



CAGAYAN STATE UNIVERSITY

CARIG CAMPUS

Campus Research, Development and Extension Office

COLLEGE OF ENGINEERING

INSTALLATION AND OPERATION OF SOLAR PHOTOVOLTAIC SYSTEM

FY 2021





CSU Vision

*Transforming
lives by
Educating for
the BEST.*

CSU Mission

*CSU is
committed
to transform the
lives of people
and
communities
through high
quality
instruction and
innovative
research,
development,
production and
extension.*

CSU - IGA

Competence

Social Responsibility

Unifying Presence

Project Title: Installation and Operation of Solar Photovoltaic System

Date: February 19, 2021

Venue: Sitio Burayok, Basao, Gattaran, Cagayan

Proponents: Engr. Audy R. Quebral
Electronics Engineering Dept. Faculty
Electrical Engineering Dept. Faculty
Computer Engineering Dept. Faculty

Rationale:

Agtas belong to the Negrito ethnolinguistic group. There are many Agta tribes, scattered over Regions I to V in the island of Luzon Northeastern Luzon, particularly Cagayan and Isabela in Cagayan Valley, are the habitations of the Central Cagayan Agtas.

Traditional Agta houses are built in clusters and made from indigenous materials such as bamboo, wood, talahib (cogon), coconut leaves, and abaca bark. At Sitio Burayok however, fourteen (14) Agta households live in five hectares property by the Church of Christ of the Philippines. Through the assistance and support of Philippines Red Cross, every Agta family was guided to build their own houses.

Agtas as young as 14 marry the partner chosen by their parents. Hunting is their main means of subsistence. They use pointed sticks called galud to kill birds, wild deer, monkeys, and wild pigs. Agtas exchange part of the meat and some forest products for starchy food and other goods with nearby farmers. Their other traditional means of livelihood are farming and fishing. Today, however, many Agtas take on seasonal jobs, such as copra and charcoal making and other agricultural works.

The spiritual, health, livelihood, education, and literacy needs of the Agtas are a big challenge to the government. In Sitio Burayok community, only few of the residents can





CSU Vision

*Transforming
lives by
Educating for
the BEST.*

CSU Mission

*CSU is
committed
to transform the
lives of people
and
communities
through high
quality
instruction and
innovative
research,
development,
production and
extension.*

CSU - IGA

Competence

Social Responsibility

Unifying Presence

read and write. Most of them have reached elementary level but a few took the ALS program. At present, most of their children attend the elementary school.

Though they were provided with shelter and space to live in but the community can't afford an electricity source. The electric supply have not reached their community. They usually go down from the highlands to the barangay hall once a week to charge batteries that supply the DC bulbs being utilized at night time.

It is in this light that a College of Engineering and Architecture through its Integrated Community Rural Development Extension Program of Cagayan State University – Carig Campus would like to render service for the installation of Solar Photovoltaic System to cater the 14 households of the Agta community. The project aims to provide information regarding installation, operation and maintenance of Solar Photovoltaic System that powers every household's DC light bulb to be used during nighttime and a single port DC charger.

The training is composed of the following topics:

- Installation and Operation of Solar Photovoltaic System

Objectives:

Generally, the training aims to provide orientation and to assist the residents regarding Installation and Operation of Solar Photovoltaic System.

Specifically, the training should be able to:

- a. Explain the operation of the solar photovoltaic system
- b. Demonstrate how to install lighting and charge devices using the solar photovoltaic system.





CSU Vision

*Transforming
lives by
Educating for
the BEST.*

CSU Mission

*CSU is
committed
to transform the
lives of people
and
communities
through high
quality
instruction and
innovative
research,
development,
production and
extension.*

CSU - IGA

Competence

Social Responsibility

Unifying Presence

Methodology:

- a. Value Orientation
- b. Lecture and Demonstration
- c. Participative discussion

The aim of this project is to conduct training. Participants will be the beneficiaries or the Agay residents and their leaders. Prior to the training proper, interview for the profile of the participants and facilitation of attendance will be conducted. After the training, evaluation of the speakers will also be conducted.

Training will include Installation and Operation of Solar Photovoltaic System. The topic will be an orientation regarding on what a Solar Photovoltaic System is, how it is installed, its operating mechanism and its uses in the households and in the community.

So that the attendees will fully understand the topics, the speakers will use Filipino language and Ilocano as local dialect for the duration of the training and during discussion. The training sessions will be conducted using variety of training methods and techniques such as lecture-demonstration, slides presentations, group discussion, cooperative learning, and group dynamics and team building. Lecture-discussion type of training will be conducted for each topic. There will be open forum after every lecture. Participants will also conduct an evaluation on the training after the training.





CSU Vision

Transforming
lives by
Educating for
the BEST.

CSU Mission

CSU is
committed
to transform the
lives of people
and
communities
through high
quality
instruction and
innovative
research,
development,
production and
extension.

CSU - IGA

Competence

Social Responsibility

Unifying Presence

Training Activities:

Topic	Contents	Time Allotment	Training Requirements from Participants
Installation and Operation of Solar PV System	a. Solar Energy b. Why solar? c. Solar PV System d. Advantages of Solar PV System e. Principles of Solar PV System f. How does Solar PV System works?	8 hours	- Attendance - Evaluation

Training Resources:

Technical services, training materials

Ink for printer

Bond papers

Food/Meals for the speakers, participants and working committee

Expected Output:

The participants are expected to utilize the installed solar photovoltaic system and learn to maintain it. Electrification of the community will also benefit them during disaster and calamity since they will also be charging communication devices.

Budgetary Requirement:

One day training budget:

Description	Quantity	Cost per unit	Amount
DAY 1: Installation and Operation of Solar PV (Power) System			
2 Snacks for 30 pax	30	50.00	1,500.00
Lunch for 10 pax	10	75.00	750.00
Certificates for Speakers	5	50.00	250.00
TOTAL			P2,500.00





Republic of the Philippines
Cagayan State University
CARIG CAMPUS
Carig Sur, Tuguegarao City
Tel. No. (078) 304 – 1205 loc 035/036

COLLEGE of ENGINEERING

Living in Excellence

CSU Vision

*Transforming
lives by
Educating for
the BEST.*

CSU Mission

*CSU is
committed
to transform the
lives of people
and
communities
through high
quality
instruction and
innovative
research,
development,
production and
extension.*

CSU - IGA

Competence

Social Responsibility

Unifying Presence

References/Sources:

David Levinson. Ethnic Groups Worldwide: A Ready Reference Handbook. The Oryx Press, 1998.

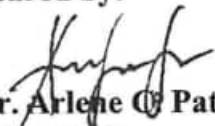
Indigenous People: Negrito, <http://library.thinkquest.org/>

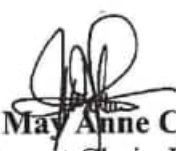
Philippine Tribes: Agta, <http://www.globalpinoy.com/>

Runoko Rashidi. Black People in the Philippines, 2000. <http://www.cwo.com/>

Thomas Headland. Agta Negritos of the Philippines, <http://www.culturalsurvival.org/>

Prepared by:


Engr. Arlene C. Patricio
Faculty, EE Dept.


Engr. May Anne C. Valencia
Department Chair, ECE Dept.

Noted by:


Engr. Audy R. Quebral, DPA
Dean, COEA





Narrative Report

**Installation and Operation of Solar Power System
 Integrated Community Rural Development Extension Program
 Sitio Burayok, Basao, Gattaran, Cagayan
 February 19, 2021**

CSU Vision

*Transforming
 lives by
 Educating for
 the BEST.*

CSU Mission

*CSU is
 committed
 to transform the
 lives of people
 and
 communities
 through high
 quality
 instruction and
 innovative
 research,
 development,
 production and
 extension.*

CSU - IGA

Competent

Self-disciplined

Universally

adapt

As part of the extension program Integrated Community Rural Development Extension Program, the CSU Carig Campus College of Engineering and Architecture faculty installed Solar Power System for the Agta community in Basao, Gattaran, Cagayan. The extension activity was conducted by the College Dean, Engr. Audy R. Quebral, with the following faculty and staff of the College of Engineering and Architecture (COEA) and College of Industrial Technology (CIT):

1. Engr. Oliver Doctolero
2. Engr. May Anne Valencia
3. Engr. Joseph Cabalbag
4. Engr. Ralph Angelo Estiller
5. Engr. Ian Pagulayan
6. Engr. Arlene Patricio
7. Engr. Rezel Sto. Tomas
8. Engr. Gilbert Calubaquib
9. Gerald Telan

The above-mentioned extensionists rode the CSU-Carig School Bus driven by Mr. Timoteo Paulino. They left the campus early in the morning and travelled to Basao, Gattaran.

