yes - See Notes, below!



ESTIMATED SYSTEM SIZE


The system size best for your situation will vary based upon product, building, geographic and other variables. We encourage you to work with a Solar Pro who can better estimate the system size best for your situation. We estimate your building will need a system sized between 15.54 kW and 23.32 kW of peak power. This estimate assumes the mid-point of this range.

Solar Rating: **Great** 5.24 kWh/sq-m/day 
 Solar System Capacity Required: 19.43 kW of peak power (DC watts) 
 Roof Area Needed: 1,943 sq-ft 
 Equivalent Annual Production: 26,337 kWh electricity

ESTIMATED SYSTEM COST


This is only an estimate based upon many assumptions. Installation costs can vary considerably. We encourage you to work with a Solar Pro who can provide you with a more detailed cost estimate. We estimate that a 19 kW peak DC power system will cost between \$77,720 and \$116,580. This estimate assumes the mid-point of this cost range.



Assumed Installation Gross Cost: \$97,150
 "Gross Cost" is the cost before any rebates, incentives, tax credits, etc. are applied. See the Cost Notes, below!
 assuming \$5 
 per watt DC

FINANCIAL INCENTIVES

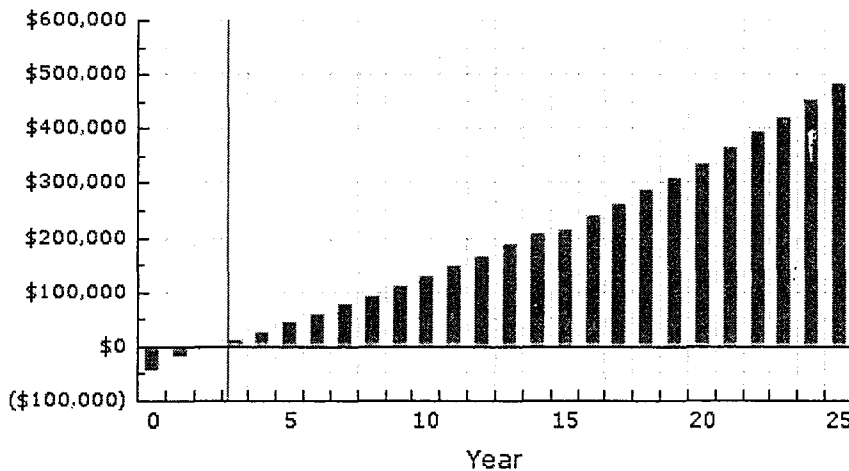
Financial incentives shown are totals across all years. So, if an incentive spans multiple years then the value shown is the total of all years. For details, please refer to the table below "Cash Flow by Year and Cumulative Across Years"

Federal Tax Credit (30% of Gross Cost at Installation) » link \$ 29,145
 HI Tax Credit (Commercial PV: 35%, \$ 500k Max.) » link \$ 23,802
 Modified Accelerated Cost Recovery System (MACRS) Depreciation (5 yr) » link YES 

ESTIMATED NET COST: \$ 44,203 
 Cash & Loan Amounts: \$ 44,203 Cash
 \$ 0 Borrowed
 Loan Monthly Payment (6.5% apr, 30 years): \$ 0

CASH FLOW KEO Main Administrative Office

Cumulative Cash Flow



Cash Flow Breakeven is where the chart crosses the \$0 point - this is when your investment has paid itself back in cash.

The chart above is a summary of the net cash flow you can expect over time. Net Cash Flow is the total cash after all costs (out-flows of cash) are reduced by financial incentives, annual utility savings and tax effects (in-flows of cash).

Average values are used together with your assumed income tax rate (37%). Any property appreciation has not been included, as this is generally not a cash flow (it's an investment). The loan modeled, if any, is included. Because this is a business, we have assumed utility savings do not result in loss of some expense write offs against income. And Modified Accelerated Cost Recovery System (MACRS) Depreciation applies (an income tax benefit). Because individual tax situations vary, we have not included Federal income tax liabilities that may result from having received non-federal incentives, if any (e.g. state rebate programs) as they are usually not taxed as earned income.

SAVINGS & BENEFITS

First-year Utility Savings:	\$12,456	More
Average Monthly Utility Savings: <i>over 25-year expected life of system</i>	\$1,742	More
Average Annual Utility Savings: <i>over 25-year expected life of system</i>	\$20,907	More
25-year Utility Savings:	\$522,674	More
Levelized Cost of your Solar Energy: \$44,203 cost / 658,425 kWh electricity replaced by solar	\$0.07 per kWh	More
Return on Investment (ROI):	1101%	More
Internal Rate of Return (IRR):	43.9%	More
Net Present Value (NPV):	\$237,579	More
Profitability Index:	6.4	More
Greenhouse Gas (CO2) Saved: <i>over 25-year system life</i>	540 tons 1,080,000 auto miles	More

Cash Flow by Year and Cumulative Across Years

This cash flow table includes tax effects applied to utility savings and loan interest payments (if any). For commercial (business) situations we assume utility savings do not result in loss of some expense write offs against income. "Tax Savings from MACRS depreciation" (below) is the net cash saved on income taxes after the depreciation expense is written off. So the amount that was depreciated would be the cash value shown divided by the Income Tax Rate (more info.). Because individual tax situations vary, we have not included Federal income tax liabilities that may result from having received non-federal incentives, if any (e.g. state rebate programs) as they are usually not taxed as earned income. Any income from your system (e.g. performance-based incentives and "SREC's") may be taxed as income (also not shown).

Year of Operation:	at install	1	2	3	4	5
Gross Cost	(\$97,150)					
Federal Tax Credit (30% of Gross Cost at Installation)	\$29,145	\$0	\$0	\$0	\$0	\$0
HI Tax Credit (Commercial PV: 35%, \$ 500k Max.)	\$23,802	\$0	\$0	\$0	\$0	\$0
Tax savings from MACRS Depreciation	\$0	\$13,048	\$3,480	\$2,088	\$1,253	\$1,253
Utility Savings	\$0	\$12,927	\$13,415	\$13,923	\$14,449	\$14,995
ANNUAL CASH FLOW	\$-44,203	\$25,975	\$16,895	\$16,010	\$15,701	\$16,248
Cumulative Cash Flow	\$-44,203	\$-18,228	\$-1,333	\$14,677	\$30,378	\$46,626

Breakeven

Year of Operation:	6	7	8	9	10	11
Gross Cost						
Federal Tax Credit (30% of Gross Cost at Installation)	\$0	\$0	\$0	\$0	\$0	\$0
HI Tax Credit (Commercial PV: 35%, \$ 500k Max.)	\$0	\$0	\$0	\$0	\$0	\$0
Tax savings from MACRS Depreciation	\$1,253	\$0	\$0	\$0	\$0	\$0
Utility Savings	\$15,562	\$16,150	\$16,761	\$17,394	\$18,052	\$18,734
ANNUAL CASH FLOW	\$16,188	\$16,150	\$16,761	\$17,394	\$18,052	\$18,734
Cumulative Cash Flow	\$62,814	\$78,964	\$95,725	\$113,119	\$131,171	\$149,905

Year of Operation:	12	13	14	15	16	17
Gross Cost				(\$13,601)		
				Inverter		
				Replaced		
Federal Tax Credit (30% of Gross Cost at Installation)	\$0	\$0	\$0	\$0	\$0	\$0
HI Tax Credit (Commercial PV: 35%, \$ 500k Max.)	\$0	\$0	\$0	\$0	\$0	\$0
Tax savings from MACRS Depreciation	\$0	\$0	\$0	\$0	\$0	\$0
Utility Savings	\$19,442	\$20,177	\$20,940	\$21,731	\$22,553	\$23,405
ANNUAL CASH FLOW	\$19,442	\$20,177	\$20,940	\$8,130	\$22,553	\$23,405
Cumulative Cash Flow	\$169,347	\$189,524	\$210,464	\$218,594	\$241,147	\$264,552

Year of Operation:	18	19	20	21	22	23	24	25
Gross Cost								
Federal Tax Credit (30% of Gross Cost at Installation)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

HI Tax Credit (Commercial PV: 35% of \$500K Max.)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Tax savings from MACRS Depreciation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Utility Savings	\$24,290	\$25,208	\$26,161	\$27,150	\$28,176	\$29,241	\$30,346	\$31,493
ANNUAL CASH FLOW	\$24,290	\$25,208	\$26,161	\$27,150	\$28,176	\$29,241	\$30,346	\$31,493
Cumulative Cash Flow	\$288,842	\$314,050	\$340,211	\$367,361	\$395,537	\$424,778	\$455,124	\$486,617

FAQ's: Frequently Asked Questions for HI:

- Where can I find more information about Hawaii Renewable energy programs and incentives?

Notes & Assumptions: Solar Electric (PV) Systems

*** HOW TO REDUCE THE SYSTEM SIZE NEEDED & INCREASE SAVINGS**

The estimate provided above assumes "base" electric rates apply. Other taxes and surcharges may be applied to your utility bill. We suggest you review a recent utility bill and change the "Assumed Electric Rate", above, as needed to better match your situation.

You may have other metered-rate options with your utility. Options such as Tiered billing rates, Time-Of-Use (TOU) metering, and Net-Metering, if available, can help reduce the system size you need to provide a "net-zero" energy bill. Sometimes people also reduce the size of their solar system to accommodate planned improvements in their building's energy efficiency, or to match a budget and/or the available space for installing a solar system.

Energy production from a solar electric (PV) system is a function of several factors, including the following. Our assumptions are:

Factor	Assumption
Solar resources	Assumed solar availability: As per Solar Radiance chart
Soiling or contamination of the PV panels	Clean, washed frequently: 100% design sunlight transmission
Temperature	25C, calm wind
System configuration (battery or non-battery)	Non-battery
Orientation to the sun	South facing, tilted at latitude, full sun
Shading	None
PV Energy delivered as % of manufacturer's rating	95%
Soiling, wiring & power point tracking losses	9% (91% delivered)
Inverter Efficiency	90%
<u>Total Energy Delivered</u>	<u>95% x 91% x 90% = 78%</u>

Energy Efficiency: Improving your building's energy efficiency will reduce the system size you need to attain a "net-zero" energy bill.

Tiered Rates: Often people are paying a "Tiered" rate for their electricity. This is a higher rate (higher than the "Base" rate) for electricity charged when a home or building uses more than a "Base" amount allocated for the building. Installing a solar system will reduce your electrical demand from the utility. This can result in a lower utility rate because you stay within the "Base" rate level. In this case, the more expensive "Tiered" rate electricity is eliminated, reducing your average electricity rate.

TOU Metering: Many utilities offer Time-of-Use (TOU) meters. This allows the price of electricity to vary by time of day (called "Peak" or "Off-Peak" periods) and by season (usually "Winter" versus "Summer" rates). If TOU metering is offered by your utility, a solar system may result in additional savings. This is because peak (more expensive electricity) rates often occur during the daytime. This is usually when a solar system is producing the most output, thus reducing your demand for peak-rate electricity from the utility.

Most utilities do charge for the purchase and installation of a time-of-use meter (normally a few hundred dollars). We have assumed the cost for this is part of the "Estimated Installation cost" shown above.

Net-Metering: With Net-Metering, surplus electricity generated by your renewable energy system will be credited back to your utility account. So if your solar system makes more electricity than you are using, the "meter spins backwards". You are not actually "selling" electricity, since in most states the utility will not reimburse you for excess electricity. But, if your utility offers "Net-Metering" you may be able to get credit for electricity provided back to the grid during peak periods. Combined with TOU metering, Net-Metering can result in multiplied savings since your electricity account may be gaining electricity credits during the time of peak utility rates -- Think of a hot, sunny summer day ... your solar system is producing power, spinning your electric meter backwards, and supplying the grid with electricity to run other people's air conditioners -- you're "spinning back" cost at peak rates! That's the savings power of Net-metering, combined with TOU rates.

Solar Power "Fixes" Energy Costs: The cost of sunshine is free. While the sun rises every morning, the cost of sunshine does not. Utility rates, on the other hand, tend to rise steadily in cost. So, the value of your savings from a solar system are likely to increase as time goes on. If you are on a fixed income (e.g. nearing or in retirement) this may be of particular interest to you.

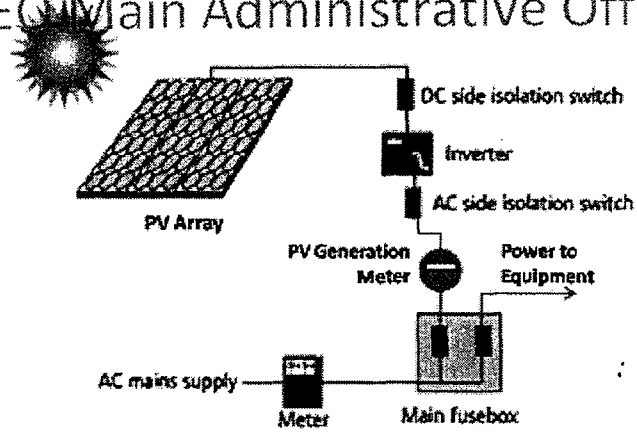
THE COST TO GO SOLAR

This is only an estimate based upon many assumptions and limited data entered by you: Installation costs can vary considerably. The cost to purchase and install a complete grid-tied solar photovoltaic (PV) system on a residential home is typically as further defined in the table, below. This includes the PV array, inverter and associated balance of system costs. It does not include the cost of options you may select, such as battery backup power storage, or the costs of building preparation work, like new shingles. Costs can also be higher if you add other features or have special installation needs (such as application over tile roofing) or you choose to use special mounting systems (such as sun tracking systems). Other factors may also affect price, including, but not limited to, your location, the building condition, type and location, its wiring, and warranties offered.

