

City of Key West Solar Evaluation Form

Per Resolution 19-328, options for solar power components shall be presented to the City Commission for all future City development and redevelopment projects.

Section 1: Energy Usage

Project Name: Frederick Douglass Community Center

Project Level of Design: 75% Design Development

Square Feet of Building(s): 9,587 sf (usable area)

Post Disaster Importance: High Med Low

Estimated Annual Energy Use (Kwh): Proposed Building- Low- 90,000 Kwh/ Year
High- 110,000 Kwh/ Year

Section 2: Energy Use Related to Water Heating: N/A

Section 3: Panel Specs:

Warranty: 25 years Expected Lifespan: 40 years

Section 4: Estimated Energy Production

	Space Available for Solar (sq foot)	Estimated Energy Output (KwH/Yr)	Price Per Kilowatt	Estimated Yearly Energy offset
Low Roof	6,400	78,982.4	\$0.136*	\$10,741
High Roof	2,600	32,086.6	\$0.136*	\$4,363
Total	9,000	111,069	\$0.136*	\$15,105

*Averaged rate over a 12-month period.

Section 5: Cost of System

Current Keys Energy electricity costs \$0.136/Kw-hr. The estimated 111,069 KwH/yr requirement at \$0.136 (111,069 x .136) equates to \$15,105 worth of electricity annually, or \$1,259/month.

A prominent renewable energy calculator (nrel.gov) indicates that a 68 KW system is required to produce the anticipated 111,069 KwH/yr requirement. To construct a system size of 68 KW, costs are roughly \$3.25- \$4.00 per watt. See charts below for range of costs for a complete system.

	Cost Per Watt	Number of Watts	Cost to Build
Low Roof	\$3.25	40,000	\$130,000
High Roof	\$3.25	28,000	\$91,000

Total Cost= **\$221,000**

	Cost Per Watt	Number of Watts	Cost to Build
Low Roof	\$4.00	40,000	\$160,000
High Roof	\$4.00	28,000	\$112,000

Total Cost= **\$272,000**

Section 6: Pay Back Period- Return on Investment (ROI)

To calculate return on investment (ROI), take the cost of the system and divide it by the estimated annual savings.

If electricity costs increase 2%-5% each year, then payback will be faster, as shown in the last two columns.

	Estimated Cost of Solar System: \$3.25 sf	Estimated Yearly Savings	ROI (Years)	ROI 2% (Year)	ROI 5% (Year)
Low Roof	\$130,000	\$10,741	12.1 years	10.9 Years	9.6 Years
High Roof	\$91,000	\$4,363	21.0 years	17.5 Years	14.5 Years
Total	\$221,000	\$15,105	14.6 years	12.9 Years	11.2 Years

	Estimated Cost of Solar System: \$4.00 sf	Estimated Yearly Energy offset	ROI (Years)	ROI 2% (Year)	ROI 5% (Year)
Low Roof	\$160,000	\$10,741	14.9 years	13.2 Years	11.5 Years
High Roof	\$112,000	\$4,363	25.6 years	20.9 Years	17.3 Years
Total	\$272,000	\$15,105	18.0 years	15.5 Years	13.7 Years

Section 7: Conclusion

Based on the information reviewed at 75% Design Development, solar would be a viable addition to the project. Depending on the size of the solar panel system and the end cost, return on investment (ROI) should be between 10.9 years – 15.5 years, based on a conservative 2% increase in energy costs each year.