Once arrived, three (3) solar panels, three (charge controllers), three (batteries) were started to installed as electricity source of the said community with 14 houses. DC light bulbs and DC chargers were also installed in each house. Some of these supplies installed were donated by Institute of Electronics Engineering of the Philippines, Inc. – Cagayan Valley (IECEP-CV) Chapter.

Installation of solar panels, batteries and charge controllers was conducted by Engr. Quebral, Mr. Telan, Engr. Sto. Tomas and Engr. Cabalbag. One set was installed at the center of their Sitio and it will provide electricity for three (3) near houses from it. The second set was installed on the roof of one of the houses, and it will be used for seven (7) houses. The last set was not finished to install because of lack of wire.





Republic of the Philippines
Cagayan State University
CARIG CAMPUS
Carig Sur, Tuguegarao City
Tel. No. (078) 304-1205 loc 035/036

COLLEGE of ENGINEERING

Living in Excellence

CSU Vision

*Transforming
lives by
Educating for
the BEST.*

CSU Mission

*CSU is
committed
to transform the
lives of people
and
communities
through high
quality
instruction and
innovative
research,
development,
production and
extension.*

CSU - IGA

*Competent
Self-disciplined
Universally
adapt*

Installation of the DC light bulbs and DC chargers for each house was done by joint forces of Engr. Pagulayan, Engr. Valencia, Engr. Doctolero, Engr. Estiller, Engr. Patricio and Engr. Calubaquib. Each house was inspected first for the best location of the light bulbs and chargers before installing.

After the installation was done, each set was tested for its functionality and operation. Fortunately, the team was successful in installing the said two sets. But some chargers were busted. Since the last set was not installed and the chargers were needed to replace, the team planned to come back after a week to finish the work.

Shortly after advising the household members on how to operate the light bulbs and chargers, the team happily went home and arrived Tuguegarao early evening of that day.

PHOTOS:



The extensionists on their way to the Agta Community in Basao, Gattaran, Cagayan

CSU -COE





Republic of the Philippines
Cagayan State University
CARIG CAMPUS
Carig Sur, Tuguegarao City
Tel. No. (078) 304 - 1205 loc 035/036

COLLEGE of ENGINEERING

Living in Excellence

CSU Vision

*Transforming
lives by
Educating for
the BEST.*

CSU Mission

*CSU is
committed
to transform the
lives of people
and
communities
through high
quality
instruction and
innovative
research,
development,
production and
extension.*

CSU - IGA

*Competent
Self-disciplined
Universally-
adopt*



Installation of Solar Panels, Charge Controllers and Batteries

CSU -COE





Republic of the Philippines
Cagayan State University
CARIG CAMPUS
Carig Sur, Tuguegarao City
Tel. No. (078) 304-1205 loc. 035/036

COLLEGE of ENGINEERING

Living In Excellence

CSU Vision

*Transforming
lives by
Educating for
the BEST.*

CSU Mission

*CSU is
committed
to transform the
lives of people
and
communities
through high
quality
instruction and
innovative
research,
development,
production and
extension.*

CSU - IGA

*Competent
Self-disciplined
Universally-
adept*



Installation of DC Light Bulbs and DC Chargers

CSU -COE





Republic of the Philippines
Cagayan State University
CARIG CAMPUS
Carig Sur, Tuguegarao City
Tel. No. (078) 304-1205 loc. 035/036

COLLEGE of ENGINEERING

Living in excellence

CSU Vision

*Transforming
lives by
Educating for
the BEST.*

CSU Mission

*CSU is
committed
to transform the
lives of people
and
communities
through high
quality
instruction and
innovative
research,
development,
production and
extension.*

CSU - IGA

Competent

Self-disciplined

*Universally-
adept*



Testing of the Functionality and Operation of the Solar Power System



The extensionists and the community leader after the extension activity

Prepared By:

[Signature]
Engr. Audy R. Quebral, DPA
Dean, College of Engineering

CSU -COE





TRAINING EVALUATION FORM (Community-Based)

This form is designed to draw out your reaction/perception after attending the training.
Please answer TRUTHFULLY all items by using the scale below:

5 - Outstanding 4 - Very Satisfactory 3 - Satisfactory 2 - Good 1 - Poor

Title of Training/Seminar: Installation and Operation of Solar Power System Date: 02/19/21

A. Course Content

1. The training is very relevant to present needs of the community and the country as a whole. 1 2 3 4 5
2. The topics/workshop gave me new insights/ideas about how I should do my work. 1 2 3 4 5
3. The topics/workshop gave me new skills that will improve my efficiency/productivity. 1 2 3 4 5
4. The topics/workshop will enhance my dealings with the members of my community. 1 2 3 4 5

B. Training Schedule

1. The sessions started and ended according to the set schedule. 1 2 3 4 5
2. The schedule for the training was conducive to learning. 1 2 3 4 5
3. The time allotted for the topic was sufficient to ensure maximum learning. 1 2 3 4 5
4. The time allotted for breaks was sufficient. 1 2 3 4 5

C. Timeliness

1. The topics discussed gave solutions to my present concerns related to my work/enterprise/project. 1 2 3 4 5

D. Resource Speakers

Engr. A. Quebral

Engr. I. Pagulayan

Engr. M. Valencia/
Engr. Sto. Tomas

Resource Persons/ Speakers	Speaker: 1					Speaker: 2					Speaker: 3				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1. The resource persons showed mastery of the subject matter.					/					/					/
2. The resource persons spoke clearly.					/					/					/
3. The resource persons presented the topics in an organized manner.					/					/					/
4. The resource persons exhibited the enthusiasm in delivering their lecture.					/					/					/
5. The resource persons used various methods to make the presentations interesting and lively.					/					/					/
6. The resource persons encouraged group participation.					/					/					/

On the space below, please write your comments or observations that may not have been covered or included in this evaluation.



TRAINING EVALUATION FORM (Community-Based)

This form is designed to draw out your reaction/perception after attending the training.
Please answer TRUTHFULLY all items by using the scale below:

5 - Outstanding 4 - Very Satisfactory 3 - Satisfactory 2 - Good 1 - Poor

Title of Training/Seminar: Installation and Operation of Solar Power System Date: 2/19/21

A. Course Content

1. The training is very relevant to present needs of the community and the country as a whole. 1 2 3 4 5
2. The topics/workshop gave me new insights/ideas about how I should do my work. 1 2 3 4 5
3. The topics/workshop gave me new skills that will improve my efficiency/productivity. 1 2 3 4 5
4. The topics/workshop will enhance my dealings with the members of my community. 1 2 3 4 5

B. Training Schedule

1. The sessions started and ended according to the set schedule. 1 2 3 4 5
2. The schedule for the training was conducive to learning. 1 2 3 4 5
3. The time allotted for the topic was sufficient to ensure maximum learning. 1 2 3 4 5
4. The time allotted for breaks was sufficient. 1 2 3 4 5

C. Timeliness

1. The topics discussed gave solutions to my present concerns related to my work/enterprise/project. 1 2 3 4 5

D. Resource Speakers

Engr. A. Quebral

Engr. I. Pagulayan

Engr. M. Valencia/
Engr. Sto. Tomas

Resource Persons/ Speakers	Speaker: 1					Speaker: 2					Speaker: 3				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1. The resource persons showed mastery of the subject matter.					✓					✓					✓
2. The resource persons spoke clearly.					✓					✓					✓
3. The resource persons presented the topics in an organized manner.					✓					✓					✓
4. The resource persons exhibited the enthusiasm in delivering their lecture.					✓					✓					✓
5. The resource persons used various methods to make the presentations interesting and lively.					✓					✓					✓
6. The resource persons encouraged group participation.					✓					✓					✓

On the space below, please write your comments or observations that may not have been covered or included in this evaluation.



TRAINING EVALUATION FORM (Community-Based)

This form is designed to draw out your reaction/perception after attending the training.