Assumed Cost, per Watt DC

Item	System Size 1 kW	System Size 10 kW
Assumed Total	\$7 per watt DC (+/- 20%)	\$5 per watt DC (+/- 20%)

KEO Main Administrative Office



OTHER ASSUMPTIONS

This summary is based upon many assumptions and the limited data you entered. An actual site assessment by a qualified solar system retailer or contractor will be needed to determine the actual costs and benefits of installing a solar electric system.

HELPFUL PDF's & Links



Payback & Other Financial Test for Solar on Your Home

The Dept. of Energy's: **PVWatts Online PV Calculator**

Natural Resources Canada's: **RETScreen Renewable Energy Calculators**

This estimate is made available to you by: Solar-Estimate.org

Mana`olana

(Emergency Homeless & Transitional Shelters, Kitchen & Laundry) **Your Solar Electric Estimate**

YOUR SOLAR RATING



The solar rating of your area is **Great** for adopting a solar system. (5.24 kWh/m² per day).

You may want to change some of the information to better match your situation.

Customize Your Assumptions

Price Installed \$ per watt DC.

Provide % of my electricity, on average, over the course of a year.

Electric Rate: \$ /kWh [More](#)

Monthly Electric Usage: kWh/Month [More](#)

Utility Annual Inflation Rate: %

Utility Savings Method: [help](#)

Federal ITC Based Upon: [help](#)

Federal Income Tax Rate: [help](#)

State Income Tax Rate: % (Low: 1.40% - High: 8.25%) [help](#)

Loan Modeling: Borrow % of \$35,490 estimated cost
at % interest (apr) re-paid over years

[» Update My Assumptions](#)

If you agree **this is a smart investment**, we encourage you to work with a Professional to help you install your very own system.

Click on the [More](#) buttons to learn about our assumptions and other important information used to generate your estimate. Also, please review the Notes below.

Help us improve. We rely on feedback from our users to help keep our service accurate and useful:

» Send us your Feedback

Your Solar Electric Estimate by the Numbers

Building Type: **Mana`olana** Commercial/Business

State & County: HI - Kauai
 (Emergency Homeless & Transitional Shelters, Kitchen & Laundry room) **FIND...**

Utility: Kauai Island Utility Coop

Utility Type: Electric Cooperative

Your Average Monthly Electricity Bill: \$ 1,667 / Month
 (Assumed rate x average monthly useage)

Tiered Rates Apply: No

Time-of-Use Metering Offered: No

Net-Metering Available: Yes - See Notes, below! **More**



ESTIMATED SYSTEM SIZE

The system size best for your situation will vary based upon product, building, geographic and other variables. We encourage you to work with a Solar Pro who can better estimate the system size best for your situation. We estimate your building will need a system sized between 12.48 kW and 18.72 kW of peak power. This estimate assumes the mid-point of this range.

Solar Rating: **Great**
 5.24 kWh/sq-m/day **More**

Solar System Capacity Required: 15.60 kW of peak power
 (DC watts) **More**

Roof Area Needed: 1,560 sq-ft **More**

Equivalent Annual Production: 21,146 kWh electricity

ESTIMATED SYSTEM COST

This is only an estimate based upon many assumptions. Installation costs can vary considerably. We encourage you to work with a Solar Pro who can provide you with a more detailed cost estimate. We estimate that a 16 kW peak DC power system will cost between \$62,400 and \$93,600. This estimate assumes the mid-point of this cost range.



Assumed Installation Gross Cost: \$78,000
 "Gross Cost" is the cost before any rebates, incentives, tax credits, etc. are applied. See the Cost Notes, below!
 assuming \$5 **More**
 per watt DC

FINANCIAL INCENTIVES

Financial incentives shown are totals across all years. So, if an incentive spans multiple years then the value shown is the total of all years. For details, please refer to the table below "Cash Flow by Year and Cumulative Across Years"

Federal Tax Credit (30% of Gross Cost at Installation) » link \$ 23,400

HI Tax Credit (Commercial PV: 35%, \$ 500k Max.) » link \$ 19,110

Modified Accelerated Cost Recovery System (MACRS) **YES** **More**
 Depreciation (5 yr) » link

ESTIMATED NET COST: \$ 35,490 **More**

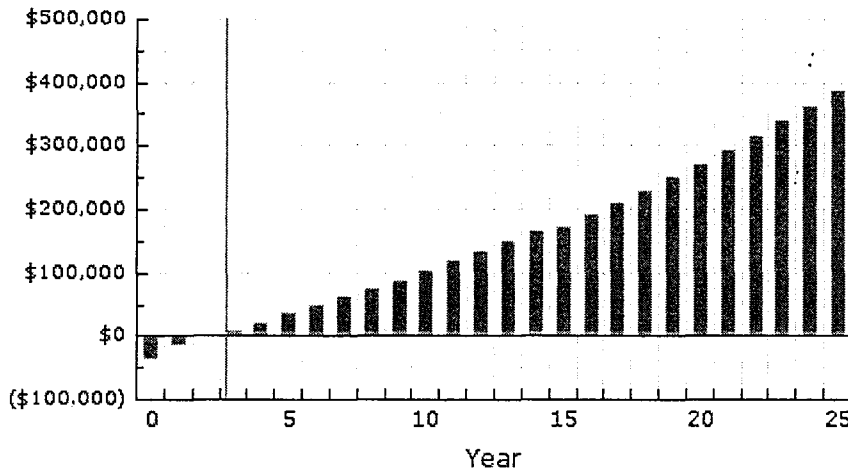
Cash & Loan Amounts: \$ 35,490 Cash
 \$ 0 Borrowed

Loan Monthly Payment (6.5% apr, 30 years): \$ 0

CASH FLOW

Mana`olana

(Emergency Homeless & Transitional Shelters, Kitchen & Laundromat)



Cash Flow Breakeven is where the chart crosses the \$0 point - this is when your investment has paid itself back in cash.

The chart above is a summary of the net cash flow you can expect over time. Net Cash Flow is the total cash after all costs (out-flows of cash) are reduced by financial incentives, annual utility savings and tax effects (in-flows of cash).

Average values are used together with your assumed income tax rate (37%). Any property appreciation has not been included, as this is generally not a cash flow (it's an investment). The loan modeled, if any, is included. Because this is a business, we have assumed utility savings do not result in loss of some expense write offs against income. And Modified Accelerated Cost Recovery System (MACRS) Depreciation applies (an income tax benefit). Because individual tax situations vary, we have not included Federal income tax liabilities that may result from having received non-federal incentives, if any (e.g. state rebate programs) as they are usually not taxed as earned income.

SAVINGS & BENEFITS

First-year Utility Savings:	\$10,002	More
Average Monthly Utility Savings: <i>over 25-year expected life of system</i>	\$1,399	More
Average Annual Utility Savings: <i>over 25-year expected life of system</i>	\$16,788	More
25-year Utility Savings:	\$419,700	More
Levelized Cost of your Solar Energy: \$35,490 cost / 528,650 kWh electricity replaced by solar	\$0.07 per kWh	More
Return on Investment (ROI):	1101%	More
Internal Rate of Return (IRR):	43.9%	More
Net Present Value (NPV):	\$190,775	More
Profitability Index:	6.4	More
Greenhouse Gas (CO2) Saved: <i>over 25-year system life</i>	433 tons 866,000 auto miles	More

Cash Flow by Year and Cumulative Across Years

This cash flow table includes tax effects applied to utility savings and loan interest payments (if any). For commercial (business) situations we assume utility savings do not result in loss of some expense write offs against income. "Tax Savings from MACRS depreciation" (below) is the net cash saved on income taxes after the depreciation expense is written off. So the amount that was depreciated would be the cash value shown divided by the Income Tax Rate (more info.). Because individual tax situations vary, we have not included Federal income tax liabilities that may result from having received non-federal incentives, if any (e.g. state rebate programs) as they are usually not taxed as earned income. Any income from your system (e.g. performance-based incentives and "SREC's") may be taxed as income (also not shown).

Year of Operation:	at Install	1	2	3	4	5
Gross Cost	(\$78,000)					
Federal Tax Credit (30% of Gross Cost at Installation)	\$23,400	\$0	\$0	\$0	\$0	\$0
HI Tax Credit (Commercial PV: 35%, \$ 500k Max.)	\$19,110	\$0	\$0	\$0	\$0	\$0
Tax savings from MACRS Depreciation	\$0	\$10,476	\$2,794	\$1,676	\$1,006	\$1,006
Utility Savings	\$0	\$10,380	\$10,772	\$11,180	\$11,602	\$12,041
ANNUAL CASH FLOW	\$-35,490	\$20,856	\$13,566	\$12,856	\$12,608	\$13,047
Cumulative Cash Flow	\$-35,490	\$-14,634	\$-1,068	\$11,788	\$24,396	\$37,443

Breakeven

Year of Operation:	6	7	8	9	10	11
Gross Cost						
Federal Tax Credit (30% of Gross Cost at Installation)	\$0	\$0	\$0	\$0	\$0	\$0
HI Tax Credit (Commercial PV: 35%, \$ 500k Max.)	\$0	\$0	\$0	\$0	\$0	\$0
Tax savings from MACRS Depreciation	\$1,006	\$0	\$0	\$0	\$0	\$0
Utility Savings	\$12,496	\$12,968	\$13,458	\$13,967	\$14,495	\$15,043
ANNUAL CASH FLOW	\$12,999	\$12,968	\$13,458	\$13,967	\$14,495	\$15,043
Cumulative Cash Flow	\$50,442	\$63,410	\$76,868	\$90,835	\$105,330	\$120,373

Year of Operation:	12	13	14	15	16	17
Gross Cost						
Federal Tax Credit (30% of Gross Cost at Installation)	\$0	\$0	\$0	\$0	\$0	\$0
HI Tax Credit (Commercial PV: 35%, \$ 500k Max.)	\$0	\$0	\$0	\$0	\$0	\$0
Tax savings from MACRS Depreciation	\$0	\$0	\$0	\$0	\$0	\$0
Utility Savings	\$15,612	\$16,202	\$16,814	\$17,450	\$18,109	\$18,794
ANNUAL CASH FLOW	\$15,612	\$16,202	\$16,814	\$6,530	\$18,109	\$18,794
Cumulative Cash Flow	\$135,985	\$152,187	\$169,001	\$175,531	\$193,640	\$212,434

**(\$10,920)
Inverter
Replaced**

Year of Operation:	18	19	20	21	22	23	24	25
Gross Cost								
Federal Tax Credit (30% of Gross Cost at Installation)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

HI Tax Credit (Commercial PV: 35%, \$ 500k Max.)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Tax savings from MACRS Depreciation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Utility Savings	\$19,504	\$20,242	\$21,007	\$21,801	\$22,625	\$23,480	\$24,368	\$25,289
ANNUAL CASH FLOW	\$19,504	\$20,242	\$21,007	\$21,801	\$22,625	\$23,480	\$24,368	\$25,289
Cumulative Cash Flow	\$231,938	\$252,180	\$273,187	\$294,988	\$317,613	\$341,093	\$365,461	\$390,750

Mana olaha

(Emergency Homeless & Transitional Shelters, Kitchen & Laundromat)

FAQ's: Frequently Asked Questions for HI:

- Where can I find more information about Hawaii Renewable energy programs and incentives?

Notes & Assumptions: Solar Electric (PV) Systems

* HOW TO REDUCE THE SYSTEM SIZE NEEDED & INCREASE SAVINGS

The estimate provided above assumes "base" electric rates apply. Other taxes and surcharges may be applied to your utility bill. We suggest you review a recent utility bill and change the "Assumed Electric Rate", above, as needed to better match your situation.

You may have other metered-rate options with your utility. Options such as Tiered billing rates, Time-Of-Use (TOU) metering, and Net-Metering, if available, can help reduce the system size you need to provide a "net-zero" energy bill. Sometimes people also reduce the size of their solar system to accommodate planned improvements in their building's energy efficiency, or to match a budget and/or the available space for installing a solar system.

Energy production from a solar electric (PV) system is a function of several factors, including the following. Our assumptions are:

Factor	Assumption
Solar resources	Assumed solar availability: As per Solar Radiance chart
Soiling or contamination of the PV panels	Clean, washed frequently: 100% design sunlight transmission
Temperature	25C, calm wind
System configuration (battery or non-battery)	Non-battery
Orientation to the sun	South facing, tilted at latitude, full sun
Shading	None
PV Energy delivered as % of manufacturer's rating	95%
Soiling, wiring & power point tracking losses	9% (91% delivered)
Inverter Efficiency	90%
<u>Total Energy Delivered</u>	<u>95% x 91% x 90% = 78%</u>

Energy Efficiency: Improving your building's energy efficiency will reduce the system size you need to attain a "net-zero" energy bill.

Tiered Rates: Often people are paying a "Tiered" rate for their electricity. This is a higher rate (higher than the "Base" rate) for electricity charged when a home or building uses more than a "Base" amount allocated for the building. Installing a solar system will reduce your electrical demand from the utility. This can result in a lower utility rate because you stay within the "Base" rate level. In this case, the more expensive "Tiered" rate electricity is eliminated, reducing your average electricity rate.

TOU Metering: Many utilities offer Time-of-Use (TOU) meters. This allows the price of electricity to vary by time of day (called "Peak" or "Off-Peak" periods) and by season (usually "Winter" versus "Summer" rates). If TOU metering is offered by your utility, a solar system may result in additional savings. This is because peak (more expensive electricity) rates often occur during the daytime. This is usually when a solar system is producing the most output, thus reducing your demand for peak-rate electricity from the utility.

