

PROJECT PROPOSAL
2022 DOST-GIA FUNDING

I. PROJECT PROFILE

(1) Project Title: Solar Powered Water Pumping System for Sustainable Water Supply in Sta. Cruz, Marinduque				
(2) Project Leader/Sex: Hon. Marisa R. Martinez (Mayor)/ F Engr. Rowell A. Peñaflor (Waterworks Superintendent) / M				
Agency: Municipality of Sta. Cruz				
Address/Telephone/Fax/Email: mayoroffice@rediscoversantacruz.com				
(3) Cooperating Agency/ies: DOST-MIMAROPA / LGU-STA. CRUZ				
(4) Site/s of Implementation (Municipality / District / Province / Region) Base Station: Baliis, Sta. Cruz, Marinduque, MIMAROPA Region Other Implementation Site (s): _____				
(5) Project Duration: 12 months				
(6) Total Project Cost: (indicate Counterpart Funds; use Form A for the Line-Item Budget)				
Source of Fund / Site(s) of Implementation	PS	MOOE	EO	Total
LGU STA. CRUZ	435,600.00 Estimated PS for Municipal WaterWorks	300,000.00 Repair and maintenance of pipings and water pumps. Other MOOEs	1,190,000.00 10KW (three phase) Grid Tied Solar Energy System for 15hp booster pump.	1,925,600.00
DOST-MIMAROPA		11,753.00	P1,679,000.00	1,690,753.00
TOTAL	435,600.00	311,753.00	2,869,000.00	3,616,353.00

II. PROJECT SUMMARY**(7) Rationale** (Not to exceed one page)

In the Municipality of Sta.Cruz, Marinduque there is a water scarcity in Barangay Banahaw, Lipa, and Pag-asa, which together have a combined population of 689 households or 2,756 individuals. One of the major problem of Sta. Cruz Municipal Waterworks Section is the increasing cost of electricity and frequent power interruption which leads to water pump shutdown or cutoff of water supply at Baliis Water source. Moreover, business establishments operation like water refilling stations, carwash, restaurants, bakeries, etc. in the area are also affected.

Municipal Waterworks pays monthly electric bill ranges from P13,500.00 to P 22,5000.00 for using 10hp submersible water pump and a 15hp booster pump. To provide technology solutions to

problems in the identified priority areas through collaboration with LGU-Sta. Cruz and address this long term issue, a 12.4 Kw Hybrid Solar Powered Water Pumping System is being proposed.

Active Connection on Baliis Tank	Brgy. Banahaw (85%)	Brgy. Lipa (50%)	Brgy Pagasa (30%)	TOTAL
Total No. of Household	557	116	523	1,196
Total No. of Household (Active Connection)	474	58	157	689
Population	1896	232	628	2,756

(8) Project Description (Not to exceed 15 pages)

OBJECTIVES (General and Specific)

The general objective of the project is Improve access to tap water (domestic uses) for 689 households and/or 2756 individuals including business establishments through water pumping system powered with solar energy system in Sta. Cruz, Marinduque.

SPECIFIC OBJECTIVES:

- Installation of 12.4 Kw Hybrid Solar Powered Water Pumping System and another 10KW Grid Tied Solar Energy System (SES) for 15hp booster pump.
- Provide sustainable water supply.
- Promote the use of renewable energy (solar energy).

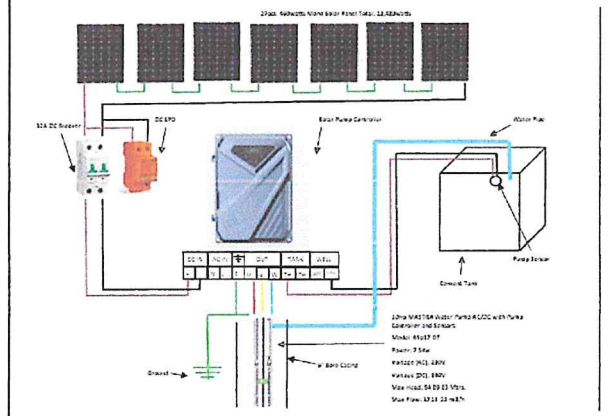
METHODOLOGY

- The DOST-MIMAROPA will provide technical assistance; 12.4 Kw Hybrid Solar Powered Water Pumping System.
- The LGU- Sta. Cruz will provide counterpart funds for the following:
 1. 10 KW (three phase) Grid Tied Solar Energy System for 15hp Booster pump (existing).
 2. Personnel Services for assigned operator/maintenance of Municipal Waterworks.
 3. Repair and maintenance of all the equipment.
- LGU-Sta. Cruz through the Municipal Waterworks Section will manage the operation and maintenance of the solar-powered water pumping system to ensure the sustainability of the project.
- PSTO-Marinduque will closely monitor the progress of the project thru it's Work Plan to ensure that the project is implemented based on the scheduled activities.