Please answer TRUTHFULLY all items by using the scale below:

5 - Outstanding 4 - Very Satisfactory 3 - Satisfactory 2 - Good 1 - Poor

Title of Training/Seminar: Installation and Operation of Solar
Power System

Date: 2/19/21

A. Course Content

1. The training is very relevant to present needs of the community and the country as a whole. 1 2 3 4 5
2. The topics/workshop gave me new insights/ideas about how I should do my work. 1 2 3 4 5
3. The topics/workshop gave me new skills that will improve my efficiency/productivity. 1 2 3 4 5
4. The topics/workshop will enhance my dealings with the members of my community. 1 2 3 4 5

B. Training Schedule

1. The sessions started and ended according to the set schedule. 1 2 3 4 5
2. The schedule for the training was conducive to learning. 1 2 3 4 5
3. The time allotted for the topic was sufficient to ensure maximum learning. 1 2 3 4 5
4. The time allotted for breaks was sufficient. 1 2 3 4 5

C. Timeliness

1. The topics discussed gave solutions to my present concerns related to my work/enterprise/project. 1 2 3 4 5

D. Resource Speakers

Engr. A. Quebral

Engr. I. Pagulayan

Engr. M. Valencia/
Engr. Sto. Tomas

Resource Persons/ Speakers	Speaker: 1					Speaker: 2					Speaker: 3				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1. The resource persons showed mastery of the subject matter.					/					/					/
2. The resource persons spoke clearly.					/					/					/
3. The resource persons presented the topics in an organized manner.					/					/					/
4. The resource persons exhibited the enthusiasm in delivering their lecture.					/					/					/
5. The resource persons used various methods to make the presentations interesting and lively.					/					/					/
6. The resource persons encouraged group participation.					/					/					/

On the space below, please write your comments or observations that may not have been covered or included in this evaluation.



TRAINING EVALUATION FORM (Community-Based)

This form is designed to draw out your reaction/perception after attending the training.
Please answer TRUTHFULLY all items by using the scale below:

5 - Outstanding 4 - Very Satisfactory 3 - Satisfactory 2 - Good 1 - Poor

Title of Training/Seminar: Installation and Operation of Solar
Power System

Date: 2/19/21

A. Course Content

1. The training is very relevant to present needs of the community and the country as a whole. 1 2 3 4 5
2. The topics/workshop gave me new insights/ideas about how I should do my work. 1 2 3 4 5
3. The topics/workshop gave me new skills that will improve my efficiency/productivity. 1 2 3 4 5
4. The topics/workshop will enhance my dealings with the members of my community. 1 2 3 4 5

B. Training Schedule

1. The sessions started and ended according to the set schedule. 1 2 3 4 5
2. The schedule for the training was conducive to learning. 1 2 3 4 5
3. The time allotted for the topic was sufficient to ensure maximum learning. 1 2 3 4 5
4. The time allotted for breaks was sufficient. 1 2 3 4 5

C. Timeliness

1. The topics discussed gave solutions to my present concerns related to my work/enterprise/project. 1 2 3 4 5

D. Resource Speakers

Engr. A. Quebral

Engr. I. Pagulayan

Engr. M. Valencia/
Engr. Sto. Tomas

Resource Persons/ Speakers	Speaker: 1					Speaker: 2					Speaker: 3				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1. The resource persons showed mastery of the subject matter.					/					/					/
2. The resource persons spoke clearly.					/					/					/
3. The resource persons presented the topics in an organized manner.					/					/					/
4. The resource persons exhibited the enthusiasm in delivering their lecture.					/					/					/
5. The resource persons used various methods to make the presentations interesting and lively.					/					/					/
6. The resource persons encouraged group participation.					/					/					/

On the space below, please write your comments or observations that may not have been covered or included in this evaluation.



TRAINING EVALUATION FORM (Community-Based)

This form is designed to draw out your reaction/perception after attending the training.
Please answer TRUTHFULLY all items by using the scale below:

5 - Outstanding 4 - Very Satisfactory 3 - Satisfactory 2 - Good 1 - Poor

Title of Training/Seminar: Installation and Operation of Solar
Power System

Date: 2/19/21

A. Course Content

1. The training is very relevant to present needs of the community and the country as a whole. 1 2 3 4 5
2. The topics/workshop gave me new insights/ideas about how I should do my work. 1 2 3 4 5
3. The topics/workshop gave me new skills that will improve my efficiency/productivity. 1 2 3 4 5
4. The topics/workshop will enhance my dealings with the members of my community. 1 2 3 4 5

B. Training Schedule

1. The sessions started and ended according to the set schedule. 1 2 3 4 5
2. The schedule for the training was conducive to learning. 1 2 3 4 5
3. The time allotted for the topic was sufficient to ensure maximum learning. 1 2 3 4 5
4. The time allotted for breaks was sufficient. 1 2 3 4 5

C. Timeliness

1. The topics discussed gave solutions to my present concerns related to my work/enterprise/project. 1 2 3 4 5

D. Resource Speakers

Engr. A. Quebral

Engr. I. Paquayan

Engr. M. Valencia/
Engr. Sto. Tomas

Resource Persons/ Speakers	Speaker: 1					Speaker: 2					Speaker: 3				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1. The resource persons showed mastery of the subject matter.					/					/					/
2. The resource persons spoke clearly.					/					/					/
3. The resource persons presented the topics in an organized manner.					/					/					/
4. The resource persons exhibited the enthusiasm in delivering their lecture.					/					/					/
5. The resource persons used various methods to make the presentations interesting and lively.					/					/					/
6. The resource persons encouraged group participation.					/					/					/

On the space below, please write your comments or observations that may not have been covered or included in this evaluation.



TRAINING EVALUATION FORM (Community-Based)

This form is designed to draw out your reaction/perception after attending the training.
Please answer TRUTHFULLY all items by using the scale below:

5 - Outstanding 4 - Very Satisfactory 3 - Satisfactory 2 - Good 1 - Poor

Title of Training/Seminar: Installation and Operation of Solar
Power System

Date: 2/19/21

A. Course Content

1. The training is very relevant to present needs of the community and the country as a whole. 1 2 3 4 5
2. The topics/workshop gave me new insights/ideas about how I should do my work. 1 2 3 4 5
3. The topics/workshop gave me new skills that will improve my efficiency/productivity. 1 2 3 4 5
4. The topics/workshop will enhance my dealings with the members of my community. 1 2 3 4 5

B. Training Schedule

1. The sessions started and ended according to the set schedule. 1 2 3 4 5
2. The schedule for the training was conducive to learning. 1 2 3 4 5
3. The time allotted for the topic was sufficient to ensure maximum learning. 1 2 3 4 5
4. The time allotted for breaks was sufficient. 1 2 3 4 5

C. Timeliness

1. The topics discussed gave solutions to my present concerns related to my work/enterprise/project. 1 2 3 4 5

D. Resource Speakers

Engr. A. Quebral Engr. I. Pagulayan

Engr. M. Valencia/
Engr. Sto. Tomas

Resource Persons/ Speakers	Speaker: 1					Speaker: 2					Speaker: 3				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1. The resource persons showed mastery of the subject matter.					/					/					/
2. The resource persons spoke clearly.					/					/					/
3. The resource persons presented the topics in an organized manner.					/					/					/
4. The resource persons exhibited the enthusiasm in delivering their lecture.					/					/					/
5. The resource persons used various methods to make the presentations interesting and lively.					/					/					/
6. The resource persons encouraged group participation.					/					/					/

On the space below, please write your comments or observations that may not have been covered or included in this evaluation.



TRAINING EVALUATION FORM (Community-Based)

This form is designed to draw out your reaction/perception after attending the training.
Please answer TRUTHFULLY all items by using the scale below:

5 - Outstanding 4 - Very Satisfactory 3 - Satisfactory 2 - Good 1 - Poor

Title of Training/Seminar: Installation and Operation of Solar Power System

Date: 2/19/21

A. Course Content

1. The training is very relevant to present needs of the community and the country as a whole. 1 2 3 4 5
2. The topics/workshop gave me new insights/ideas about how I should do my work. 1 2 3 4 5
3. The topics/workshop gave me new skills that will improve my efficiency/productivity. 1 2 3 4 5
4. The topics/workshop will enhance my dealings with the members of my community. 1 2 3 4 5

B. Training Schedule

1. The sessions started and ended according to the set schedule. 1 2 3 4 5
2. The schedule for the training was conducive to learning. 1 2 3 4 5
3. The time allotted for the topic was sufficient to ensure maximum learning. 1 2 3 4 5
4. The time allotted for breaks was sufficient. 1 2 3 4 5

C. Timeliness

1. The topics discussed gave solutions to my present concerns related to my work/enterprise/project. 1 2 3 4 5

D. Resource Speakers

Engr. A. Quebral

Engr. I. Pagulayan

Engr. M. Valencia/
Engr. Sto. Tomas

Resource Persons/ Speakers	Speaker: 1					Speaker: 2					Speaker: 3				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1. The resource persons showed mastery of the subject matter.					/					/					/
2. The resource persons spoke clearly.					/					/					/
3. The resource persons presented the topics in an organized manner.					/					/					/
4. The resource persons exhibited the enthusiasm in delivering their lecture.					/					/					/
5. The resource persons used various methods to make the presentations interesting and lively.					/					/					/
6. The resource persons encouraged group participation.					/					/					/

On the space below, please write your comments or observations that may not have been covered or included in this evaluation.