Most utilities do charge for the purchase and installation of a time-of-use meter (normally a few hundred dollars). We have assumed the cost for this is part of the "Estimated Installation cost" shown above.

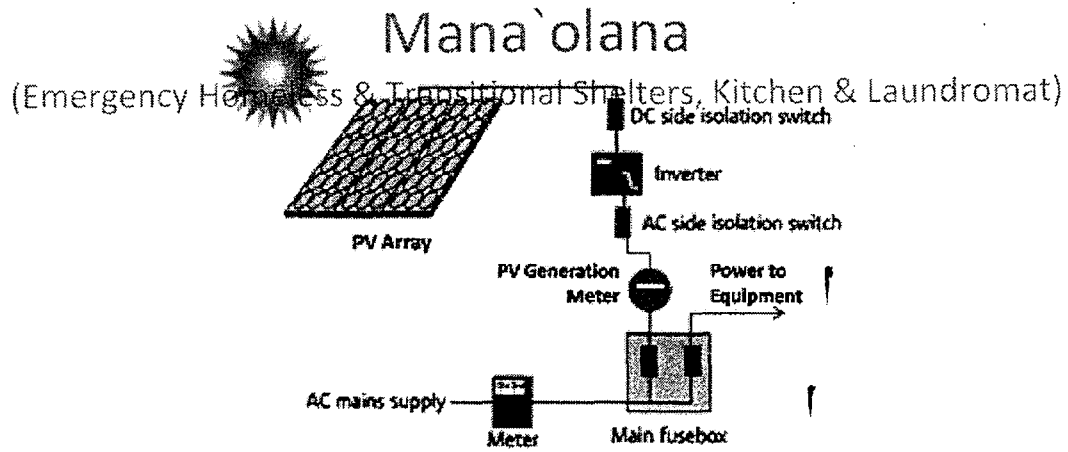
Net-Metering: With Net-Metering, surplus electricity generated by your renewable energy system will be credited back to your utility account. So if your solar system makes more electricity than you are using, the "meter spins backwards". You are not actually "selling" electricity, since in most states the utility will not reimburse you for excess electricity. But, if your utility offers "Net-Metering" you may be able to get credit for electricity provided back to the grid during peak periods. Combined with TOU metering, Net-Metering can result in multiplied savings since your electricity account may be gaining electricity credits during the time of peak utility rates -- Think of a hot, sunny summer day ... your solar system is producing power, spinning your electric meter backwards, and supplying the grid with electricity to run other people's air conditioners -- you're "spinning back" cost at peak rates! That's the savings power of Net-metering, combined with TOU rates.

Solar Power "Fixes" Energy Costs: The cost of sunshine is free. While the sun rises every morning, the cost of sunshine does not. Utility rates, on the other hand, tend to rise steadily in cost. So, the value of your savings from a solar system are likely to increase as time goes on. If you are on a fixed income (e.g. nearing or in retirement) this may be of particular interest to you.

THE COST TO GO SOLAR

This is only an estimate based upon many assumptions and limited data entered by you: Installation costs can vary considerably. The cost to purchase and install a complete grid-tied solar photovoltaic (PV) system on a residential home is typically as further defined in the table, below. This includes the PV array, inverter and associated balance of system costs. It does not include the cost of options you may select, such as battery backup power storage, or the costs of building preparation work, like new shingles. Costs can also be higher if you add other features or have special installation needs (such as application over tile roofing) or you choose to use special mounting systems (such as sun tracking systems). Other factors may also affect price, including, but not limited to, your location, the building condition, type and location, its wiring, and warranties offered.

Item	Assumed Cost, per Watt DC	
	System Size 1 kW	System Size 10 kW
Assumed Total	\$7 per watt DC (+/- 20%)	\$5 per watt DC (+/- 20%)



OTHER ASSUMPTIONS

This summary is based upon many assumptions and the limited data you entered. An actual site assessment by a qualified solar system retailer or contractor will be needed to determine the actual costs and benefits of installing a solar electric system.

HELPFUL PDF's & Links



Payback & Other Financial Test for Solar on Your Home

The Dept. of Energy's: **PVWatts Online PV Calculator**

Natural Resources Canada's: **RETScreen Renewable Energy Calculators**

This estimate is made available to you by: Solar-Estimate.org

Lihue Early Learning Center

Your Solar Electric Estimate

YOUR SOLAR RATING



The solar rating of your area is Great for adopting a solar system. (5.24 kWh/m² per day).

You may want to change some of the information to better match your situation.

Customize Your Assumptions

Price Installed \$6.21 per watt DC.

Provide 50 % of my electricity, on average, over the course of a year.

Electric Rate: \$ 0.473 /kWh [More](#)

Monthly Electric Usage: 801 kWh/Month [More](#)

Utility Annual Inflation Rate: 4 %

Utility Savings Method: Net Metering (common) [help](#)

Federal ITC Based Upon: Gross Cost [help](#)

Federal Income Tax Rate: 28% [help](#)

State Income Tax Rate: 7.2 % (Low: 1.40% - High: 8.25%) [help](#)

Loan Modeling: Borrow 0 % of \$10,031 estimated cost
at 6.5 % interest (apr) re-paid over 30 years

[» Update My Assumptions](#)

If you agree **this is a smart investment**, we encourage you to work with a Professional to help you install your very own system.

Click on the [More](#) buttons to learn about our assumptions and other important information used to generate your estimate. Also, please review the Notes below.

Help us improve. We rely on feedback from our users to help keep our service accurate and useful:

» [Send us your Feedback](#)

Your Solar Electric Estimate by the Numbers

Building Type: Commercial/Business
 State & County: HI - Kauai
 Utility: Kauai Island Utility Coop
 Utility Type: Electric Cooperative
 Your Average Monthly Electricity Bill: \$ 379 / Month
 (Assumed rate x average monthly usage)
 Tiered Rates Apply: No
 Time-of-Use Metering Offered: No
 Net-Metering Available: Yes - See;Notes, below!



ESTIMATED SYSTEM SIZE

The system size best for your situation will vary based upon product, building, geographic and other variables. We encourage you to work with a Solar Pro who can better estimate the system size best for your situation. We estimate your building will need a system sized between 2.84 kW and 4.26 kW of peak power. This estimate assumes the mid-point of this range.

Solar Rating: **Great** [More](#)
 5.24 kWh/sq-m/day
 Solar System Capacity Required: [More](#)
 3.55 kW of peak power (DC watts)
 Roof Area Needed: [More](#)
 355 sq-ft
 Equivalent Annual Production: 4,812 kWh electricity

ESTIMATED SYSTEM COST

This is only an estimate based upon many assumptions. Installation costs can vary considerably. We encourage you to work with a Solar Pro who can provide you with a more detailed cost estimate. We estimate that a 4 kW peak DC power system will cost between \$17,636 and \$26,455. This estimate assumes the mid-point of this cost range.



Assumed Installation Gross Cost: **\$22,046**
 "Gross Cost" is the cost before any rebates, incentives, tax credits, etc. are applied. See the Cost Notes, below!
 assuming \$6.21 [More](#)
 per watt DC

FINANCIAL INCENTIVES

Financial incentives shown are totals across all years. So, if an incentive spans multiple years then the value shown is the total of all years. For details, please refer to the table below "Cash Flow by Year and Cumulative Across Years"

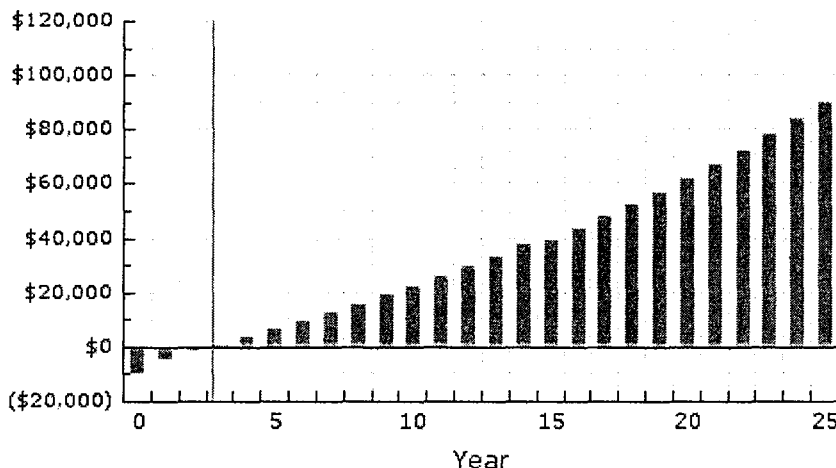
Federal Tax Credit (30% of Gross Cost at Installation) » link \$ 6,614
 HI Tax Credit (Commercial PV: 35%, \$ 500k Max.) » link \$ 5,401
 Modified Accelerated Cost Recovery System (MACRS) Depreciation (5 yr) » link **YES** [More](#)

ESTIMATED NET COST: **\$ 10,031** [More](#)
 Cash & Loan Amounts: \$ 10,031 Cash
 \$ 0 Borrowed
 Loan Monthly Payment (6.5% apr, 30 years): \$ 0

CASH FLOW

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Cumulative Cash Flow



Cash Flow Breakeven is where the chart crosses the \$0 point - this is when your investment has paid itself back in cash.

The chart above is a summary of the net cash flow you can expect over time. Net Cash Flow is the total cash after all costs (out-flows of cash) are reduced by financial incentives, annual utility savings and tax effects (in-flows of cash).

Average values are used together with your assumed income tax rate (35%). Any property appreciation has not been included, as this is generally not a cash flow (it's an investment). The loan modeled, if any, is included. Because this is a business, we have assumed utility savings do not result in loss of some expense write offs against income. And Modified Accelerated Cost Recovery System (MACRS) Depreciation applies (an income tax benefit). Because individual tax situations vary, we have not included Federal income tax liabilities that may result from having received non-federal incentives, if any (e.g. state rebate programs) as they are usually not taxed as earned income.

SAVINGS & BENEFITS

First-year Utility Savings:	\$2,273	More
Average Monthly Utility Savings: <i>over 25-year expected life of system</i>	\$328	More
Average Annual Utility Savings: <i>over 25-year expected life of system</i>	\$3,938	More
25-year Utility Savings:	\$98,448	More
Levelized Cost of your Solar Energy: \$10,031 cost / 120,300 kWh electricity replaced by solar	\$0.08 per kWh	More
Return on Investment (ROI):	903%	More
Internal Rate of Return (IRR):	36.6%	More
Net Present Value (NPV):	\$43,360	More
Profitability Index:	5.3	More
Greenhouse Gas (CO2) Saved: <i>over 25-year system life</i>	99 tons 198,000 auto miles	More

Cash Flow by Year and Cumulative Across Years

This cash flow table includes tax effects applied to utility savings and loan interest payments (if any). For commercial (business) situations we assume utility savings do not result in loss of some expense write-offs against income. "Tax Savings from MACRS depreciation" (below) is the net cash saved on income taxes after the depreciation expense is written off. So the amount that was depreciated would be the cash value shown divided by the Income Tax Rate (more info.). Because individual tax situations vary, we have not included Federal income tax liabilities that may result from having received non-federal incentives, if any (e.g. state rebate programs) as they are usually not taxed as earned income. Any income from your system (e.g. performance-based incentives and "SREC's") may be taxed as income (also not shown).

Year of Operation:	at Install	1	2	3	4	5
Gross Cost	(\$22,046)					
Federal Tax Credit (30% of Gross Cost at Installation)	\$6,614	\$0	\$0	\$0	\$0	\$0
HI Tax Credit (Commercial PV: 35%, \$ 500k Max.)	\$5,401	\$0	\$0	\$0	\$0	\$0
Tax savings from MACRS Depreciation	\$0	\$2,817	\$751	\$451	\$270	\$270
Utility Savings	\$0	\$2,364	\$2,458	\$2,557	\$2,659	\$2,765
ANNUAL CASH FLOW	\$-10,031	\$5,181	\$3,210	\$3,007	\$2,929	\$3,036
Cumulative Cash Flow	\$-10,031	\$-4,850	\$-1,640	\$1,367	\$4,296	\$7,332

Breakeven

Year of Operation:	6	7	8	9	10	11
Gross Cost						
Federal Tax Credit (30% of Gross Cost at Installation)	\$0	\$0	\$0	\$0	\$0	\$0
HI Tax Credit (Commercial PV: 35%, \$ 500k Max.)	\$0	\$0	\$0	\$0	\$0	\$0
Tax savings from MACRS Depreciation	\$270	\$0	\$0	\$0	\$0	\$0
Utility Savings	\$2,876	\$2,991	\$3,111	\$3,235	\$3,365	\$3,499
ANNUAL CASH FLOW	\$3,011	\$2,991	\$3,111	\$3,235	\$3,365	\$3,499
Cumulative Cash Flow	\$10,343	\$13,334	\$16,445	\$19,680	\$23,045	\$26,544

Year of Operation:	12	13	14	15	16	17
Gross Cost				(\$2,485)		
				Inverter		
				Replaced		
Federal Tax Credit (30% of Gross Cost at Installation)	\$0	\$0	\$0	\$0	\$0	\$0
HI Tax Credit (Commercial PV: 35%, \$ 500k Max.)	\$0	\$0	\$0	\$0	\$0	\$0
Tax savings from MACRS Depreciation	\$0	\$0	\$0	\$0	\$0	\$0
Utility Savings	\$3,639	\$3,785	\$3,936	\$4,094	\$4,257	\$4,428
ANNUAL CASH FLOW	\$3,639	\$3,785	\$3,936	\$1,609	\$4,257	\$4,428
Cumulative Cash Flow	\$30,183	\$33,968	\$37,904	\$39,513	\$43,770	\$48,198

Year of Operation:	18	19	20	21	22	23	24	25
Gross Cost								
Federal Tax Credit (30% of Gross Cost at Installation)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
HI Tax Credit (Commercial PV: 35%, \$ 500k Max.)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9
Tax savings from MACRS Depreciation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Utility Savings	\$4,605	\$4,789	\$4,980	\$5,180	\$5,387	\$5,602	\$5,826	\$6,059	
ANNUAL CASH FLOW	\$4,605	\$4,789	\$4,980	\$5,180	\$5,387	\$5,602	\$5,826	\$6,059	
Cumulative Cash Flow	\$52,803	\$57,592	\$62,572	\$67,752	\$73,139	\$78,741	\$84,567	\$90,626	

FAQ's: Frequently Asked Questions for HI:

- Where can I find more information about Hawaii Renewable energy programs and incentives?

