

RESOLUTION No. 22-092

A RESOLUTION OF THE CITY COMMISSION OF THE CITY OF KEY WEST, FLORIDA, APPROVING AND ACCEPTING THE ATTACHED "SOLAR EVALUATION FORM" PREPARED BY THE KEY WEST ENGINEERING DEPARTMENT FOR THE FREDERICK DOUGLASS COMMUNITY CENTER PROJECT; RECOMMENDING ROOF CONSTRUCTION TO BE DESIGNED FOR INSTALLATION OF SOLAR PANELS, AND FOR A SOLAR PANEL SYSTEM TO BE BID AS A SEPARATE PROJECT; PROVIDING FOR AN EFFECTIVE DATE

WHEREAS, in Resolution 19-328, the City Commission established a policy requiring that options for solar power components are presented to the City Commission for all future city development and redevelopment projects; and

WHEREAS, City staff prepared the attached solar evaluation, based on information provided by the project's architect K2M Design, and Florida Solar One, and presented this information at the regular Commission meeting of April 5, 2022; and

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COMMISSION OF THE CITY OF KEY WEST, FLORIDA, AS FOLLOWS:

Section 1: That the attached "Solar Evaluation Form" submitted by the Key West Engineering Department is hereby approved and accepted.

Section 2: That the City Commission concurs with staff recommendations, that roof construction should be designed for the installation of solar panels now or in the future, and that solar panels should be bid out as a separate project.

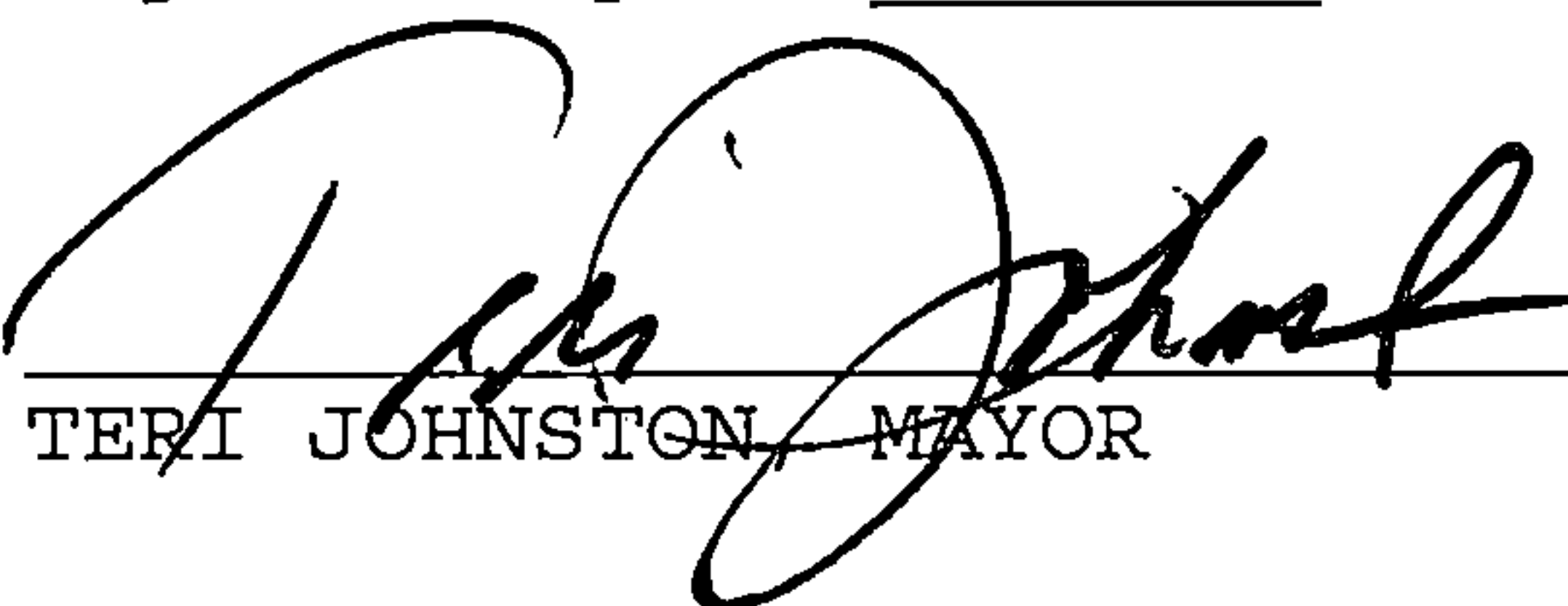
Section 3: That this Resolution shall go into effect immediately upon its passage and adoption and authentication by the signature of the Presiding Officer and the Clerk of the Commission.

Passed and adopted by the City Commission at a meeting held this 6th day of April, 2022.


Authenticated by the Presiding Officer and Clerk of the Commission on 7th day of April, 2022.

Filed with the Clerk on April 7, 2022.