TRAINING EVALUATION FORM (Community-Based)

This form is designed to draw out your reaction/perception after attending the training.
Please answer TRUTHFULLY all items by using the scale below:

5 - Outstanding 4 - Very Satisfactory 3 - Satisfactory 2 - Good 1 - Poor

Title of Training/Seminar: Installation and Operation of Solar
Power System

Date: 2/19/21

A. Course Content

1. The training is very relevant to present needs of the community and the country as a whole. 1 2 3 4 5
2. The topics/workshop gave me new insights/ideas about how I should do my work. 1 2 3 4 5
3. The topics/workshop gave me new skills that will improve my efficiency/productivity. 1 2 3 4 5
4. The topics/workshop will enhance my dealings with the members of my community. 1 2 3 4 5

B. Training Schedule

1. The sessions started and ended according to the set schedule. 1 2 3 4 5
2. The schedule for the training was conducive to learning. 1 2 3 4 5
3. The time allotted for the topic was sufficient to ensure maximum learning. 1 2 3 4 5
4. The time allotted for breaks was sufficient. 1 2 3 4 5

C. Timeliness

1. The topics discussed gave solutions to my present concerns related to my work/enterprise/project. 1 2 3 4 5

D. Resource Speakers

Engr. A. Quebral

Engr. I. Pauglayan

Engr. M. Valencia/
Engr. Sto. Tomas

Resource Persons/ Speakers	Speaker: 1					Speaker: 2					Speaker: 3				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1. The resource persons showed mastery of the subject matter.					/					/					/
2. The resource persons spoke clearly.					/					/					/
3. The resource persons presented the topics in an organized manner.					/					/					/
4. The resource persons exhibited the enthusiasm in delivering their lecture.					/					/					/
5. The resource persons used various methods to make the presentations interesting and lively.					/					/					/
6. The resource persons encouraged group participation.					/					/					/

On the space below, please write your comments or observations that may not have been covered or included in this evaluation.



TRAINING EVALUATION FORM (Community-Based)

This form is designed to draw out your reaction/perception after attending the training.
Please answer TRUTHFULLY all items by using the scale below:

5 - Outstanding 4 - Very Satisfactory 3 - Satisfactory 2 - Good 1 - Poor

Title of Training/Seminar: Installation and Operation of Solar
Power System

Date: 02/10/21

A. Course Content

1. The training is very relevant to present needs of the community and the country as a whole. 1 2 3 4 5
2. The topics/workshop gave me new insights/ideas about how I should do my work. 1 2 3 4 5
3. The topics/workshop gave me new skills that will improve my efficiency/productivity. 1 2 3 4 5
4. The topics/workshop will enhance my dealings with the members of my community. 1 2 3 4 5

B. Training Schedule

1. The sessions started and ended according to the set schedule. 1 2 3 4 5
2. The schedule for the training was conducive to learning. 1 2 3 4 5
3. The time allotted for the topic was sufficient to ensure maximum learning. 1 2 3 4 5
4. The time allotted for breaks was sufficient. 1 2 3 4 5

C. Timeliness

1. The topics discussed gave solutions to my present concerns related to my work/enterprise/project. 1 2 3 4 5

D. Resource Speakers

Engr. A. Quebral Engr. I. Pagulayan

Engr. M. Valencia/
Engr. Sto. Tomas

Resource Persons/ Speakers	Speaker: 1					Speaker: 2					Speaker: 3				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1. The resource persons showed mastery of the subject matter.					/					/					/
2. The resource persons spoke clearly.					/					/					/
3. The resource persons presented the topics in an organized manner.					/					/					/
4. The resource persons exhibited the enthusiasm in delivering their lecture.					/					/					/
5. The resource persons used various methods to make the presentations interesting and lively.					/					/					/
6. The resource persons encouraged group participation.					/					/					/

On the space below, please write your comments or observations that may not have been covered or included in this evaluation.



TRAINING EVALUATION FORM (Community-Based)

This form is designed to draw out your reaction/perception after attending the training.
Please answer TRUTHFULLY all items by using the scale below:

5 - Outstanding 4 - Very Satisfactory 3 - Satisfactory 2 - Good 1 - Poor

Title of Training/Seminar: Installation and Operation of Solar
Power System

Date: 2/17/21

A. Course Content

1. The training is very relevant to present needs of the community and the country as a whole. 1 2 3 4 5
2. The topics/workshop gave me new insights/ideas about how I should do my work. 1 2 3 4 5
3. The topics/workshop gave me new skills that will improve my efficiency/productivity. 1 2 3 4 5
4. The topics/workshop will enhance my dealings with the members of my community. 1 2 3 4 5

B. Training Schedule

1. The sessions started and ended according to the set schedule. 1 2 3 4 5
2. The schedule for the training was conducive to learning. 1 2 3 4 5
3. The time allotted for the topic was sufficient to ensure maximum learning. 1 2 3 4 5
4. The time allotted for breaks was sufficient. 1 2 3 4 5

C. Timeliness

1. The topics discussed gave solutions to my present concerns related to my work/enterprise/project. 1 2 3 4 5

D. Resource Speakers

Engr. A. Quebral

Engr. I. Pagulayan

Engr. M. Valencia/
Engr. Sto. Tomas

Resource Persons/ Speakers	Speaker: 1					Speaker: 2					Speaker: 3				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1. The resource persons showed mastery of the subject matter.					/					/					/
2. The resource persons spoke clearly.					/					/					/
3. The resource persons presented the topics in an organized manner.					/					/					/
4. The resource persons exhibited the enthusiasm in delivering their lecture.					/					/					/
5. The resource persons used various methods to make the presentations interesting and lively.					/					/					/
6. The resource persons encouraged group participation.					/					/					/

On the space below, please write your comments or observations that may not have been covered or included in this evaluation.



TRAINING EVALUATION FORM (Community-Based)

This form is designed to draw out your reaction/perception after attending the training.
Please answer TRUTHFULLY all items by using the scale below:

5 - Outstanding 4 - Very Satisfactory 3 - Satisfactory 2 - Good 1 - Poor

Title of Training/Seminar: Installation and Operation of Solar Power System

Date: 2/29/21

A. Course Content

1. The training is very relevant to present needs of the community and the country as a whole. 1 2 3 4 5
2. The topics/workshop gave me new insights/ideas about how I should do my work. 1 2 3 4 5
3. The topics/workshop gave me new skills that will improve my efficiency/productivity. 1 2 3 4 5
4. The topics/workshop will enhance my dealings with the members of my community. 1 2 3 4 5

B. Training Schedule

1. The sessions started and ended according to the set schedule. 1 2 3 4 5
2. The schedule for the training was conducive to learning. 1 2 3 4 5
3. The time allotted for the topic was sufficient to ensure maximum learning. 1 2 3 4 5
4. The time allotted for breaks was sufficient. 1 2 3 4 5

C. Timeliness

1. The topics discussed gave solutions to my present concerns related to my work/enterprise/project. 1 2 3 4 5

D. Resource Speakers

Engr. A. Quebral

Engr. I. Pagulayan

Engr. M. Valencia/
Engr. Sto. Tomas

Resource Persons/ Speakers	Speaker: 1					Speaker: 2					Speaker: 3				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1. The resource persons showed mastery of the subject matter.					/					/					/
2. The resource persons spoke clearly.					/					/					/
3. The resource persons presented the topics in an organized manner.					/					/					/
4. The resource persons exhibited the enthusiasm in delivering their lecture.					/					/					/
5. The resource persons used various methods to make the presentations interesting and lively.					/					/					/
6. The resource persons encouraged group participation.					/					/					/

On the space below, please write your comments or observations that may not have been covered or included in this evaluation.



TRAINING EVALUATION FORM (Community-Based)

This form is designed to draw out your reaction/perception after attending the training.
Please answer TRUTHFULLY all items by using the scale below:

5 - Outstanding 4 - Very Satisfactory 3 - Satisfactory 2 - Good 1 - Poor

Title of Training/Seminar: Installation and Operation of Solar Power System Date: 2/19/21

A. Course Content

1. The training is very relevant to present needs of the community and the country as a whole. 1 2 3 4 5
2. The topics/workshop gave me new insights/ideas about how I should do my work. 1 2 3 4 5
3. The topics/workshop gave me new skills that will improve my efficiency/productivity. 1 2 3 4 5
4. The topics/workshop will enhance my dealings with the members of my community. 1 2 3 4 5

B. Training Schedule

1. The sessions started and ended according to the set schedule. 1 2 3 4 5
2. The schedule for the training was conducive to learning. 1 2 3 4 5
3. The time allotted for the topic was sufficient to ensure maximum learning. 1 2 3 4 5
4. The time allotted for breaks was sufficient. 1 2 3 4 5

C. Timeliness

1. The topics discussed gave solutions to my present concerns related to my work/enterprise/project. 1 2 3 4 5

D. Resource Speakers

Engr. A. Quebral

Engr. I. Pagulayan

Engr. M. Valencia/
Engr. Sto. Tomas

Resource Persons/ Speakers	Speaker: 1					Speaker: 2					Speaker: 3				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1. The resource persons showed mastery of the subject matter.					✓					✓					✓
2. The resource persons spoke clearly.					✓					✓					✓
3. The resource persons presented the topics in an organized manner.					✓					✓					✓
4. The resource persons exhibited the enthusiasm in delivering their lecture.					✓					✓					✓
5. The resource persons used various methods to make the presentations interesting and lively.					✓					✓					✓
6. The resource persons encouraged group participation.					✓					✓					✓

On the space below, please write your comments or observations that may not have been covered or included in this evaluation.