Notes & Assumptions: Solar Electric (PV) Systems

* HOW TO REDUCE THE SYSTEM SIZE NEEDED & INCREASE SAVINGS

The estimate provided above assumes "base" electric rates apply. Other taxes and surcharges may be applied to your utility bill. We suggest you review a recent utility bill and change the "Assumed Electric Rate", above, as needed to better match your situation.

You may have other metered-rate options with your utility. Options such as Tiered billing rates, Time-Of-Use (TOU) metering, and Net-Metering, if available, can help reduce the system size you need to provide a "net-zero" energy bill. Sometimes people also reduce the size of their solar system to accommodate planned improvements in their building's energy efficiency, or to match a budget and/or the available space for installing a solar system.

Energy production from a solar electric (PV) system is a function of several factors, including the following. Our assumptions are:

Factor	Assumption
Solar resources	Assumed solar availability: As per Solar Radiance chart
Soiling or contamination of the PV panels	Clean, washed frequently: 100% design sunlight transmission
Temperature	25C, calm wind
System configuration (battery or non-battery)	Non-battery
Orientation to the sun	South facing, tilted at latitude, full sun
Shading	None
PV Energy delivered as % of manufacturer's rating	95%
Soiling, wiring & power point tracking losses	9% (91% delivered)
Inverter Efficiency	90%
<u>Total Energy Delivered</u>	<u>95% x 91% x 90% = 78%</u>

Energy Efficiency: Improving your building's energy efficiency will reduce the system size you need to attain a "net-zero" energy bill.

Tiered Rates: Often people are paying a "Tiered" rate for their electricity. This is a higher rate (higher than the "Base" rate) for electricity charged when a home or building uses more than a "Base" amount allocated for the building. Installing a solar system will reduce your electrical demand from the utility. This can result in a lower utility rate because you stay within the "Base" rate level. In this case, the more expensive "Tiered" rate electricity is eliminated, reducing your average electricity rate.

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Most utilities do charge for the purchase and installation of a time-of-use meter (normally a few hundred dollars). We have assumed the cost for this is part of the "Estimated Installation cost" shown above.

Net-Metering: With Net-Metering, surplus electricity generated by your renewable energy system will be credited back to your utility account. So if your solar system makes more electricity than you are using, the "meter spins backwards". You are not actually "selling" electricity, since in most states the utility will not reimburse you for excess electricity. But, if your utility offers "Net-Metering" you may be able to get credit for electricity provided back to the grid during peak periods. Combined with TOU metering, Net-Metering can result in multiplied savings since your electricity account may be gaining electricity credits during the time of peak utility rates -- Think of a hot, sunny summer day ... your solar system is producing power, spinning your electric meter backwards, and supplying the grid with electricity to run other people's air conditioners -- you're "spinning back" cost at peak rates! That's the savings power of Net-metering, combined with TOU rates.

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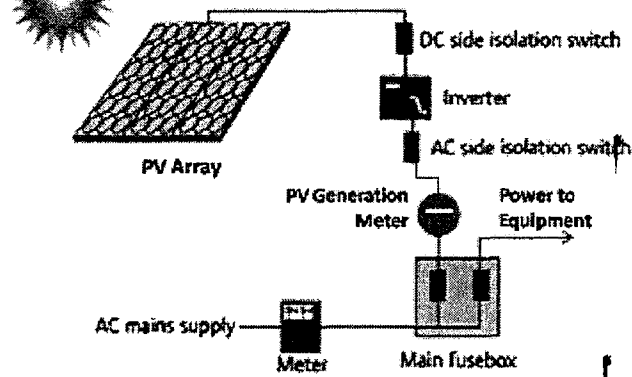
THE COST TO GO SOLAR

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Assumed Cost, per Watt DC

Item	System Size 1 kW	System Size 10 kW
Assumed Total	\$7 per watt DC (+/- 20%)	\$5 per watt DC (+/- 20%)

Libby Early Learning Center



OTHER ASSUMPTIONS

This summary is based upon many assumptions and the limited data you entered. An actual site assessment by a qualified solar system retailer or contractor will be needed to determine the actual costs and benefits of installing a solar electric system.

HELPFUL PDF's & Links



Payback & Other Financial Test for Solar on Your Home

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Natural Resources Canada's: [RETScreen Renewable Energy Calculators](#)

This estimate is made available to you by: [Solar-Estimate.org](#)

Pa`a Hana Group Home

Your Solar Electric Estimate

YOUR SOLAR RATING



The solar rating of your area is Great for adopting a solar system. (5.24 kWh/m² per day).

 Print view

You may want to change some of the information to better match your situation.

Customize Your Assumptions

Price Installed \$ per watt DC.

Provide % of my electricity, on average, over the course of a year.

Electric Rate: \$ /kWh [More](#)

Monthly Electric Usage: kWh/Month [More](#)

Utility Annual Inflation Rate: %

Utility Savings Method: [help](#)

Calculate Financial Ratios with Utility Savings

As:

Federal ITC Based Upon: [help](#)

Federal Income Tax Rate: [help](#)

State Income Tax Rate: % (Low: 1.40% - High: 8.25%)
[help](#)

Loan Modeling: Borrow % of \$8,466 estimated cost

at % interest (apr) re-paid over years

>> Update My Assumptions

If you agree **this is a smart investment**, we encourage you to work with a Professional to help you install your very own system.

Click on the [More](#) buttons to learn about our assumptions and other important information used to generate your estimate. Also, please review the Notes below.

Help us improve. We rely on feedback from our users to help keep our service accurate and useful:

» [Send us your Feedback](#)

Pa`a Hana Group Home

 Printable

Your Solar Electric Estimate by the Numbers

Building Type: Residential

State & County: HI - Kauai

Utility: Kauai Island Utility Coop

Utility Type: Electric Cooperative

Your Average Monthly Electricity Bill: \$ 313 / Month
(Assumed rate x average monthly usage)

Tiered Rates Apply: No

Time-of-Use Metering Offered: No

Net-Metering Available: Yes - See Notes, below!



ESTIMATED SYSTEM SIZE

The system size best for your situation will vary based upon product, building, geographic and other variables. We encourage you to work with a Solar Pro who can better estimate the system size best for your situation. We estimate your building will need a system sized between 2.34 kW and 3.52 kW of peak power. This estimate assumes the mid-point of this range.

Solar Rating: **Great** 
5.24 kWh/sq-m/day

Solar System Capacity Required: 2.93 kW of peak power 
(DC watts)

Roof Area Needed: 293 sq-ft 

Equivalent Annual Production: 3,972 kWh electricity


ESTIMATED SYSTEM COST

This is only an estimate based upon many assumptions. Installation costs can vary considerably. We encourage you to work with a Solar Pro who can provide you with a more detailed cost estimate. We estimate that a 3 kW peak DC power system will cost between \$14,884 and \$22,327. This estimate assumes the mid-point of this cost range.



Assumed Installation Gross Cost: \$18,606

"Gross Cost" is the cost before any rebates, incentives, tax credits, etc. are applied. See the Cost Notes, below!

assuming \$6.35 
per watt DC

FINANCIAL INCENTIVES

Financial incentives shown are totals across all years. So, if an incentive spans multiple years then the value shown is the total of all years. For details, please refer to the table below "Cash Flow by Year and Cumulative Across Years"

Federal Tax Credit (30% of Gross Cost at Installation) » link \$ 5,582

HI Tax Credit (Residential PV: 35%, 1 System \$ 5k Max) » link \$ 4,558

ESTIMATED NET COST: \$ 8,466 

Cash & Loan Amounts: \$ 8,466 Cash
\$ 0 Borrowed

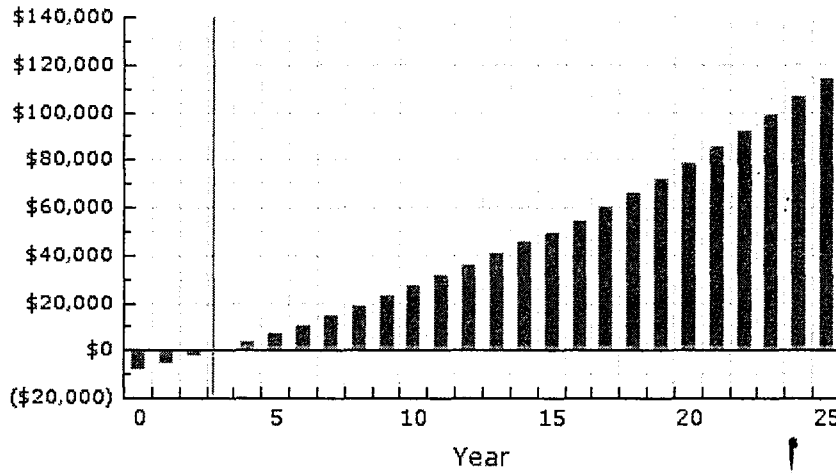
Loan Monthly Payment (6.5% apr, 30 years)

Pa'a Hana Group Home

\$ 0

CASH FLOW

Cumulative Cash Flow



Cash Flow Breakeven is where the chart crosses the \$0 point - this is when your investment has paid itself back in cash.

The chart above is a summary of the net cash flow you can expect over time. Net Cash Flow is the total cash after all costs (out-flows of cash) are reduced by financial incentives, annual utility savings and tax effects (in-flows of cash).

Average values are used together with your assumed income tax rate (35%). Any property appreciation has not been included, as this is generally not a cash flow (it's an investment). The loan modeled, if any, is included. Because individual tax situations vary, we have not included Federal income tax liabilities that may result from having received non-federal incentives, if any (e.g. state rebate programs) as they are usually not taxed as earned income.

SAVINGS & BENEFITS

First-year Utility Savings:	\$1,878	More
Average Monthly Utility Savings: <i>over 25-year expected life of system</i>	\$271	More
Average Annual Utility Savings: <i>over 25-year expected life of system</i>	\$3,254	More
25-year Utility Savings:	\$81,339	More
Levelized Cost of your Solar Energy: \$8,466 cost / 99,300 kWh electricity replaced by solar	\$0.09 per kWh	More

Utility savings shown above do not take income tax effects into account (they use "Post-Tax" dollars). The financial ratios shown below are based upon the cash flow values shown in the Cash Flow table, below, which include income tax effects, as noted.

Appreciation (Increase) in Property Value:	\$37,560	More
Return on Investment (ROI):	1358%	More
Internal Rate of Return (IRR):	39.6%	More
Net Present Value (NPV):	\$54,678	More
Profitability Index:	7.5	More

Greenhouse Gas (CO2) Saved:
over 25-year system life

Pa'a Hana Group Home

81 tons
162,000 auto miles

Cash Flow by Year and Cumulative Across Years

This cash flow table includes tax effects applied to utility savings and loan interest payments (if any). You have elected (above) to show utility savings in **Pre-Tax (Gross Income) dollars** ("pre-tax" or what you earned). Therefore for every dollar saved on utility bills, the pre-tax savings will be higher: $\text{Pre-tax Utility Savings} = (\text{\$s saved on utility bill}) / (1 - \text{Income Tax Rate})$. You may also earn compounding interest tax free (not shown). Because individual tax situations vary, we have not included Federal income tax liabilities that may result from having received non-federal incentives, if any (e.g. state rebate programs) as they are usually not taxed as earned income. Any income from your system (e.g. performance-based incentives and "SREC's") may be taxed as income (also not shown).

Year of Operation:	at Install	1	2	3	4	5
Gross Cost	(\$18,606)					
Federal Tax Credit (30% of Gross Cost at Installation)	\$5,582	\$0	\$0	\$0	\$0	\$0
HI Tax Credit (Residential PV: 35%, 1 System \$ 5k Max)	\$4,558	\$0	\$0	\$0	\$0	\$0
Utility Savings	\$0	\$3,014	\$3,135	\$3,260	\$3,390	\$3,526
ANNUAL CASH FLOW	\$-8,466	\$3,014	\$3,135	\$3,260	\$3,390	\$3,526
Cumulative Cash Flow	\$-8,466	\$-5,452	\$-2,317	\$943	\$4,333	\$7,859
				Breakeven		
Year of Operation:	6	7	8	9	10	11
Gross Cost						
Federal Tax Credit (30% of Gross Cost at Installation)	\$0	\$0	\$0	\$0	\$0	\$0
HI Tax Credit (Residential PV: 35%, 1 System \$ 5k Max)	\$0	\$0	\$0	\$0	\$0	\$0
Utility Savings	\$3,667	\$3,814	\$3,966	\$4,125	\$4,290	\$4,462
ANNUAL CASH FLOW	\$3,667	\$3,814	\$3,966	\$4,125	\$4,290	\$4,462
Cumulative Cash Flow	\$11,526	\$15,340	\$19,306	\$23,431	\$27,721	\$32,183
Year of Operation:	12	13	14	15	16	17
Gross Cost				(\$2,051) Inverter Replaced		
Federal Tax Credit (30% of Gross Cost at Installation)	\$0	\$0	\$0	\$0	\$0	\$0
HI Tax Credit (Residential PV: 35%, 1 System \$ 5k Max)	\$0	\$0	\$0	\$0	\$0	\$0
Utility Savings	\$4,640	\$4,826	\$5,019	\$5,219	\$5,428	\$5,645
ANNUAL CASH FLOW	\$4,640	\$4,826	\$5,019	\$3,168	\$5,428	\$5,645

Cumulative Cash Flow, \$36,823 \$41,649 \$46,668 \$49,836 \$55,264 \$60,909
Pa a Hana Group Home

Year of Operation:	18	19	20	21	22	23	24	25
Gross Cost								
Federal Tax Credit (30% of Gross Cost at Installation)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
HI Tax Credit (Residential PV: 35%, 1 System \$ 5k Max)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Utility Savings	\$5,871	\$6,106	\$6,350	\$6,604	\$6,868	\$7,143	\$7,429	\$7,726
ANNUAL CASH FLOW	\$5,871	\$6,106	\$6,350	\$6,604	\$6,868	\$7,143	\$7,429	\$7,726
Cumulative Cash Flow	\$66,780	\$72,886	\$79,236	\$85,840	\$92,708	\$99,851	\$107,280	\$115,006

FAQ's: Frequently Asked Questions for HI:

- Where can I find more information about Hawaii Renewable energy programs and incentives?