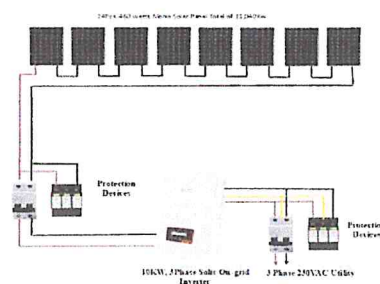
Conceptual Framework

DOST-MIMAROPA Proposed Intervention

12.4 Kw Hybrid Solar Powered Water Pumping System



LGU Sta. Cruz will provide counterpart funds in its corresponding repair and maintenance expenses and 10 KW Grid tied solar energy system for 15hp booster. Existing water tank and pipeline



Baliis Water Source

Sustainable water supply for Brgy. Banahaw, Brgy. Lipa and Brgy. Pag-asa

Year-round supply of water for domestic use

EXPECTED OUTPUTS

Publication

- At least one (1) write-up of the project output and outcomes

Product

- 1 set of 12.4 Kw Hybrid Solar Powered Water Pumping System and 10KW Grid Tied Solar Energy System for 15hp booster pump.

Place and Partnership

- Memorandum of Agreement with DOST-MIMAROPA and LGU-Sta. Cruz

EXPECTED OUTCOMES

- Ensured the availability of domestic water for the constituents of Brgy. Banahaw, Brgy. Pag-asa and Brgy. Lipa.
- Provided the community better knowledge on the use of Renewable Energy.
- Significant reduction on the electric bill of Municipal Waterworks.

PERCEIVED IMPACT**Social Impact**

- Improved sanitation in the area.
- Increased people's awareness and appreciation on solar energy system.
- More resilient barangays.

Economic impact

- Saved at least 50% of current electric bill per month.

SUSTAINABILITY

The PSTO Marinduque would monitor the project on a regular basis to ensure that objectives are met. Baseline data about the target beneficiaries would be collected.

Training on proper care and maintenance of the system will be conducted. Solar panel will be designed to be removable for safe keeping in times of typhoon.

LGU-Sta. Cruz will allot counterpart funds for the personal services and maintenance of the existing distribution line for the households.

As part of the sustainability measures, the savings generated (from the power bills) could be used for other PPAs for the benefit of the community.

Total population :	2756
Number of households :	689
Average household size:	4
Daily water requirement for domestic use:	110,240 liters
(40L/person/day)	
Water pump capacity:	17,000 liters per hour
	136,000 liters / 8-hr operation
Cost of equipment:	P1,678,991.60
1 set of 12.4 KW Hybrid Solar Powered Water Pumping System (DOST-MIMAROPA counterpart)	
Investment per capita	P609.21

Current Water source from Brgy. Baliis using 10 Hp Submersible pump



- **Booster pump going to households and Tanks**



Technical Specification of Proposed Intervention

1. 12.4 Kw Hybrid Solar Powered Water Pumping System (DOST-MIMAROPA counterpart) with the following inclusions/specifications:

- Submersible Water Pump AC/DC 10hp (1pc), 94meters max Head, 17000 Liters/hr max flow including controllers and sensors
- 460w mono solar panel (27pcs)
- including delivery, installation, testing and commissioning

2. 10KW Grid Tied Solar Energy System for 15hp booster pump (LGU-Sta. Cruz counterpart) with the following inclusions/specifications

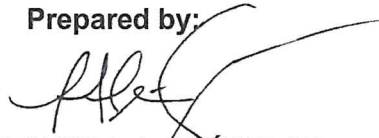
- 10kw dual MPPT On-Grid Inverter 3 Phase w/ wifi & Ct clamp
- 460w mono solar panel (24pcs)
- including delivery, installation, testing and commissioning

(9) Workplan (See Form B)**(10) Project Management (not to exceed one page)**

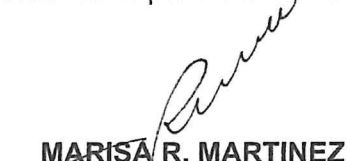
- PSTO Marinduque would monitor the project on a regular basis to ensure that objectives are met. Baseline data about the target beneficiaries would be collected.
- Training on proper care and maintenance of the system will be conducted. Solar panel will be designed to be removable for safe keeping in times of typhoon.
- LGU-Sta. Cruz through Municipal Waterworks Section will assign regular worker/operator for the management of solar powered water pumping system.
- LGU-Sta. Cruz to submit report to PSTO Marinduque every 30th day of the month.

III. ATTACHMENTS (Please refer to the DOST-GIA Guidelines for the necessary documents.)

Prepared by:



ENGR. ROWELL A. PEÑAFLOR
Waterworks Superintendent
Sta. Cruz Municipal Waterworks Section



MARISA R. MARTINEZ
Mayor
Municipality of Sta. Cruz

Endorsed By:



BERNARDO T. CARINGAL
PSTD
PSTO Marinduque

Approved by:

 Digitally signed by Abilay
Ma. Josefina Pormento
Date: 2022.11.16 17:49:58
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MA. JOSEFINA P. ABILAY
Regional Director
DOST-MIMAROPA 