TRAINING EVALUATION FORM (Community-Based)

This form is designed to draw out your reaction/perception after attending the training.
Please answer TRUTHFULLY all items by using the scale below:

5 - Outstanding 4 - Very Satisfactory 3 - Satisfactory 2 - Good 1 - Poor

Title of Training/Seminar: Installation and Operation of Solar Power System Date: 2/19/21

A. Course Content

- 1. The training is very relevant to present needs of the community and the country as a whole. 1 2 3 4 5
- 2. The topics/workshop gave me new insights/ideas about how I should do my work. 1 2 3 4 5
- 3. The topics/workshop gave me new skills that will improve my efficiency/productivity. 1 2 3 4 5
- 4. The topics/workshop will enhance my dealings with the members of my community. 1 2 3 4 5

B. Training Schedule

- 1. The sessions started and ended according to the set schedule. 1 2 3 4 5
- 2. The schedule for the training was conducive to learning. 1 2 3 4 5
- 3. The time allotted for the topic was sufficient to ensure maximum learning. 1 2 3 4 5
- 4. The time allotted for breaks was sufficient. 1 2 3 4 5

C. Timeliness

- 1. The topics discussed gave solutions to my present concerns related to my work/enterprise/project. 1 2 3 4 5

D. Resource Speakers

Engr. A. Quebral Engr. I. Pagulayan Engr. M. Valencia/
Engr. Sto. Tomas

Resource Persons/ Speakers	Speaker: 1					Speaker: 2					Speaker: 3				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1. The resource persons showed mastery of the subject matter.					/					/					/
2. The resource persons spoke clearly.					/					/					/
3. The resource persons presented the topics in an organized manner.					/					/					/
4. The resource persons exhibited the enthusiasm in delivering their lecture.					/					/					/
5. The resource persons used various methods to make the presentations interesting and lively.					/					/					/
6. The resource persons encouraged group participation.					/					/					/

On the space below, please write your comments or observations that may not have been covered or included in this evaluation.



TRAINING EVALUATION FORM (Community-Based)

This form is designed to draw out your reaction/perception after attending the training.
Please answer TRUTHFULLY all items by using the scale below:

5 - Outstanding 4 - Very Satisfactory 3 - Satisfactory 2 - Good 1 - Poor

Title of Training/Seminar: Installation and Operation of Solar Power System Date: 02/19/21

A. Course Content

1. The training is very relevant to present needs of the community and the country as a whole. 1 2 3 4 (5)
2. The topics/workshop gave me new insights/ideas about how I should do my work. 1 2 3 4 (5)
3. The topics/workshop gave me new skills that will improve my efficiency/productivity. 1 2 3 4 (5)
4. The topics/workshop will enhance my dealings with the members of my community. 1 2 3 4 (5)

B. Training Schedule

1. The sessions started and ended according to the set schedule. 1 2 3 4 (5)
2. The schedule for the training was conducive to learning. 1 2 3 4 (5)
3. The time allotted for the topic was sufficient to ensure maximum learning. 1 2 3 4 (5)
4. The time allotted for breaks was sufficient. 1 2 3 4 (5)

C. Timeliness

1. The topics discussed gave solutions to my present concerns related to my work/enterprise/project. 1 2 3 4 (5)

D. Resource Speakers

Engr. A. Quebral

Engr. I. Paquayan

Engr. M. Valencia/
Engr. Sto. Tomas

Resource Persons/ Speakers	Speaker: 1					Speaker: 2					Speaker: 3				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1. The resource persons showed mastery of the subject matter.					✓					✓					✓
2. The resource persons spoke clearly.					✓					✓					✓
3. The resource persons presented the topics in an organized manner.					✓					✓					✓
4. The resource persons exhibited the enthusiasm in delivering their lecture.					✓					✓					✓
5. The resource persons used various methods to make the presentations interesting and lively.					✓					✓					✓
6. The resource persons encouraged group participation.					✓					✓					✓

On the space below, please write your comments or observations that may not have been covered or included in this evaluation.



TRAINING EVALUATION FORM (Community-Based)

This form is designed to draw out your reaction/perception after attending the training.
Please answer TRUTHFULLY all items by using the scale below:

5 - Outstanding 4 - Very Satisfactory 3 - Satisfactory 2 - Good 1 - Poor

Title of Training/Seminar: Installation and Operation of Solar Power System Date: 02/19/21

A. Course Content

1. The training is very relevant to present needs of the community and the country as a whole. 1 2 3 4 5
2. The topics/workshop gave me new insights/ideas about how I should do my work. 1 2 3 4 5
3. The topics/workshop gave me new skills that will improve my efficiency/productivity. 1 2 3 4 5
4. The topics/workshop will enhance my dealings with the members of my community. 1 2 3 4 5

B. Training Schedule

1. The sessions started and ended according to the set schedule. 1 2 3 4 5
2. The schedule for the training was conducive to learning. 1 2 3 4 5
3. The time allotted for the topic was sufficient to ensure maximum learning. 1 2 3 4 5
4. The time allotted for breaks was sufficient. 1 2 3 4 5

C. Timeliness

1. The topics discussed gave solutions to my present concerns related to my work/enterprise/project. 1 2 3 4 5

D. Resource Speakers

Engr. A. Quebral Engr. I. Pagulayan Engr. M. Valencia/
Engr. Sto. Tomas

Resource Persons/ Speakers	Speaker: 1					Speaker: 2					Speaker: 3				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1. The resource persons showed mastery of the subject matter.					/					/					/
2. The resource persons spoke clearly.					/					/					/
3. The resource persons presented the topics in an organized manner.					/					/					/
4. The resource persons exhibited the enthusiasm in delivering their lecture.					/					/					/
5. The resource persons used various methods to make the presentations interesting and lively.					/					/					/
6. The resource persons encouraged group participation.					/					/					/

On the space below, please write your comments or observations that may not have been covered or included in this evaluation.



TRAINING EVALUATION FORM (Community-Based)

This form is designed to draw out your reaction/perception after attending the training.
Please answer TRUTHFULLY all items by using the scale below:

5 - Outstanding 4 - Very Satisfactory 3 - Satisfactory 2 - Good 1 - Poor

Title of Training/Seminar: Installation and Operation of Solar
Power System

Date: 2/19/21

A. Course Content

1. The training is very relevant to present needs of the community and the country as a whole. 1 2 3 4 5
2. The topics/workshop gave me new insights/ideas about how I should do my work. 1 2 3 4 5
3. The topics/workshop gave me new skills that will improve my efficiency/productivity. 1 2 3 4 5
4. The topics/workshop will enhance my dealings with the members of my community. 1 2 3 4 5

B. Training Schedule

1. The sessions started and ended according to the set schedule. 1 2 3 4 5
2. The schedule for the training was conducive to learning. 1 2 3 4 5
3. The time allotted for the topic was sufficient to ensure maximum learning. 1 2 3 4 5
4. The time allotted for breaks was sufficient. 1 2 3 4 5

C. Timeliness

1. The topics discussed gave solutions to my present concerns related to my work/enterprise/project. 1 2 3 4 5

D. Resource Speakers

Engr. A. Quebral Engr. I. Pagulayan

Engr. M. Valencia/
Engr. Sto. Tomas

Resource Persons/ Speakers	Speaker: 1					Speaker: 2					Speaker: 3				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1. The resource persons showed mastery of the subject matter.					✓					✓					✓
2. The resource persons spoke clearly.					✓					✓					✓
3. The resource persons presented the topics in an organized manner.					✓					✓					✓
4. The resource persons exhibited the enthusiasm in delivering their lecture.					✓					✓					✓
5. The resource persons used various methods to make the presentations interesting and lively.					✓					✓					✓
6. The resource persons encouraged group participation.					✓					✓					✓

On the space below, please write your comments or observations that may not have been covered or included in this evaluation.