Notes & Assumptions: Solar Electric (PV) Systems

*** HOW TO REDUCE THE SYSTEM SIZE NEEDED & INCREASE SAVINGS**

The estimate provided above assumes "base" electric rates apply. Other taxes and surcharges may be applied to your utility bill. We suggest you review a recent utility bill and change the "Assumed Electric Rate", above, as needed to better match your situation.

You may have other metered-rate options with your utility. Options such as Tiered billing rates, Time-Of-Use (TOU) metering, and Net-Metering, if available, can help reduce the system size you need to provide a "net-zero" energy bill. Sometimes people also reduce the size of their solar system to accommodate planned improvements in their building's energy efficiency, or to match a budget and/or the available space for installing a solar system.

Energy production from a solar electric (PV) system is a function of several factors, including the following. Our assumptions are:

Factor	Assumption
Solar resources	Assumed solar availability: As per Solar Radiance chart
Soiling or contamination of the PV panels	Clean, washed frequently: 100% design sunlight transmission
Temperature	25C, calm wind
System configuration (battery or non-battery)	Non-battery

Orientation to the sun	South facing, tilted at latitude, full sun
Shading	None
PV Energy delivered as % of manufacturer's rating	95%
Soiling, wiring & power point tracking losses	9% (91% delivered)
Inverter Efficiency	90%
<u>Total Energy Delivered</u>	<u>95% x 91% x 90% = 78%</u>

Energy Efficiency: Improving your building's energy efficiency will reduce the system size you need to attain a "net-zero" energy bill.

Tiered Rates: Often people are paying a "Tiered" rate for their electricity. This is a higher rate (higher than the "Base" rate) for electricity charged when a home or building uses more than a "Base" amount allocated for the building. Installing a solar system will reduce your electrical demand from the utility. This can result in a lower utility rate because you stay within the "Base" rate level. In this case, the more expensive "Tiered" rate electricity is eliminated, reducing your average electricity rate.

TOU Metering: Many utilities offer Time-of-Use (TOU) meters. This allows the price of electricity to vary by time of day (called "Peak" or "Off-Peak" periods) and by season (usually "Winter" versus "Summer" rates). If TOU metering is offered by your utility, a solar system may result in additional savings. This is because peak (more expensive electricity) rates often occur during the daytime. This is usually when a solar system is producing the most output, thus reducing your demand for peak-rate electricity from the utility.

Most utilities do charge for the purchase and installation of a time-of-use meter (normally a few hundred dollars). We have assumed the cost for this is part of the "Estimated Installation cost" shown above.

Net-Metering: With Net-Metering, surplus electricity generated by your renewable energy system will be credited back to your utility account. So if your solar system makes more electricity than you are using, the "meter spins backwards". You are not actually "selling" electricity, since in most states the utility will not reimburse you for excess electricity. But, if your utility offers "Net-Metering" you may be able to get credit for electricity provided back to the grid during peak periods. Combined with TOU metering, Net-Metering can result in multiplied savings since your electricity account may be gaining electricity credits during the time of peak utility rates -- Think of a hot, sunny summer day ... your solar system is producing power, spinning your electric meter backwards, and supplying the grid with electricity to run other people's air conditioners -- you're "spinning back" cost at peak rates! That's the savings power of Net-metering, combined with TOU rates.

Solar Power "Fixes" Energy Costs: The cost of sunshine is free. While the sun rises every morning, the cost of sunshine does not. Utility rates, on the other hand, tend to rise steadily in cost. So, the value of your savings from a solar system are likely to increase as time goes on. If you are on a fixed income (e.g. nearing or in retirement) this may be of particular interest to you.

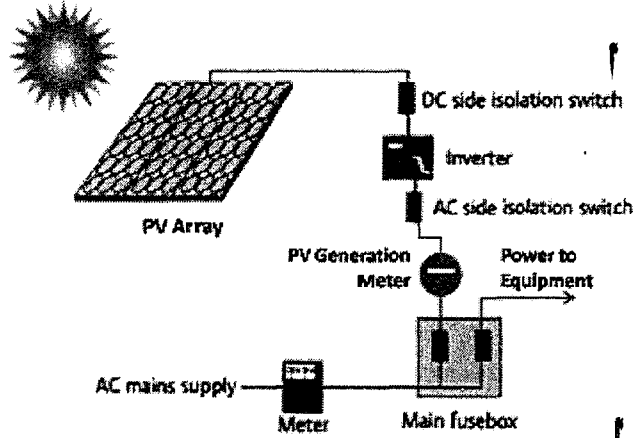
THE COST TO GO SOLAR

This is only an estimate based upon many assumptions and limited data entered by you: Installation costs can vary considerably. The cost to purchase and install a complete grid-tied solar photovoltaic (PV) system on a residential home is typically as further defined in the table, below. This includes the PV array, inverter and associated balance of system costs. It does not include the cost of options you may select, such

as battery backup power storage, or the costs of building preparation work, like new shingles. Costs can also be higher if you add other features or have special installation needs (such as application over tile roofing) or you choose to use special mounting systems (such as sun tracking systems). Other factors may also affect price, including, but not limited to, your location, the building condition, type and location, its wiring, and warranties offered.

Assumed Cost, per Watt DC

Item	System Size 1 kW	System Size 10 kW
Assumed Total	\$7 per watt DC (+/- 20%)	\$5 per watt DC (+/- 20%)



OTHER ASSUMPTIONS

This summary is based upon many assumptions and the limited data you entered. An actual site assessment by a qualified solar system retailer or contractor will be needed to determine the actual costs and benefits of installing a solar electric system.

HELPFUL PDF's & Links



[Payback & Other Financial Test for Solar on Your Home](#)

[The Dept. of Energy's: PVWatts Online PV Calculator](#)

[Natural Resources Canada's: RETScreen Renewable Energy Calculators](#)

This estimate is made available to you by: Solar-Estimate.org

Komohana Group Home

Your Solar Electric Estimate

YOUR SOLAR RATING



The solar rating of your area is **Great** for adopting a solar system. (5.24 kWh/m² per day).

You may want to change some of the information to better match your situation.

Customize Your Assumptions

Price Installed \$ per watt DC.

Provide % of my electricity, on average, over the course of a year.

Electric Rate: \$ /kWh [More](#)

Monthly Electric Usage: kWh/Month [More](#)

Utility Annual Inflation Rate: %

Utility Savings Method: [help](#)

Calculate Financial Ratios with Utility Savings As:

Federal ITC Based Upon: [help](#)

Federal Income Tax Rate: [help](#)

State Income Tax Rate: % (Low: 1.40% - High: 8.25%) [help](#)

Loan Modeling: Borrow % of \$7,325 estimated cost
at % interest (apr) re-paid over years

[» Update My Assumptions](#)

If you agree **this is a smart investment**, we encourage you to work with a Professional to help you install your very own system.

Click on the [More](#) buttons to learn about our assumptions and other important information used to generate your estimate. Also, please review the Notes below.

Help us improve. We rely on feedback from our users to help keep our service accurate and useful:

» [Send us your Feedback](#)

Your Solar Electric Estimate by the Numbers Home

Building Type:	Residential
State & County:	HI - Kauai
Utility:	Kauai Island Utility Coop
Utility Type:	Electric Cooperative
Your Average <u>Monthly</u> Electricity Bill: (Assumed rate x average monthly useage)	\$ 267 / Month
Tiered Rates Apply:	No
Time-of-Use Metering Offered:	No
Net-Metering Available:	Yes - See Notes, below!



ESTIMATED SYSTEM SIZE

The system size best for your situation will vary based upon product, building, geographic and other variables. We encourage you to work with a Solar Pro who can better estimate the system size best for your situation. We estimate your building will need a system sized between 2.00 kW and 3.00 kW of peak power. This estimate assumes the mid-point of this range.

Solar Rating:	Great 5.24 kWh/sq-m/day	More
Solar System Capacity Required:	2.50 kW of peak power (DC watts)	More
Roof Area Needed:	250 sq-ft	More
Equivalent Annual Production:	3,389 kWh electricity	

ESTIMATED SYSTEM COST

This is only an estimate based upon many assumptions. Installation costs can vary considerably. We encourage you to work with a Solar Pro who can provide you with a more detailed cost estimate. We estimate that a 3 kW peak DC power system will cost between \$12,880 and \$19,320. This estimate assumes the mid-point of this cost range.



Assumed Installation Gross Cost:	\$16,100
"Gross Cost" is the cost <u>before</u> any rebates, incentives, tax credits, etc. are applied. See the Cost Notes, below!	assuming \$6.44 per watt DC

FINANCIAL INCENTIVES

Financial incentives shown are totals across all years. So, if an incentive spans multiple years then the value shown is the total of all years. For details, please refer to the table below "Cash Flow by Year and Cumulative Across Years"

Federal Tax Credit (30% of Gross Cost at Installation) » link	\$ 4,830
HI Tax Credit (Residential PV: 35%, 1 System \$ 5k Max) » link	\$ 3,945

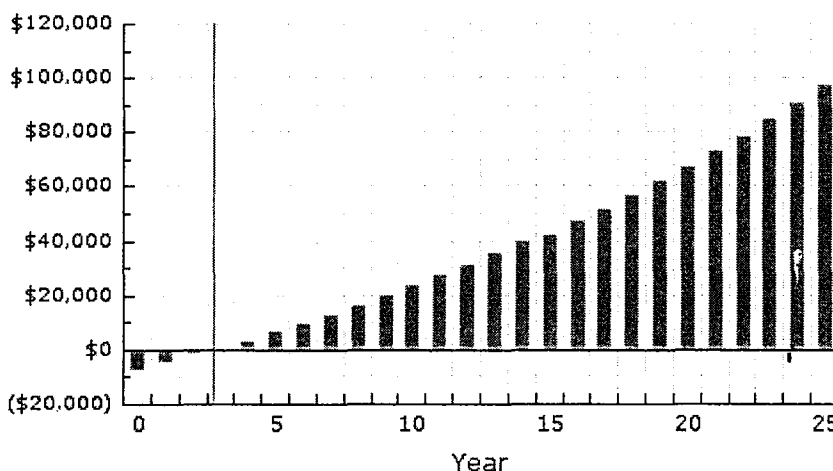
ESTIMATED NET COST: **\$ 7,325** [More](#)

Cash & Loan Amounts:	\$ 7,325 Cash \$ 0 Borrowed
Loan Monthly Payment (6.5% apr, 30 years):	\$ 0

CASH FLOW

Komohana Group Home

Cumulative Cash Flow



Cash Flow Breakeven is where the chart crosses the \$0 point - this is when your investment has paid itself back in cash.

The chart above is a summary of the net cash flow you can expect over time. Net Cash Flow is the total cash after all costs (out-flows of cash) are reduced by financial incentives, annual utility savings - and tax effects (in-flows of cash).

Average values are used together with your assumed income tax rate (37%). Any property appreciation has not been included, as this is generally not a cash flow (it's an investment). The loan modeled, if any, is included. Because individual tax situations vary, we have not included Federal income tax liabilities that may result from having received non-federal incentives, if any (e.g. state rebate programs) as they are usually not taxed as earned income.

SAVINGS & BENEFITS

First-year Utility Savings:	:	\$1,602	More
Average Monthly Utility Savings: <i>over 25-year expected life of system</i>	:	\$224	More
Average Annual Utility Savings: <i>over 25-year expected life of system</i>	:	\$2,689	More
25-year Utility Savings:	:	\$67,222	More
Levelized Cost of your Solar Energy: \$7,325 cost / 84,725 kWh electricity replaced by solar	:	\$0.09 per kWh	More

Utility savings shown above do not take income tax effects into account (they use "Post-Tax" dollars). The financial ratios shown below are based upon the cash flow values shown in the Cash Flow table, below, which include income tax effects, as noted.