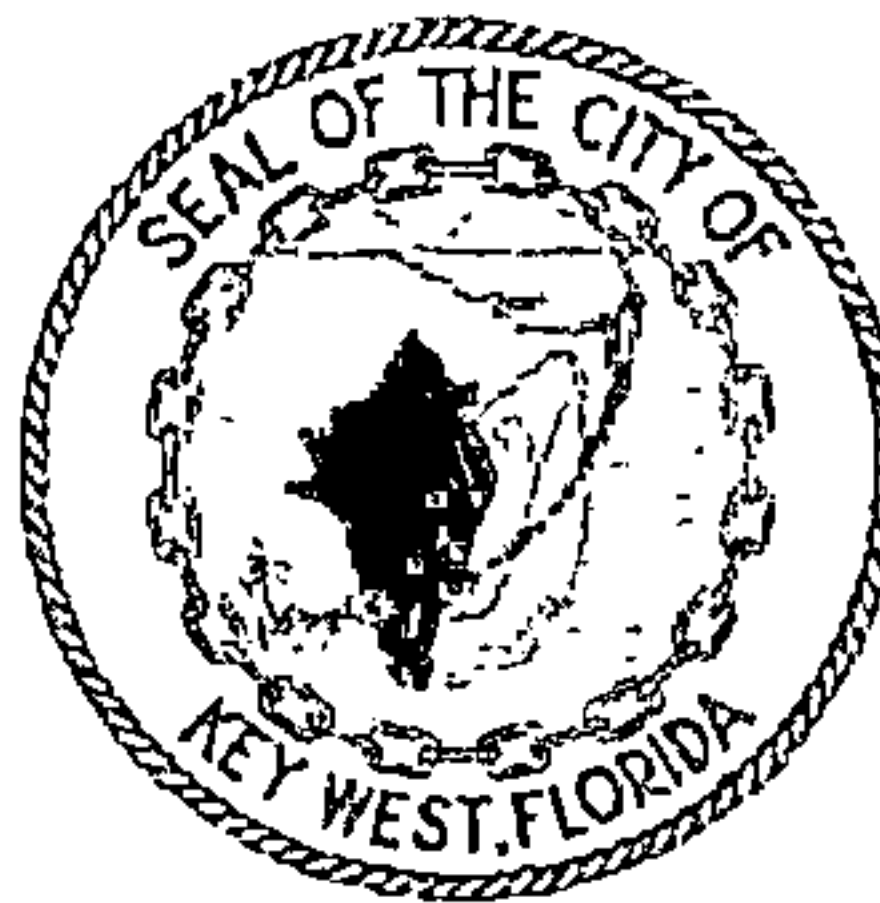
Mayor Teri Johnston	<u>Yes</u>
Vice Mayor Sam Kaufman	<u>Yes</u>
Commissioner Gregory Davila	<u>Yes</u>
Commissioner Mary Lou Hoover	<u>Yes</u>
Commissioner Clayton Lopez	<u>Yes</u>
Commissioner Billy Wardlow	<u>Yes</u>
Commissioner Jimmy Weekley	<u>Yes</u>


TERI JOHNSTON, MAYOR

ATTEST:



CHERYL SMITH, CITY CLERK



THE CITY OF KEY WEST

Post Office Box 1409 Key West, FL 33041-1409 (305) 809-3700

EXECUTIVE SUMMARY

Date: March 21, 2022

To: Patti McLauchlin, City Manager
Todd Stoughton, Assistant City Manager
Steven McAlearney, Engineering Director

From: Karen Wilman, Sr. Construction Manager

Subject: **Solar Direction for Frederick Douglass Community Center**

ACTION STATEMENT

Staff is requesting a decision on whether to install solar equipment on the Frederick Douglass Community Center.

BACKGROUND

Resolution 19-328 requires that options for solar power components be presented to the city commission for all future city development and redevelopment projects. Building solar infrastructure limits reliance on fossil fuels, adds resiliency, and provides life-cycle energy cost savings. Drawbacks to solar infrastructure are increased up-front and maintenance costs.

A solar study/cost estimate has been prepared; see attached report. The design example is based on the estimated energy consumption of the new building based on square footage and intended use. The project is at 75% Design Development and the information provided is an educated guess for both cost and performance of the suggested solar infrastructure. If Commission directs moving forward with solar installation, more design and estimating will be done prior to purchasing the system.

PURPOSE AND JUSTIFICATION

Solar installation is in line with our City's Strategic Plan, *Key West Forward*, Priority 4, Environmental Protection, Protect the health and longevity of the island and its inhabitants. Goal 1- pursue clean energy initiatives to reduce greenhouse gas emissions and increase participation in the circular economy.

FINANCIAL IMPACT

A system of the size required to meet the needs of the community center, estimated costs range from \$3.25 to \$4.00 per square foot of solar panel. The below tables show an expected range of both costs to install, and years required to see a return on investment.

	Estimated Cost of Solar Installation: At \$3.25 sf	Estimated Yearly Savings	ROI (Years)	ROI 2% increase /Yr	ROI 5% Increase /Yr
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 Installation: At \$4.00 sf	Estimated Yearly Savings	ROI (Years)	ROI 2% increase /Yr	ROI 5% Increase /Yr
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

Based on the information reviewed during 75% Design Development, solar would be a valuable addition to the project. Depending on the size of the solar panel system and estimated costs, return on investment (ROI) would be between 10.9 years – 15.5 years, based on a conservative 2% increase of energy costs each year. Most current warranties meet or exceed 20 years.

RECOMMENDATION

Staff recommends approval to install solar infrastructure for the Frederick Douglass Community Center based on the following conditions:

1. Roof Construction will be designed for the installation of solar panels, now or in the future.
2. A solar panel system will be bid as a separate ITB project, to be advertised when the project is at 50% Construction Documents. More specific information will be available at that point regarding both expected energy requirements and building use. Bid will be brought back to Commission for final review and approval.

Key to the Caribbean – average yearly temperature 77 ° Fahrenheit.

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.