TRAINING EVALUATION FORM (Community-Based)

This form is designed to draw out your reaction/perception after attending the training.
Please answer TRUTHFULLY all items by using the scale below:

5 - Outstanding 4 - Very Satisfactory 3 - Satisfactory 2 - Good 1 - Poor

Title of Training/Seminar: Installation and Operation of Solar
Power System

Date: 2/9/21

A. Course Content

1. The training is very relevant to present needs of the community and the country as a whole. 1 2 3 4 5
2. The topics/workshop gave me new insights/ideas about how I should do my work. 1 2 3 4 5
3. The topics/workshop gave me new skills that will improve my efficiency/productivity. 1 2 3 4 5
4. The topics/workshop will enhance my dealings with the members of my community. 1 2 3 4 5

B. Training Schedule

1. The sessions started and ended according to the set schedule. 1 2 3 4 5
2. The schedule for the training was conducive to learning. 1 2 3 4 5
3. The time allotted for the topic was sufficient to ensure maximum learning. 1 2 3 4 5
4. The time allotted for breaks was sufficient. 1 2 3 4 5

C. Timeliness

1. The topics discussed gave solutions to my present concerns related to my work/enterprise/project. 1 2 3 4 5

D. Resource Speakers

Engr. A. Quebral

Engr. I. Pagulayan

Engr. M. Valencia/
Engr. Sto. Tomas

Resource Persons/ Speakers	Speaker: 1					Speaker: 2					Speaker: 3				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1. The resource persons showed mastery of the subject matter.					/					/					/
2. The resource persons spoke clearly.					/					/					/
3. The resource persons presented the topics in an organized manner.					/					/					/
4. The resource persons exhibited the enthusiasm in delivering their lecture.					/					/					/
5. The resource persons used various methods to make the presentations interesting and lively.					/					/					/
6. The resource persons encouraged group participation.					/					/					/

On the space below, please write your comments or observations that may not have been covered or included in this evaluation.



TRAINING EVALUATION FORM (Community-Based)

This form is designed to draw out your reaction/perception after attending the training.
Please answer TRUTHFULLY all items by using the scale below:

5 - Outstanding 4 - Very Satisfactory 3 - Satisfactory 2 - Good 1 - Poor

Title of Training/Seminar: Installation and Operation of Solar
Power System

Date: 02/19/21

A. Course Content

1. The training is very relevant to present needs of the community and the country as a whole. 1 2 3 4 5
2. The topics/workshop gave me new insights/ideas about how I should do my work. 1 2 3 4 5
3. The topics/workshop gave me new skills that will improve my efficiency/productivity. 1 2 3 4 5
4. The topics/workshop will enhance my dealings with the members of my community. 1 2 3 4 5

B. Training Schedule

1. The sessions started and ended according to the set schedule. 1 2 3 4 5
2. The schedule for the training was conducive to learning. 1 2 3 4 5
3. The time allotted for the topic was sufficient to ensure maximum learning. 1 2 3 4 5
4. The time allotted for breaks was sufficient. 1 2 3 4 5

C. Timeliness

1. The topics discussed gave solutions to my present concerns related to my work/enterprise/project. 1 2 3 4 5

D. Resource Speakers

Engr. A. Quebral

Engr. I. Pagulayan

Engr. M. Valencia/
Engr. Sto. Tomas

Resource Persons/ Speakers	Speaker: 1					Speaker: 2					Speaker: 3				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1. The resource persons showed mastery of the subject matter.					/					/					/
2. The resource persons spoke clearly.					/					/					/
3. The resource persons presented the topics in an organized manner.					/					/					/
4. The resource persons exhibited the enthusiasm in delivering their lecture.					/					/					/
5. The resource persons used various methods to make the presentations interesting and lively.					/					/					/
6. The resource persons encouraged group participation.					/					/					/

On the space below, please write your comments or observations that may not have been covered or included in this evaluation.



TRAINING EVALUATION FORM (Community-Based)

This form is designed to draw out your reaction/perception after attending the training.
Please answer TRUTHFULLY all items by using the scale below:

5 - Outstanding 4 - Very Satisfactory 3 - Satisfactory 2 - Good 1 - Poor

Title of Training/Seminar: Installation and Operation of Solar Power System Date: 02/19/21

A. Course Content

1. The training is very relevant to present needs of the community and the country as a whole. 1 2 3 4 5
2. The topics/workshop gave me new insights/ideas about how I should do my work. 1 2 3 4 5
3. The topics/workshop gave me new skills that will improve my efficiency/productivity. 1 2 3 4 5
4. The topics/workshop will enhance my dealings with the members of my community. 1 2 3 4 5

B. Training Schedule

1. The sessions started and ended according to the set schedule. 1 2 3 4 5
2. The schedule for the training was conducive to learning. 1 2 3 4 5
3. The time allotted for the topic was sufficient to ensure maximum learning. 1 2 3 4 5
4. The time allotted for breaks was sufficient. 1 2 3 4 5

C. Timeliness

1. The topics discussed gave solutions to my present concerns related to my work/enterprise/project. 1 2 3 4 5

D. Resource Speakers

Engr. A. Quebral Engr. I. Pagulayan Engr. M. Valencia/
Engr. Sto. Tomas

Resource Persons/ Speakers	Speaker: 1					Speaker: 2					Speaker: 3				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1. The resource persons showed mastery of the subject matter.					/					/					/
2. The resource persons spoke clearly.					/					/					/
3. The resource persons presented the topics in an organized manner.					/					/					/
4. The resource persons exhibited the enthusiasm in delivering their lecture.					/					/					/
5. The resource persons used various methods to make the presentations interesting and lively.					/					/					/
6. The resource persons encouraged group participation.					/					/					/

On the space below, please write your comments or observations that may not have been covered or included in this evaluation.



TRAINING EVALUATION FORM (Community-Based)

This form is designed to draw out your reaction/perception after attending the training.

Please answer TRUTHFULLY all items by using the scale below:

5 - Outstanding 4 - Very Satisfactory 3 - Satisfactory 2 - Good 1 - Poor

Title of Training/Seminar: Installation and Operation of Solar
Power System

Date: 2/17/21

A. Course Content

1. The training is very relevant to present needs of the community and the country as a whole. 1 2 3 4 5
2. The topics/workshop gave me new insights/ideas about how I should do my work. 1 2 3 4 5
3. The topics/workshop gave me new skills that will improve my efficiency/productivity. 1 2 3 4 5
4. The topics/workshop will enhance my dealings with the members of my community. 1 2 3 4 5

B. Training Schedule

1. The sessions started and ended according to the set schedule. 1 2 3 4 5
2. The schedule for the training was conducive to learning. 1 2 3 4 5
3. The time allotted for the topic was sufficient to ensure maximum learning. 1 2 3 4 5
4. The time allotted for breaks was sufficient. 1 2 3 4 5

C. Timeliness

1. The topics discussed gave solutions to my present concerns related to my work/enterprise/project. 1 2 3 4 5

D. Resource Speakers

Engr. A. Quebral Engr. I. Pagulayan

Engr. M. Valencia/
Engr. Sto. Tomas

Resource Persons/ Speakers	Speaker: 1					Speaker: 2					Speaker: 3				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1. The resource persons showed mastery of the subject matter.					/					/					/
2. The resource persons spoke clearly.					/					/					/
3. The resource persons presented the topics in an organized manner.					/					/					/
4. The resource persons exhibited the enthusiasm in delivering their lecture.					/					/					/
5. The resource persons used various methods to make the presentations interesting and lively.					/					/					/
6. The resource persons encouraged group participation.					/					/					/

On the space below, please write your comments or observations that may not have been covered or included in this evaluation.



Carig Sur, Tuguegarao City
Tel. No. (078) 304-1705 loc 035/036

Living in Excellence

February 19, 2021

Universally-adopt

[illegible]



Carig Sur, Tuguegarao City
(tel. No. 1076) 304 - 1205 for Day/Use

February 24, 2021

ATTENDANCE

CSU Mission

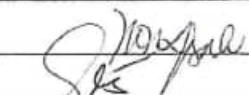
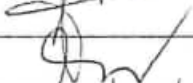
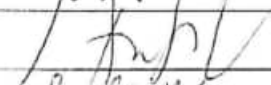
ESU is committed to transform the lives of people and communities through high quality instruction and innovative research, development, production and extension.