Appreciation (Increase) in Property Value:	:	\$32,040	More
Return on Investment (ROI):	:	1333%	More
Internal Rate of Return (IRR):	:	39.8%	More
Net Present Value (NPV):	:	\$46,638	More
Profitability Index:	:	7.4	More
Greenhouse Gas (CO2) Saved: <i>over 25-year system life</i>	:	69 tons	More
	:	138,000 auto miles	

Cash Flow by Year and Cumulative Across Years Konoehana Group Home

This cash flow table includes tax effects applied to utility savings and loan interest payments (if any). You have elected (above) to show utility savings in **Pre-Tax (Gross Income) dollars** ("pre-tax" or what you earned). Therefore for every dollar saved on utility bills, the pre-tax savings will be higher: Pre-tax Utility Savings = (\$'s saved on utility bill) / (1 - Income Tax Rate). You may also earn compounding interest tax free (not shown). Because individual tax situations vary, we have not included Federal income tax liabilities that may result from having received non-federal incentives, if any (e.g. state rebate programs) as they are usually not taxed as earned income. Any income from your system (e.g. performance-based incentives and "SREC's") may be taxed as income (also not shown).

Year of Operation:	at Install	1	2	3	4	5
Gross Cost	(\$16,100)					
Federal Tax Credit (30% of Gross Cost at Installation)	\$4,830	\$0	\$0	\$0	\$0	\$0
HI Tax Credit (Residential PV: 35%, 1 System \$ 5k Max)	\$3,945	\$0	\$0	\$0	\$0	\$0
Utility Savings	\$0	\$2,639	\$2,739	\$2,842	\$2,950	\$3,061
ANNUAL CASH FLOW	-\$7,325	\$2,639	\$2,739	\$2,842	\$2,950	\$3,061
Cumulative Cash Flow	-\$7,325	-\$4,686	-\$1,947	\$895	\$3,845	\$6,906

Breakeven

Year of Operation:	6	7	8	9	10	11
Gross Cost						
Federal Tax Credit (30% of Gross Cost at Installation)	\$0	\$0	\$0	\$0	\$0	\$0
HI Tax Credit (Residential PV: 35%, 1 System \$ 5k Max)	\$0	\$0	\$0	\$0	\$0	\$0
Utility Savings	\$3,177	\$3,297	\$3,422	\$3,551	\$3,685	\$3,824
ANNUAL CASH FLOW	\$3,177	\$3,297	\$3,422	\$3,551	\$3,685	\$3,824
Cumulative Cash Flow	\$10,083	\$13,380	\$16,802	\$20,353	\$24,038	\$27,862

Year of Operation:	12	13	14	15	16	17
Gross Cost				(\$1,750) Inverter Replaced		
Federal Tax Credit (30% of Gross Cost at Installation)	\$0	\$0	\$0	\$0	\$0	\$0
HI Tax Credit (Residential PV: 35%, 1 System \$ 5k Max)	\$0	\$0	\$0	\$0	\$0	\$0
Utility Savings	\$3,969	\$4,119	\$4,275	\$4,436	\$4,604	\$4,778
ANNUAL CASH FLOW	\$3,969	\$4,119	\$4,275	\$2,686	\$4,604	\$4,778
Cumulative Cash Flow	\$31,831	\$35,950	\$40,225	\$42,911	\$47,515	\$52,293

Year of Operation:	18	19	20	21	22	23	24	25
Gross Cost								
Federal Tax Credit (30% of Gross Cost at Installation)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
HI Tax Credit (Residential PV: 35%, 1 System \$ 5k Max)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Utility Savings	\$4,959	\$5,146	\$5,341	\$5,543	\$5,752	\$5,969	\$6,195	\$6,429

ANNUAL CASH FLOW	\$4,959	\$5,146	\$5,341	\$5,543	\$5,752	\$5,969	\$6,195	\$6,429
Cumulative Cash Flow	\$57,252	\$62,398	\$67,739	\$73,282	\$79,034	\$85,003	\$91,198	\$97,627

Komohana Group Home

FAQ's: Frequently Asked Questions for HI:

- Where can I find more information about Hawaii Renewable energy programs and incentives?

Notes & Assumptions: Solar Electric (PV) Systems :

*** HOW TO REDUCE THE SYSTEM SIZE NEEDED & INCREASE SAVINGS**

The estimate provided above assumes "base" electric rates apply. Other taxes and surcharges may be applied to your utility bill. We suggest you review a recent utility bill and change the "Assumed Electric Rate", above, as needed to better match your situation.

You may have other metered-rate options with your utility. Options such as Tiered billing rates, Time-Of-Use (TOU) metering, and Net-Metering, if available, can help reduce the system size you need to provide a "net-zero" energy bill. Sometimes people also reduce the size of their solar system to accommodate planned improvements in their building's energy efficiency, or to match a budget and/or the available space for installing a solar system.

Energy production from a solar electric (PV) system is a function of several factors, including the following. Our assumptions are:

Factor	Assumption
Solar resources	Assumed solar availability: As per Solar Radiance chart
Soiling or contamination of the PV panels	Clean, washed frequently: 100% design sunlight transmission
Temperature	25C, calm wind
System configuration (battery or non-battery)	Non-battery
Orientation to the sun	South facing, tilted at latitude, full sun
Shading	None
PV Energy delivered as % of manufacturer's rating	95%
Soiling, wiring & power point tracking losses	9% (91% delivered)
Inverter Efficiency	90%
<u>Total Energy Delivered</u>	<u>95% x 91% x 90% = 78%</u>

Energy Efficiency: Improving your building's energy efficiency will reduce the system size you need to attain a "net-zero" energy bill.

Tiered Rates: Often people are paying a "Tiered" rate for their electricity. This is a higher rate (higher than the "Base" rate) for electricity charged when a home or building uses more than a "Base" amount allocated for the building. Installing a solar system will reduce your electrical demand from the utility. This can result in a lower utility rate because you stay within the "Base" rate level. In this case, the more expensive "Tiered" rate electricity is eliminated, reducing your average electricity rate.

Komohana Group Home

TOU Metering: Many utilities offer Time-of-Use (TOU) meters. This allows the price of electricity to vary by time of day (called "Peak" or "Off-Peak" periods) and by season (usually "Winter" versus "Summer" rates). If TOU metering is offered by your utility, a solar system may result in additional savings. This is because peak (more expensive electricity) rates often occur during the daytime. This is usually when a solar system is producing the most output, thus reducing your demand for peak-rate electricity from the utility.

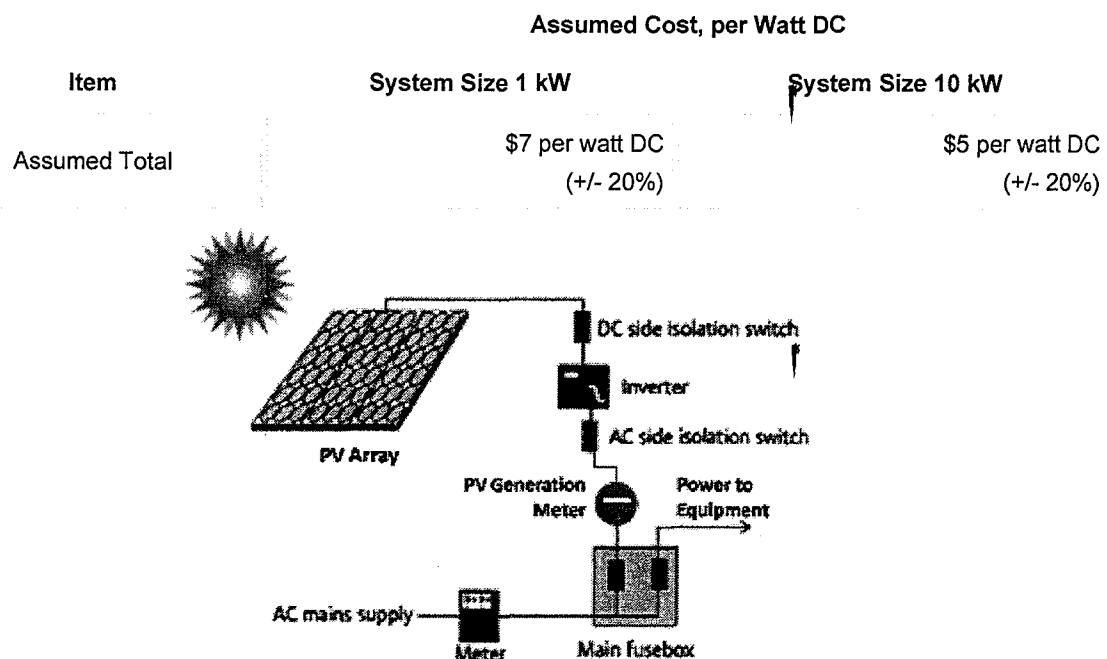
Most utilities do charge for the purchase and installation of a time-of-use meter (normally a few hundred dollars). We have assumed the cost for this is part of the "Estimated Installation cost" shown above.

Net-Metering: With Net-Metering, surplus electricity generated by your renewable energy system will be credited back to your utility account. So if your solar system makes more electricity than you are using, the "meter spins backwards". You are not actually "selling" electricity, since in most states the utility will not reimburse you for excess electricity. But, if your utility offers "Net-Metering" you may be able to get credit for electricity provided back to the grid during peak periods. Combined with TOU metering, Net-Metering can result in multiplied savings since your electricity account may be gaining electricity credits during the time of peak utility rates – Think of a hot, sunny summer day ... your solar system is producing power, spinning your electric meter backwards, and supplying the grid with electricity to run other people's air conditioners – you're "spinning back" cost at peak rates! That's the savings power of Net-metering, combined with TOU rates.

Solar Power "Fixes" Energy Costs: The cost of sunshine is free. While the sun rises every morning, the cost of sunshine does not. Utility rates, on the other hand, tend to rise steadily in cost. So, the value of your savings from a solar system are likely to increase as time goes on. If you are on a fixed income (e.g. nearing or in retirement) this may be of particular interest to you.

THE COST TO GO SOLAR

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OTHER ASSUMPTIONS

This summary is based upon many assumptions and the limited data you entered. An actual site assessment by a qualified solar system retailer or contractor will be needed to determine the actual costs and benefits of installing a solar electric system.

HELPFUL PDF's & Links



[Payback & Other Financial Test for Solar on Your Home](#)

The Dept. of Energy's: [PVWatts Online PV Calculator](#)

Natural Resources Canada's: [RETScreen Renewable Energy Calculators](#)

This estimate is made available to you by: [Solar-Estimate.org](#)

Kome Transitional Shelter

Your Solar Electric Estimate

YOUR SOLAR RATING



The solar rating of your area is Great for adopting a solar system. (5.24 kWh/m² per day).

You may want to change some of the information to better match your situation.

Customize Your Assumptions

Price Installed \$6.18 per watt DC.

Provide 50 % of my electricity, on average, over the course of a year.

Electric Rate: \$ 0.418 /kWh [More](#)

Monthly Electric Usage: 837 kWh/Month [More](#)

Utility Annual Inflation Rate: 3.78 %

Utility Savings Method: Net Metering (common) [help](#)

Calculate Financial Ratios with Utility Savings As: Pre-Tax Dollars (Gross Income) [help](#)

Federal ITC Based Upon: Gross Cost [help](#)

Federal Income Tax Rate: 28% [help](#)

State Income Tax Rate: 9.0 % (Low: 1.40% - High: 8.25%) [help](#)

Loan Modeling: Borrow 0 % of \$11,050 estimated cost
at 6.5 % interest (apr) re-paid over 30 years

[» Update My Assumptions](#)

If you agree **this is a smart investment**, we encourage you to work with a Professional to help you install your very own system.

Click on the [More](#) buttons to learn about our assumptions and other important information used to generate your estimate. Also, please review the Notes below.

Help us improve. We rely on feedback from our users to help keep our service accurate and useful:

» [Send us your Feedback](#)

Your Solar Electric Estimate by the Numbers Home Transitional Shelter

Building Type: Residential
 State & County: HI - Kauai
 Utility: OTHER
 Utility Type: Investor-Owned Utility
 Your Average Monthly Electricity Bill:
 (Assumed rate x average monthly usage) \$ 350 / Month
 Tiered Rates Apply: No
 Time-of-Use Metering Offered: No
 Net-Metering Available: Yes - See Notes, below!



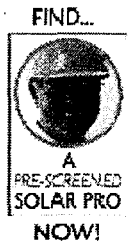
ESTIMATED SYSTEM SIZE


The system size best for your situation will vary based upon product, building, geographic and other variables. We encourage you to work with a Solar Pro who can better estimate the system size best for your situation. We estimate your building will need a system sized between 2.97 kW and 4.45 kW of peak power. This estimate assumes the mid-point of this range.

Solar Rating: **Great**
 5.24 kWh/sq-m/day 
 Solar System Capacity Required: 3.71 kW of peak power
 (DC watts) 
 Roof Area Needed: 371 sq-ft 
 Equivalent Annual Production: 5,029 kWh electricity

ESTIMATED SYSTEM COST

This is only an estimate based upon many assumptions. Installation costs can vary considerably. We encourage you to work with a Solar Pro who can provide you with a more detailed cost estimate. We estimate that a 4 kW peak DC power system will cost between \$18,342 and \$27,513. This estimate assumes the mid-point of this cost range.