DOST Form A

DEPARTMENT OF SCIENCE AND TECHNOLOGY

Project Line-Item Budget

CY 2022

Program Title : Grant In Aid
 Project Title : Solar Powered Water Pumping System for Sustainable Water Supply in Sta. Cruz, Marinduque
 Implementing Agency : LGU-Sta. Cruz
 Total Duration : 1 year
 Current Duration : 1 year
 Cooperating Agency : DOST-MIMAROPA, LGU Sta. Cruz
 Program Leader : Ma. Josefina P. Abilay
 Project Leader : Rowell A. Peñaflor
 Monitoring Agency : DOST-MIMAROPA

Counterpart Funding

		LGU Sta. Cruz	To be Transferred	DOST-MIMAROPA To be retained	Total
I. Personal Services					
<u>Direct Cost</u>					
<i>Salaries (3 workers(operator, maintenance, collector @ P12,100.00/month)</i>					
		435,600.00			
	Sub-total for PS	P 435,600.00		-	-
II. Maintenance and Other Operating Expenses					
(Implementing Agency)					
	Repairs and Maintenance	300,000.00			
 (Monitoring Agency)					
	Taxes, Insurance Premiums and other Fees			11,753.00	
	Sub-Total for MOOE	P 300,000.00		11,753.00	11,753.00

DOST Form A

DEPARTMENT OF SCIENCE AND TECHNOLOGY

Project Line-Item Budget

CY 2022

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III. Equipment Outlay

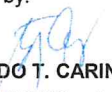
1. Supply, delivery, installation, testing and commissioning of 12.4 Kw Hybrid Solar Powered Water Pumping System with the following inclusions/specifications: - Submersible Water Pump AC/DC 10hp (1pc), 94meters max Head, 17000 Liters/hr max flow including controllers and sensors - 460w mono solar panel (27pcs)	P	1,679,000.00		1,679,000.00
2. Supply, delivery, installation, testing and commissioning of 10KW Grid Tied Solar Energy System for 15hp booster pump with the following inclusions/specifications -10kw dual MPPT On-Grid Inverter 3 Phase w/ wifi & Ct clamp - 460w mono solar panel (24pcs) -including delivery, installation, testing and commissioning	P	1,190,000.00		

Sub-Total for EO	P	<u>1,190,000.00</u>	<u>1,679,000.00</u>	<u>-</u>	<u>1,679,000.00</u>
GRAND TOTAL	P	<u>1,925,600.00</u>	<u>1,679,000.00</u>	<u>11,753.00</u>	<u>1,690,753.00 *</u>

Prepared by:


ENGR. ROWELL A. PEÑAFLOR
 Waterworks Superintendent


Endorsed by:


BERNARDO T. CARINGAL
 Provincial S&T Director

Certified Funds Available:


XAVIER MAC DANIEL A. ORTIZ
 Accountant III

Approved by:


DR. MA. JOSEFINA P. ABILAY
 Regional Director

Digitally signed by Abilay
 Ma. Josefina Pormento
 Date: 2022.11.16 17:50:25
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**DOST Form B
PROJECT WORKPLAN**

(1) Program Title: Grant-In-Aid

(2) Project Title: Solar Powered Water Pumping System for Sustainable Water Supply in Sta. Cruz, Marinduque

(3) Total Duration (in months): 12 months

(4) Planned Start Date: November 2022

(5) Planned End Date: November 2023

(6) OBJECTIVES	(7) TARGET ACTIVITIES	(8) TARGET ACCOMPLISHMENTS (quantify, if possible)	2022	2023		
			Q4	Q1	Q2	Q3
<ul style="list-style-type: none"> Installation of 12.4 kW Hybrid Solar Powered Water Pumping System and another 10KW Grid Tied Solar Energy System (SES) for 15 hp booster pump. 	Procurement Processes for Solar Powered Water Pumping System <ul style="list-style-type: none"> - Purchase request and canvass prepared - Posting to PHILGEPS - Bidding process - Purchase order prepared - Notice of Award/Notice to Proceed - IAR - Delivery and installation 	12.4 Kw Hybrid Solar Powered Water Pumping System and another 10KW Grid Tied Solar Energy System (SES) for 15hp booster pump.	X			
<ul style="list-style-type: none"> Provide sustainable water supply. 	Actual operation of 12.4 kW Hybrid Solar Powered Water Pumping System and another 10 kW Grid Tied Solar Energy System (SES) for 15 hp booster pump.	Produced 136,000 liters of tap water / 8-hr operation		X	X	X

<ul style="list-style-type: none"> Promote the use of renewable energy (solar energy). 	<ul style="list-style-type: none"> Information Dissemination through Internet (FB), Radio and TV. One (1) write-up of the project output and outcomes 	Press Releases <ul style="list-style-type: none"> 1 internet 1 Radio 1 TV 				X

(9) EXPECTED OUTPUTS	(10) DETAILS (quantify, if possible)	2022	2023		
		Q4	Q1	Q2	Q3
Publications	At least one (1) write-up of the project output and outcomes				X
Products	1 set of 12.4 kW Hybrid Solar Powered Water Pumping System and 10 kW Grid Tied Solar Energy System for 15 hp booster pump.		X		
Places and Partnerships	Memorandum of Agreement with DOST-MIMAROPA and LGU-Sta. Cruz	X			