CSU - IGA

Competent

Self-disciplined

Universally adept

Name	Signature
Maria Nina Dinceth P. Salas	
OLIVER J. DUCTOYENO	
J. Paulina	
G. Calubagub	
R. Estiller	
Arturo Patricio	
Cyrus Kelly A. Macabangon	
May Ann C. Valencia	
• Jan C. Pagulayan	
AMY ANTHONY	



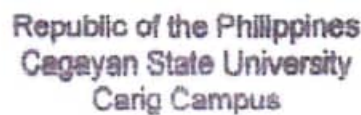


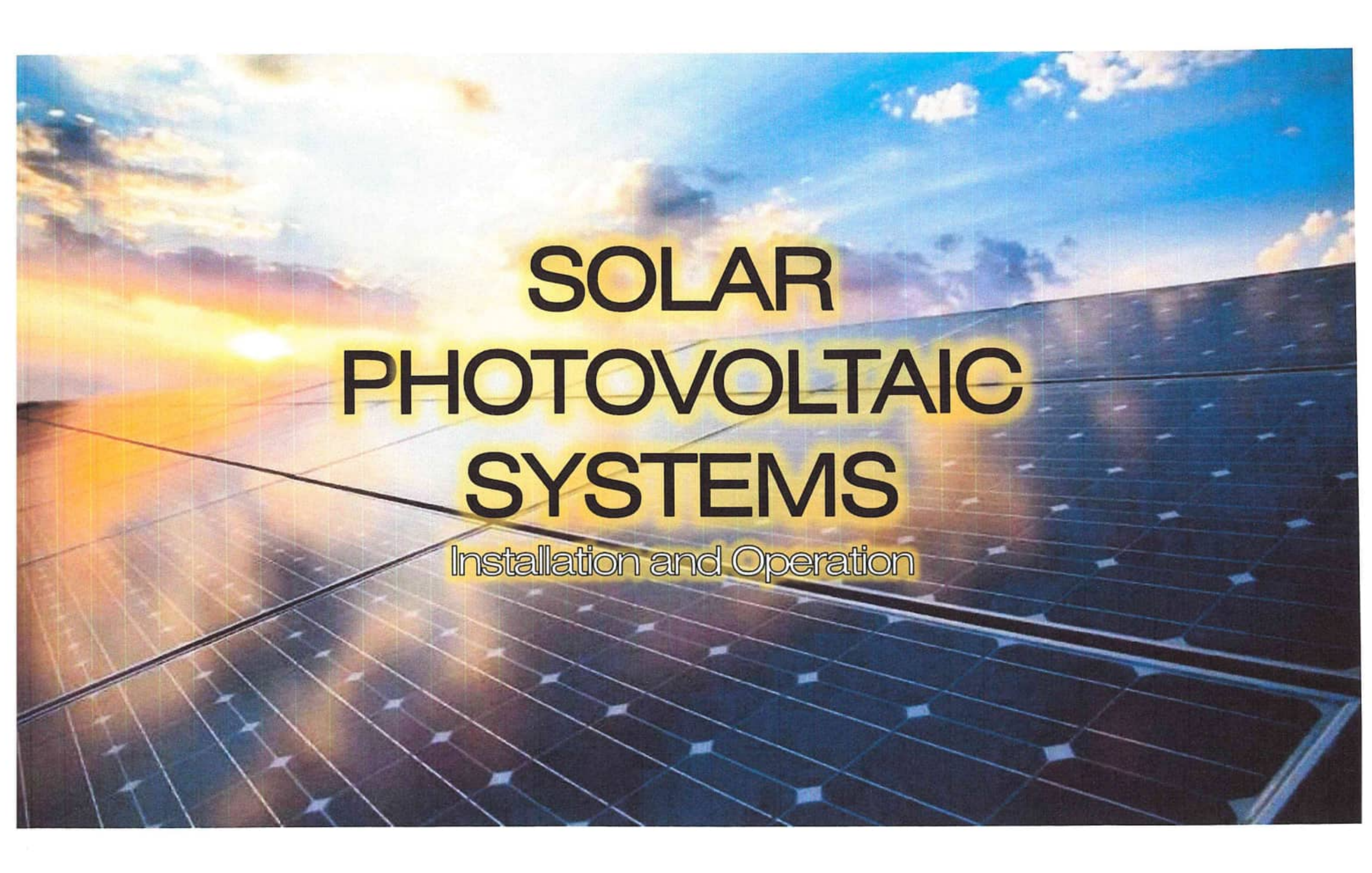
Research for Development and Extension Office

ATTENDANCE SHEET

Activity/Training: INSTALLATION AND OPERATION OF SOLAR PV (POWER) SYSTEM
Venue: Sitio Burayok, Basao, Gattaran, Cagayan
Date: February 19, 2021

	Name	Sex	Address	CP Number	Signature
1	Joel Tuliao	M	Basao, Gattaran, Cagayan		J.T.
2	Liza Tuliao	F	Gattaran, Cagayan		L.T.
3	Mario Ancheta	M	Gattaran, Cagayan		Mario A.
4	Myrna Ancheta	F	Gattaran, Cagayan		Ma Ancheta
5	Dennis Ancheta	M	Gattaran, Cagayan		D. Ancheta
6	Rovilyn Simplicio	F	Gattaran, Cagayan		R. S.
7	Angelica Alambat	F	Gattaran, Cagayan		A. A.
8	Redel Lagimon	M	Gattaran, Cagayan		R. L.
9	Eliner Alviar	F	Gattaran, Cagayan		E. A.
10	George Alambat	M	Gattaran, Cagayan		G. A.
11	Cathy Alambat	F	Gattaran, Cagayan		C. A.
12	Dominador Flores	M	Gattaran, Cagayan		D. F.
13	Wilma Gonzales	F	Gattaran, Cagayan		Wilma Gonzales
14	Lito Gonzales	M	Gattaran, Cagayan		Lito Gonzales
15	Brenda Mondajar	F	Gattaran, Cagayan		B. Mondajar
16	Eduardo Mondajar Jr.	M	Gattaran, Cagayan		E. M.
17	Cristina Tumaluan	F	Gattaran, Cagayan		C. Tumaluan
18	Jonas Tumaluan	M	Gattaran, Cagayan		J. Tumaluan
19	Riza Ancheta	F	Gattaran, Cagayan		R. Ancheta
20	Edgar Simplicio	M	Gattaran, Cagayan		E. Simplicio
21					
22					
23					
24					
25					
26					
27					

[illegible]