Assumed Installation Gross Cost: \$22,928
 "Gross Cost" is the cost before any rebates, incentives, tax credits, etc. are applied. See the Cost Notes, below!
 assuming \$6.18 
 per watt DC

FINANCIAL INCENTIVES

Financial incentives shown are totals across all years. So, if an incentive spans multiple years then the value shown is the total of all years. For details, please refer to the table below "Cash Flow by Year and Cumulative Across Years"

Federal Tax Credit (30% of Gross Cost at Installation) » link \$ 6,878
 HI Tax Credit (Residential PV: 35%, 1 System \$ 5k Max) » link \$ 5,000

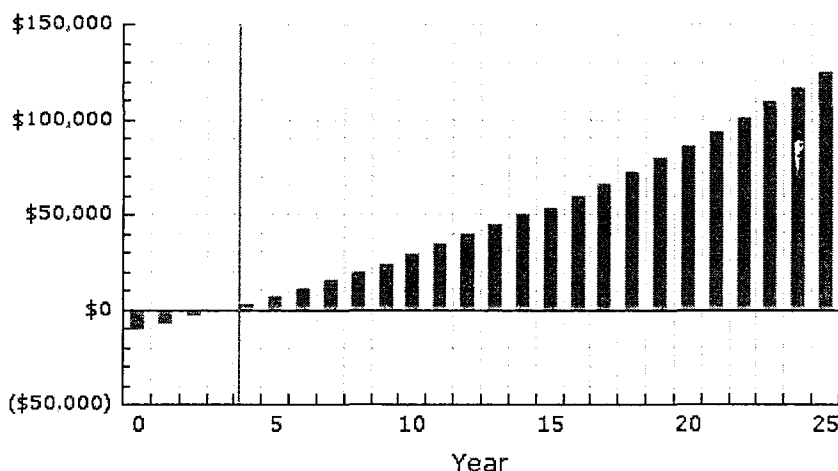
ESTIMATED NET COST: \$ 11,050 

Cash & Loan Amounts: \$ 11,050 Cash
 \$ 0 Borrowed
 Loan Monthly Payment (6.5% apr, 30 years): \$ 0

CASH FLOW

Kome Transitional Shelter

Cumulative Cash Flow



Cash Flow Breakeven is where the chart crosses the \$0 point - this is when your investment has paid itself back in cash.

The chart above is a summary of the net cash flow you can expect over time. Net Cash Flow is the total cash after all costs (out-flows of cash) are reduced by financial incentives, annual utility savings and tax effects (in-flows of cash).

Average values are used together with your assumed income tax rate (37%). Any property appreciation has not been included, as this is generally not a cash flow (it's an investment). The loan modeled, if any, is included. Because individual tax situations vary, we have not included Federal income tax liabilities that may result from having received non-federal incentives, if any (e.g. state rebate programs) as they are usually not taxed as earned income.

SAVINGS & BENEFITS

First-year Utility Savings:	\$2,100	More
Average Monthly Utility Savings: <i>over 25-year expected life of system</i>	\$294	More
Average Annual Utility Savings: <i>over 25-year expected life of system</i>	\$3,525	More
25-year Utility Savings:	\$88,119	More
Levelized Cost of your Solar Energy: \$11,050 cost / 125,725 kWh electricity replaced by solar	\$0.09 per kWh	More

Utility savings shown above do not take income tax effects into account (they use "Post-Tax" dollars). The financial ratios shown below are based upon the cash flow values shown in the Cash Flow table, below, which include income tax effects, as noted.

Appreciation (Increase) in Property Value:	\$42,000	More
Return on Investment (ROI):	1142%	More
Internal Rate of Return (IRR):	35%	More
Net Present Value (NPV):	\$59,542	More
Profitability Index:	6.4	More
Greenhouse Gas (CO2) Saved: <i>over 25-year system life</i>	103 tons 206,000 auto miles	More

Cash Flow by Year and Cumulative Across Years Home Transitional Shelter

This cash flow table includes tax effects applied to utility savings and loan interest payments (if any). You have elected (above) to show utility savings in **Pre-Tax (Gross Income) dollars** ("pre-tax" or what you earned). Therefore for every dollar saved on utility bills, the pre-tax savings will be higher: Pre-tax Utility Savings = (\$'s saved on utility bill) / (1 - Income Tax Rate). You may also earn compounding interest tax free (not shown). Because individual tax situations vary, we have not included Federal income tax liabilities that may result from having received non-federal incentives, if any (e.g. state rebate programs) as they are usually not taxed as earned income. Any income from your system (e.g. performance-based incentives and "SREC's") may be taxed as income (also not shown).

Year of Operation:	at Install	1	2	3	4	5
Gross Cost	(\$22,928)					
Federal Tax Credit (30% of Gross Cost at Installation)	\$6,878	\$0	\$0	\$0	\$0	\$0
HI Tax Credit (Residential PV: 35%, 1 System \$ 5k Max)	\$5,000	\$0	\$0	\$0	\$0	\$0
Utility Savings	\$0	\$3,459	\$3,590	\$3,726	\$3,867	\$4,013
ANNUAL CASH FLOW	\$-11,050	\$3,459	\$3,590	\$3,726	\$3,867	\$4,013
Cumulative Cash Flow	\$-11,050	\$-7,591	\$-4,001	\$-275	\$3,592	\$7,605
					Breakeven	

Year of Operation:	6	7	8	9	10	11
Gross Cost						
Federal Tax Credit (30% of Gross Cost at Installation)	\$0	\$0	\$0	\$0	\$0	\$0
HI Tax Credit (Residential PV: 35%, 1 System \$ 5k Max)	\$0	\$0	\$0	\$0	\$0	\$0
Utility Savings	\$4,164	\$4,322	\$4,485	\$4,655	\$4,831	\$5,013
ANNUAL CASH FLOW	\$4,164	\$4,322	\$4,485	\$4,655	\$4,831	\$5,013
Cumulative Cash Flow	\$11,769	\$16,091	\$20,576	\$25,231	\$30,062	\$35,075

Year of Operation:	12	13	14	15	16	17
Gross Cost						
				(\$2,597) Inverter Replaced		
Federal Tax Credit (30% of Gross Cost at Installation)	\$0	\$0	\$0	\$0	\$0	\$0
HI Tax Credit (Residential PV: 35%, 1 System \$ 5k Max)	\$0	\$0	\$0	\$0	\$0	\$0
Utility Savings	\$5,203	\$5,400	\$5,604	\$5,815	\$6,035	\$6,263
ANNUAL CASH FLOW	\$5,203	\$5,400	\$5,604	\$3,218	\$6,035	\$6,263
Cumulative Cash Flow	\$40,278	\$45,678	\$51,282	\$54,500	\$60,535	\$66,798

Year of Operation:	18	19	20	21	22	23	24	25
Gross Cost								
Federal Tax Credit (30% of Gross Cost at Installation)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
HI Tax Credit (Residential PV: 35%, 1 System \$ 5k Max)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Utility Savings	\$6,500	\$6,746	\$7,001	\$7,266	\$7,540	\$7,825	\$8,121	\$8,428

ANNUAL CASH FLOW	\$6,500	\$6,746	\$7,001	\$7,266	\$7,540	\$7,825	\$8,121	\$8,428
Cumulative Cash Flow	\$73,298	\$80,044	\$87,045	\$94,311	\$101,851	\$109,676	\$117,797	\$126,225

FAQ's: Frequently Asked Questions for HI:

- Where can I find more information about Hawaii Renewable energy programs and incentives?

Notes & Assumptions: Solar Electric (PV) Systems

* HOW TO REDUCE THE SYSTEM SIZE NEEDED & INCREASE SAVINGS

The estimate provided above assumes "base" electric rates apply. Other taxes and surcharges may be applied to your utility bill. We suggest you review a recent utility bill and change the "Assumed Electric Rate", above, as needed to better match your situation.

You may have other metered-rate options with your utility. Options such as Tiered billing rates, Time-Of-Use (TOU) metering, and Net-Metering, if available, can help reduce the system size you need to provide a "net-zero" energy bill. Sometimes people also reduce the size of their solar system to accommodate planned improvements in their building's energy efficiency, or to match a budget and/or the available space for installing a solar system.

Energy production from a solar electric (PV) system is a function of several factors, including the following. Our assumptions are:

Factor	Assumption
Solar resources	Assumed solar availability: As per Solar Radiance chart
Soiling or contamination of the PV panels	Clean, washed frequently: 100% design sunlight transmission
Temperature	25C, calm wind
System configuration (battery or non-battery)	Non-battery
Orientation to the sun	South facing, tilted at latitude, full sun
Shading	None
PV Energy delivered as % of manufacturer's rating	95%
Soiling, wiring & power point tracking losses	9% (91% delivered)
Inverter Efficiency	90%
<u>Total Energy Delivered</u>	<u>95% x 91% x 90% = 78%</u>

Energy Efficiency: Improving your building's energy efficiency will reduce the system size you need to attain a "net-zero" energy bill.

Tiered Rates: Often people are paying a "Tiered" rate for their electricity. This is a higher rate (higher than the "Base" rate) for electricity charged when a home or building uses more than a "Base" amount allocated for the building. Installing a solar system will reduce your

Rome Transitional Shelter

electrical demand from the utility. This can result in a lower utility rate because you stay within the "Base" rate level. In this case, the more expensive "Tiered" rate electricity is eliminated, reducing your average electricity rate.

TOU Metering: Many utilities offer Time-of-Use (TOU) meters. This allows the price of electricity to vary by time of day (called "Peak" or "Off-Peak" periods) and by season (usually "Winter" versus "Summer" rates). If TOU metering is offered by your utility, a solar system may result in additional savings. This is because peak (more expensive electricity) rates often occur during the daytime. This is usually when a solar system is producing the most output, thus reducing your demand for peak-rate electricity from the utility.

Most utilities do charge for the purchase and installation of a time-of-use meter (normally a few hundred dollars). We have assumed the cost for this is part of the "Estimated Installation cost" shown above.

Net-Metering: With Net-Metering, surplus electricity generated by your renewable energy system will be credited back to your utility account. So if your solar system makes more electricity than you are using, the "meter spins backwards". You are not actually "selling" electricity, since in most states the utility will not reimburse you for excess electricity. But, if your utility offers "Net-Metering" you may be able to get credit for electricity provided back to the grid during peak periods. Combined with TOU metering, Net-Metering can result in multiplied savings since your electricity account may be gaining electricity credits during the time of peak utility rates -- Think of a hot, sunny summer day ... your solar system is producing power, spinning your electric meter backwards, and supplying the grid with electricity to run other people's air conditioners -- you're "spinning back" cost at peak rates! That's the savings power of Net-metering, combined with TOU rates.

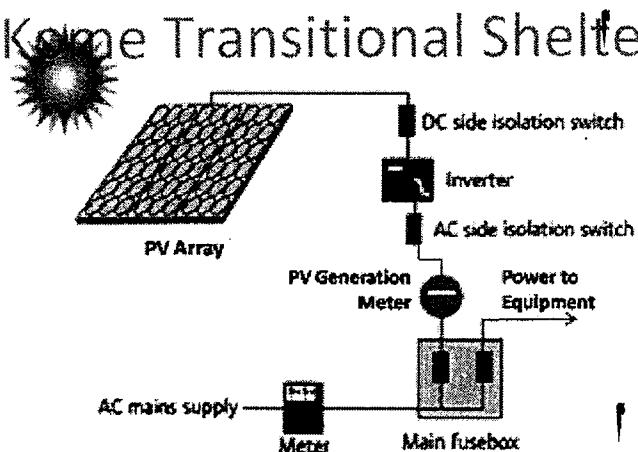
Solar Power "Fixes" Energy Costs: The cost of sunshine is free. While the sun rises every morning, the cost of sunshine does not. Utility rates, on the other hand, tend to rise steadily in cost. So, the value of your savings from a solar system are likely to increase as time goes on. If you are on a fixed income (e.g. nearing or in retirement) this may be of particular interest to you.

THE COST TO GO SOLAR

This is only an estimate based upon many assumptions and limited data entered by you: Installation costs can vary considerably. The cost to purchase and install a complete grid-tied solar photovoltaic (PV) system on a residential home is typically as further defined in the table, below. This includes the PV array, inverter and associated balance of system costs. It does not include the cost of options you may select, such as battery backup power storage, or the costs of building preparation work, like new shingles. Costs can also be higher if you add other features or have special installation needs (such as application over tile roofing) or you choose to use special mounting systems (such as sun tracking systems). Other factors may also affect price, including, but not limited to, your location, the building condition, type and location, its wiring, and warranties offered.

Item	Assumed Cost, per Watt DC	
	System Size 1 kW	System Size 10 kW
Assumed Total	\$7 per watt DC (+/- 20%)	\$5 per watt DC (+/- 20%)

Home Transitional Shelter



OTHER ASSUMPTIONS

This summary is based upon many assumptions and the limited data you entered. An actual site assessment by a qualified solar system retailer or contractor will be needed to determine the actual costs and benefits of installing a solar electric system.

HELPFUL PDF's & Links



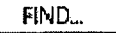


Payback & Other Financial Test for Solar on Your Home

The Dept. of Energy's: [PVWatts Online PV Calculator](#)

Natural Resources Canada's: [RETScreen Renewable Energy Calculators](#)

This estimate is made available to you by: Solar-Estimate.org

Your Solar Electric Estimate by the Numbers Lawehana Transitional Shelter

Building Type:	Residential	
State & County:	HI - Kauai	
Utility:	Kauai Island Utility Coop	A PRE-SCREENED SOLAR PRO
Utility Type:	Electric Cooperative	NOW!
Your Average <u>Monthly</u> Electricity Bill: (Assumed rate x average monthly usage)	\$ 350 / Month	
Tiered Rates Apply:	No	
Time-of-Use Metering Offered:	No	
Net-Metering Available:	Yes - See Notes, below!	




ESTIMATED SYSTEM SIZE

The system size best for your situation will vary based upon product, building, geographic and other variables. We encourage you to work with a Solar Pro who can better estimate the system size best for your situation. We estimate your building will need a system sized between 2.62 kW and 3.94 kW of peak power. This estimate assumes the mid-point of this range.

Solar Rating:	Great 5.24 kWh/sq-m/day	
Solar System Capacity Required:	3.28 kW of peak power (DC watts)	
Roof Area Needed:	328 sq-ft	
Equivalent Annual Production:	4,446 kWh electricity	

ESTIMATED SYSTEM COST


This is only an estimate based upon many assumptions. Installation costs can vary considerably. We encourage you to work with a Solar Pro who can provide you with a more detailed cost estimate. We estimate that a 3 kW peak DC power system will cost between \$16,452 and \$24,679. This estimate assumes the mid-point of this cost range.

Assumed Installation Gross Cost:	\$20,566	
"Gross Cost" is the cost <u>before</u> any rebates, incentives, tax credits, etc. are applied. See the Cost Notes, below!	assuming \$6.27 per watt DC	 A PRE-SCREENED SOLAR PRO NOW!
		

FINANCIAL INCENTIVES

Financial incentives shown are totals across all years. So, if an incentive spans multiple years then the value shown is the total of all years. For details, please refer to the table below "Cash Flow by Year and Cumulative Across Years"

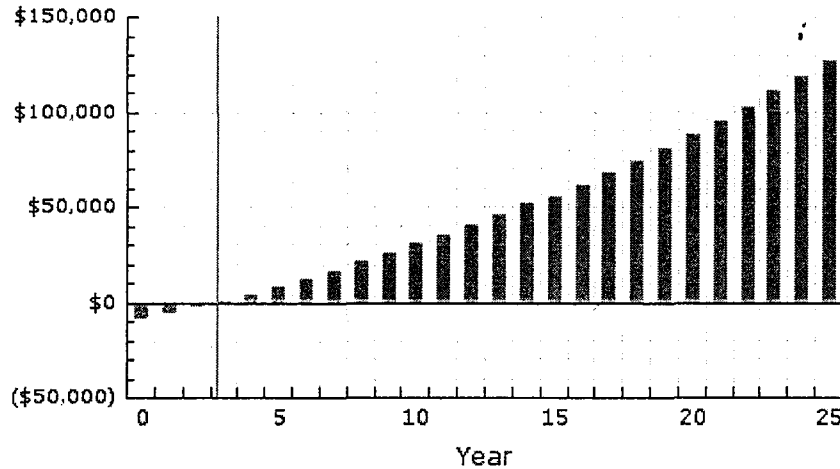
Federal Tax Credit (30% of Gross Cost at Installation) » link	\$ 6,170
HI Tax Credit (Residential PV: 35%, 1 System \$ 5k Max) » link	\$ 5,000

ESTIMATED NET COST:	\$ 9,396	
Cash & Loan Amounts:	\$ 9,396 Cash \$ 0 Borrowed	
Loan Monthly Payment (6.5% apr, 30 years):	\$ 0	

CASH FLOW

Lawehana Transitional Shelter

Cumulative Cash Flow



Cash Flow Breakeven is where the chart crosses the \$0 point - this is when your investment has paid itself back in cash.

The chart above is a summary of the net cash flow you can expect over time. Net Cash Flow is the total cash after all costs (out-flows of cash) are reduced by financial incentives, annual utility savings and tax effects (in-flows of cash).

Average values are used together with your assumed income tax rate (37%). Any property appreciation has not been included, as this is generally not a cash flow (it's an investment). The loan modeled, if any, is included. Because individual tax situations vary, we have not included Federal income tax liabilities that may result from having received non-federal incentives, if any (e.g. state rebate programs) as they are usually not taxed as earned income.

SAVINGS & BENEFITS

First-year Utility Savings: \$2,100 [More](#)

Average Monthly Utility Savings: \$294 [More](#)
over 25-year expected life of system

Average Annual Utility Savings: \$3,525 [More](#)
over 25-year expected life of system

25-year Utility Savings: \$88,119 [More](#)

Levelized Cost of your Solar Energy: \$0.08 per kWh [More](#)
\$9,396 cost / 111,150 kWh electricity replaced by solar

Utility savings shown above do not take income tax effects into account (they use "Post-Tax" dollars). The financial ratios shown below are based upon the cash flow values shown in the Cash Flow table, below, which include income tax effects, as noted.

Appreciation (Increase) in Property Value: \$42,000 [More](#)

Return on Investment (ROI): 1364% [More](#)

Internal Rate of Return (IRR): 40.6% [More](#)

Net Present Value (NPV): \$61,341 [More](#)

Profitability Index: 7.5 [More](#)

Greenhouse Gas (CO2) Saved: 91 tons [More](#)
over 25-year system life 182,000 auto miles

Cash Flow by Year and Cumulative Across Years Lawehana Transitional Shelter

This cash flow table includes tax effects applied to utility savings and loan interest payments (if any). You have elected (above) to show utility savings in **Pre-Tax (Gross Income) dollars** ("pre-tax" or what you earned). Therefore for every dollar saved on utility bills, the pre-tax savings will be higher: Pre-tax Utility Savings = (\$'s saved on utility bill) / (1 - Income Tax Rate). You may also earn compounding interest tax free (not shown). Because individual tax situations vary, we have not included Federal income tax liabilities that may result from having received non-federal incentives, if any (e.g. state rebate programs) as they are usually not taxed as earned income. Any income from your system (e.g. performance-based incentives and "SREC's") may be taxed as income (also not shown).

Year of Operation:	at Install	1	2	3	4	5		
Gross Cost	(\$20,566)							
Federal Tax Credit (30% of Gross Cost at Installation)	\$6,170	\$0	\$0	\$0	\$0	\$0		
HI Tax Credit (Residential PV: 35%, 1 System \$ 5k Max)	\$5,000	\$0	\$0	\$0	\$0	\$0		
Utility Savings	\$0	\$3,459	\$3,590	\$3,726	\$3,867	\$4,013		
ANNUAL CASH FLOW	-\$9,396	\$3,459	\$3,590	\$3,726	\$3,867	\$4,013		
Cumulative Cash Flow	-\$9,396	-\$5,937	-\$2,347	\$1,379	\$5,246	\$9,259		
				Breakeven				
Year of Operation:	6	7	8	9	10	11		
Gross Cost								
Federal Tax Credit (30% of Gross Cost at Installation)	\$0	\$0	\$0	\$0	\$0	\$0		
HI Tax Credit (Residential PV: 35%, 1 System \$ 5k Max)	\$0	\$0	\$0	\$0	\$0	\$0		
Utility Savings	\$4,164	\$4,322	\$4,485	\$4,655	\$4,831	\$5,013		
ANNUAL CASH FLOW	\$4,164	\$4,322	\$4,485	\$4,655	\$4,831	\$5,013		
Cumulative Cash Flow	\$13,423	\$17,745	\$22,230	\$26,885	\$31,716	\$36,729		
Year of Operation:	12	13	14	15	16	17		
Gross Cost								
					(\$2,296)			
					Inverter			
					Replaced			
Federal Tax Credit (30% of Gross Cost at Installation)	\$0	\$0	\$0	\$0	\$0	\$0		
HI Tax Credit (Residential PV: 35%, 1 System \$ 5k Max)	\$0	\$0	\$0	\$0	\$0	\$0		
Utility Savings	\$5,203	\$5,400	\$5,604	\$5,815	\$6,035	\$6,263		
ANNUAL CASH FLOW	\$5,203	\$5,400	\$5,604	\$3,519	\$6,035	\$6,263		
Cumulative Cash Flow	\$41,932	\$47,332	\$52,936	\$56,455	\$62,490	\$68,753		
Year of Operation:	18	19	20	21	22	23	24	25
Gross Cost								
Federal Tax Credit (30% of Gross Cost at Installation)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
HI Tax Credit (Residential PV: 35%, 1 System \$ 5k Max)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Utility Savings	\$6,500	\$6,746	\$7,001	\$7,266	\$7,540	\$7,825	\$8,121	\$8,428

ANNUAL CASH FLOW	\$6,500	\$8,465	\$7,001	\$7,266	\$7,540	\$7,825	\$8,121	\$8,428
Cumulative Cash Flow	\$75,253	\$81,999	\$89,000	\$96,266	\$103,806	\$111,631	\$119,752	\$128,180

FAQ's: Frequently Asked Questions for HI:

- Where can I find more information about Hawaii Renewable energy programs and incentives?

Notes & Assumptions: Solar Electric (PV) Systems

* HOW TO REDUCE THE SYSTEM SIZE NEEDED & INCREASE SAVINGS

The estimate provided above assumes "base" electric rates apply. Other taxes and surcharges may be applied to your utility bill. We suggest you review a recent utility bill and change the "Assumed Electric Rate", above, as needed to better match your situation.

You may have other metered-rate options with your utility. Options such as Tiered billing rates, Time-Of-Use (TOU) metering, and Net-Metering, if available, can help reduce the system size you need to provide a "net-zero" energy bill. Sometimes people also reduce the size of their solar system to accommodate planned improvements in their building's energy efficiency, or to match a budget and/or the available space for installing a solar system.

Energy production from a solar electric (PV) system is a function of several factors, including the following. Our assumptions are:

Factor	Assumption
Solar resources	Assumed solar availability: As per Solar Radiance chart
Soiling or contamination of the PV panels	Clean, washed frequently: 100% design sunlight transmission
Temperature	25C, calm wind
System configuration (battery or non-battery)	Non-battery
Orientation to the sun	South facing, tilted at latitude, full sun
Shading	None
PV Energy delivered as % of manufacturer's rating	95%
Soiling, wiring & power point tracking losses	9% (91% delivered)
Inverter Efficiency	90%
<u>Total Energy Delivered</u>	<u>95% x 91% x 90% = 78%</u>

Energy Efficiency: Improving your building's energy efficiency will reduce the system size you need to attain a "net-zero" energy bill.

Tiered Rates: Often people are paying a "Tiered" rate for their electricity. This is a higher rate (higher than the "Base" rate) for electricity charged when a home or building uses more than a "Base" amount allocated for the building. Installing a solar system will reduce your

electrical demand from the utility. This can result in a lower utility rate because you stay within the "Base" rate level. In this case, the more expensive "Tiered" rate electricity is eliminated, reducing your average electricity rate.

TOU Metering: Many utilities offer Time-of-Use (TOU) meters. This allows the price of electricity to vary by time of day (called "Peak" or "Off-Peak" periods) and by season (usually "Winter" versus "Summer" rates). If TOU metering is offered by your utility, a solar system may result in additional savings. This is because peak (more expensive electricity) rates often occur during the daytime. This is usually when a solar system is producing the most output, thus reducing your demand for peak-rate electricity from the utility.

Most utilities do charge for the purchase and installation of a time-of-use meter (normally a few hundred dollars). We have assumed the cost for this is part of the "Estimated Installation cost" shown above.

Net-Metering: With Net-Metering, surplus electricity generated by your renewable energy system will be credited back to your utility account. So if your solar system makes more electricity than you are using, the "meter spins backwards". You are not actually "selling" electricity, since in most states the utility will not reimburse you for excess electricity. But, if your utility offers "Net-Metering" you may be able to get credit for electricity provided back to the grid during peak periods. Combined with TOU metering, Net-Metering can result in multiplied savings since your electricity account may be gaining electricity credits during the time of peak utility rates -- Think of a hot, sunny summer day ... your solar system is producing power, spinning your electric meter backwards, and supplying the grid with electricity to run other people's air conditioners -- you're "spinning back" cost at peak rates! That's the savings power of Net-metering, combined with TOU rates.

Solar Power "Fixes" Energy Costs: The cost of sunshine is free. While the sun rises every morning, the cost of sunshine does not. Utility rates, on the other hand, tend to rise steadily in cost. So, the value of your savings from a solar system are likely to increase as time goes on. If you are on a fixed income (e.g. nearing or in retirement) this may be of particular interest to you.

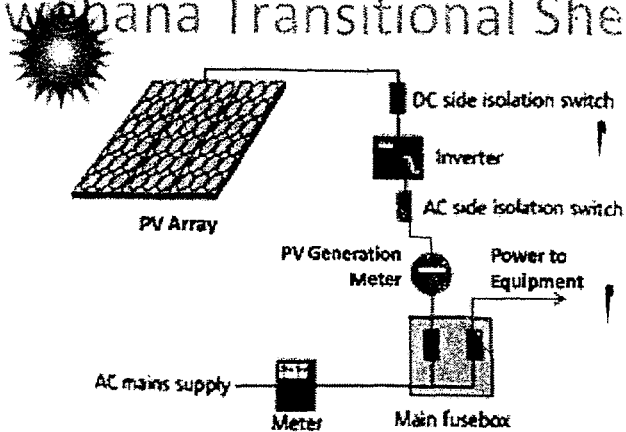
THE COST TO GO SOLAR

This is only an estimate based upon many assumptions and limited data entered by you: Installation costs can vary considerably. The cost to purchase and install a complete grid-tied solar photovoltaic (PV) system on a residential home is typically as further defined in the table, below. This includes the PV array, inverter and associated balance of system costs. It does not include the cost of options you may select, such as battery backup power storage, or the costs of building preparation work, like new shingles. Costs can also be higher if you add other features or have special installation needs (such as application over tile roofing) or you choose to use special mounting systems (such as sun tracking systems). Other factors may also affect price, including, but not limited to, your location, the building condition, type and location, its wiring, and warranties offered.

Assumed Cost, per Watt DC

Item	System Size 1 kW	System Size 10 kW
Assumed Total	\$7 per watt DC (+/- 20%)	\$5 per watt DC (+/- 20%)

Lawabana Transitional Shelter



OTHER ASSUMPTIONS

This summary is based upon many assumptions and the limited data you entered. An actual site assessment by a qualified solar system retailer or contractor will be needed to determine the actual costs and benefits of installing a solar electric system.

HELPFUL PDF's & Links



Payback & Other Financial Test for Solar on Your Home

The Dept. of Energy's: [PVWatts Online PV Calculator](#)

Natural Resources Canada's: [RETScreen Renewable Energy Calculators](#)

This estimate is made available to you by: [Solar-Estimate.org](#)