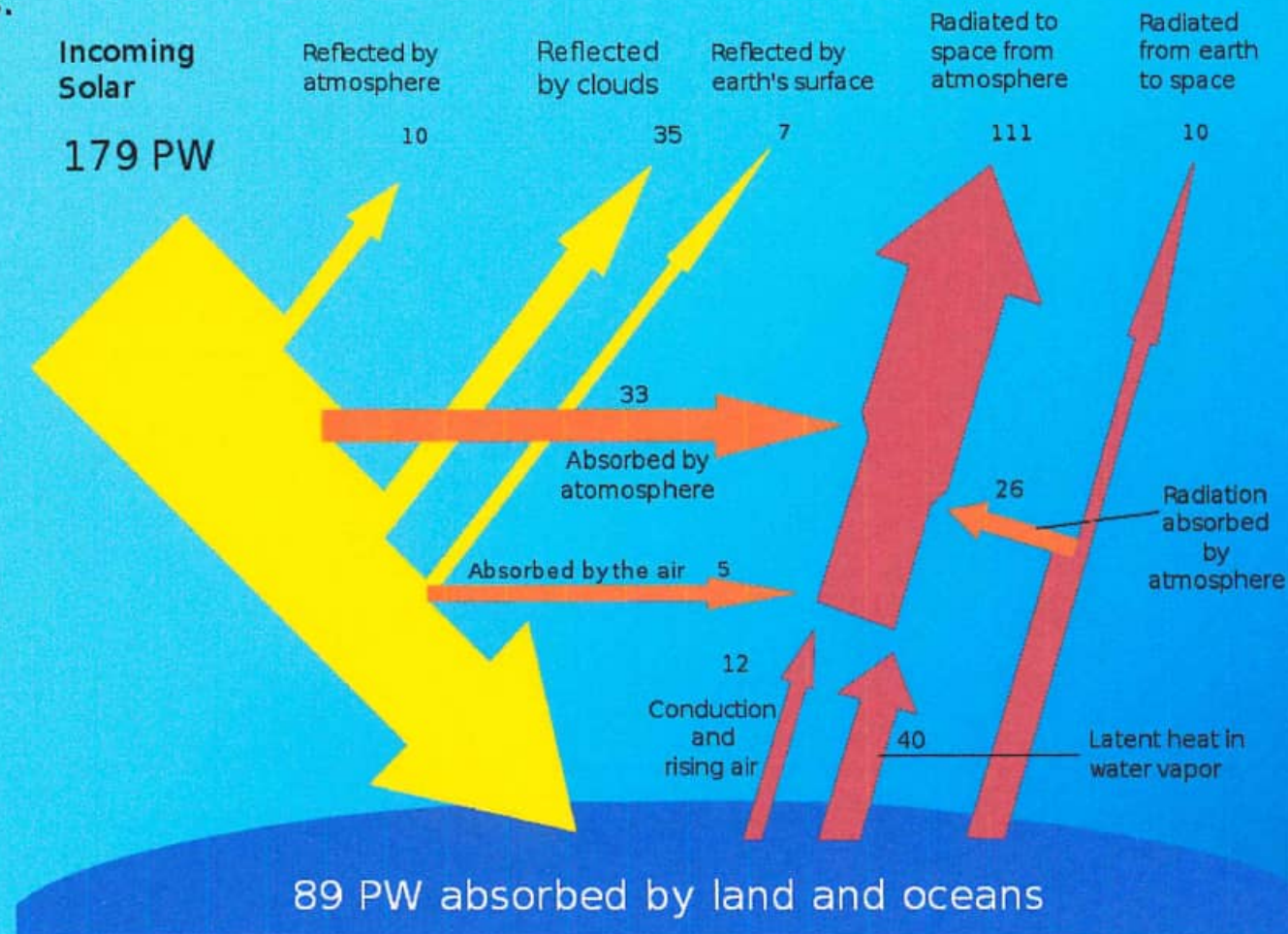


SOLAR PHOTOVOLTAIC SYSTEMS

Installation and Operation

SOLAR ENERGY

- **Solar energy** is radiant light and heat from the sun, harnessed with the help of technologies.

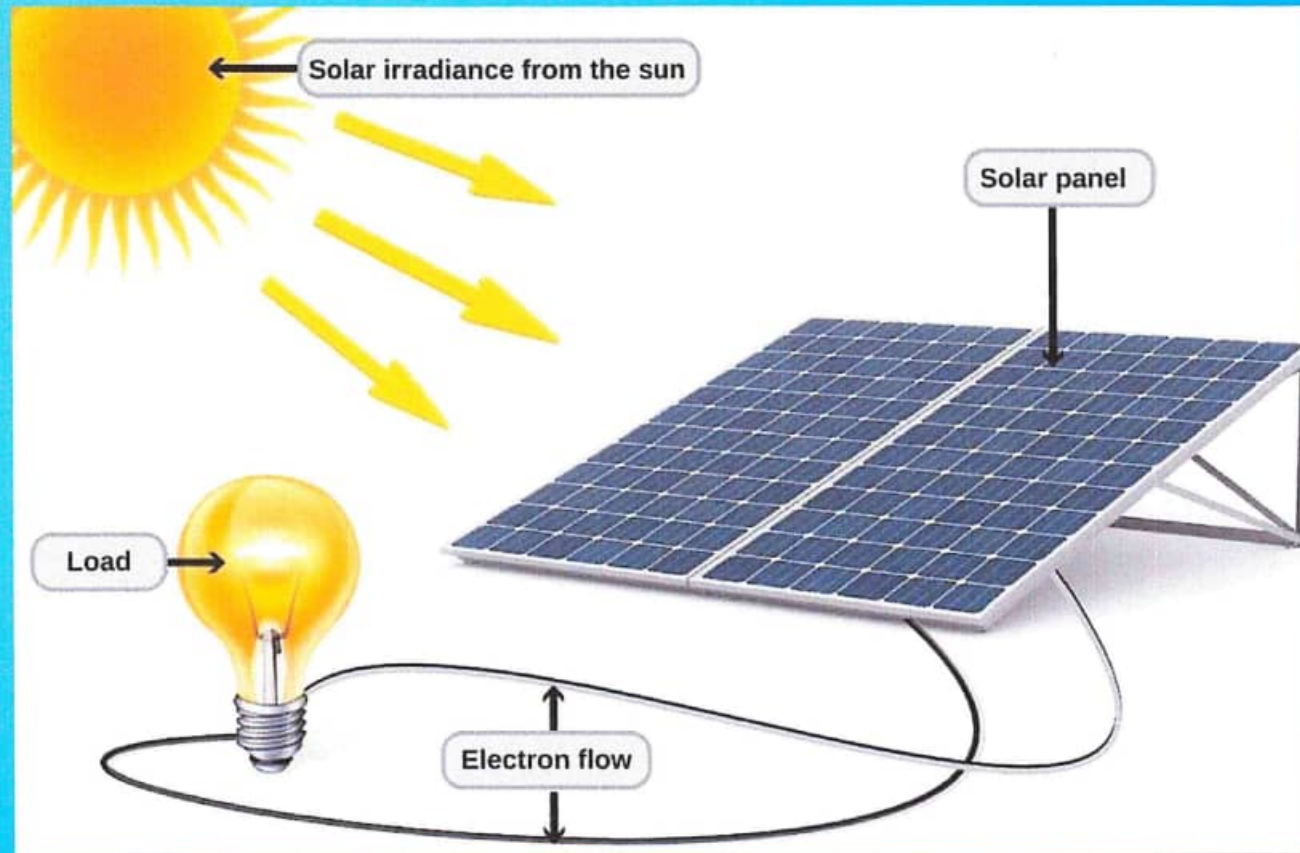


Why solar ?

- Sustainable
- Off grid
- Noiseless
- Low maintenance

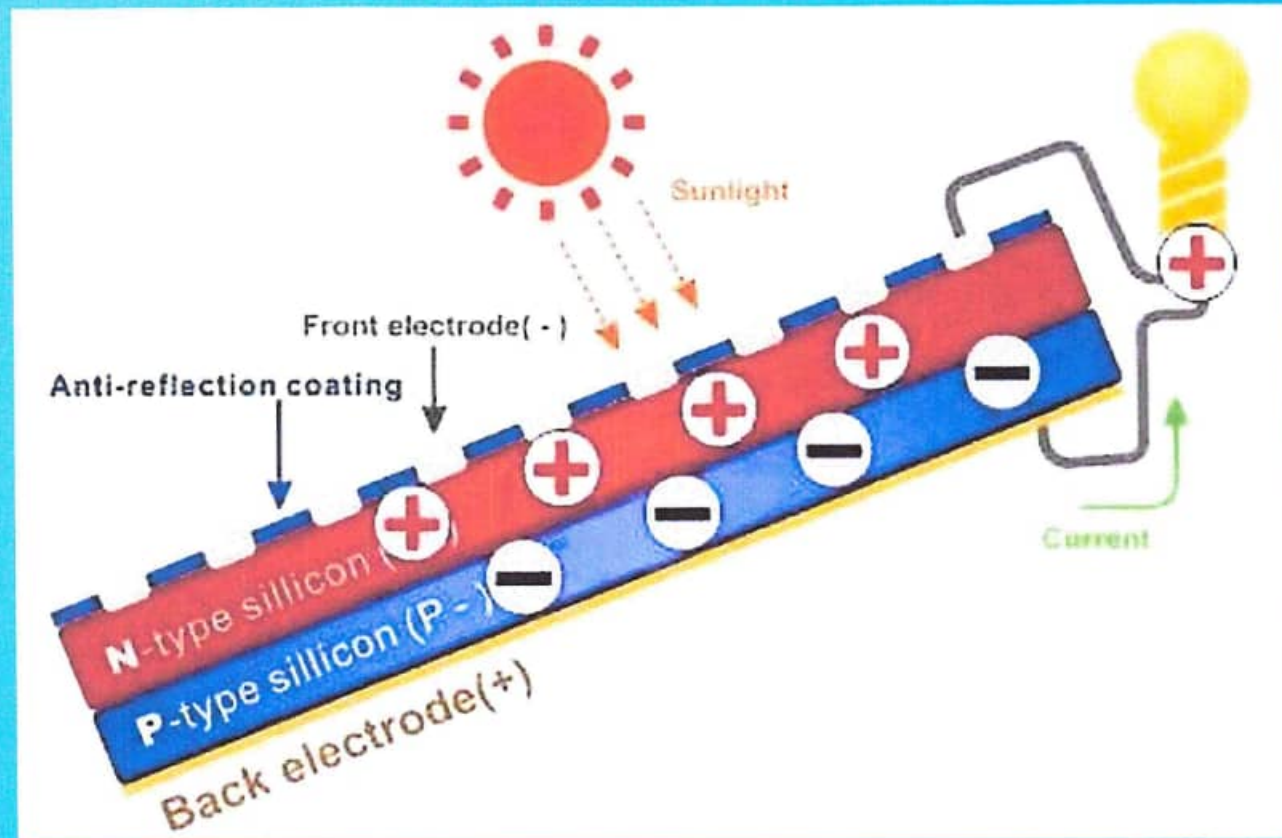
SOLAR PV

- A **photovoltaic system (PV system)** converts solar energy to electrical energy
- It uses solar cells
- Electricity generation

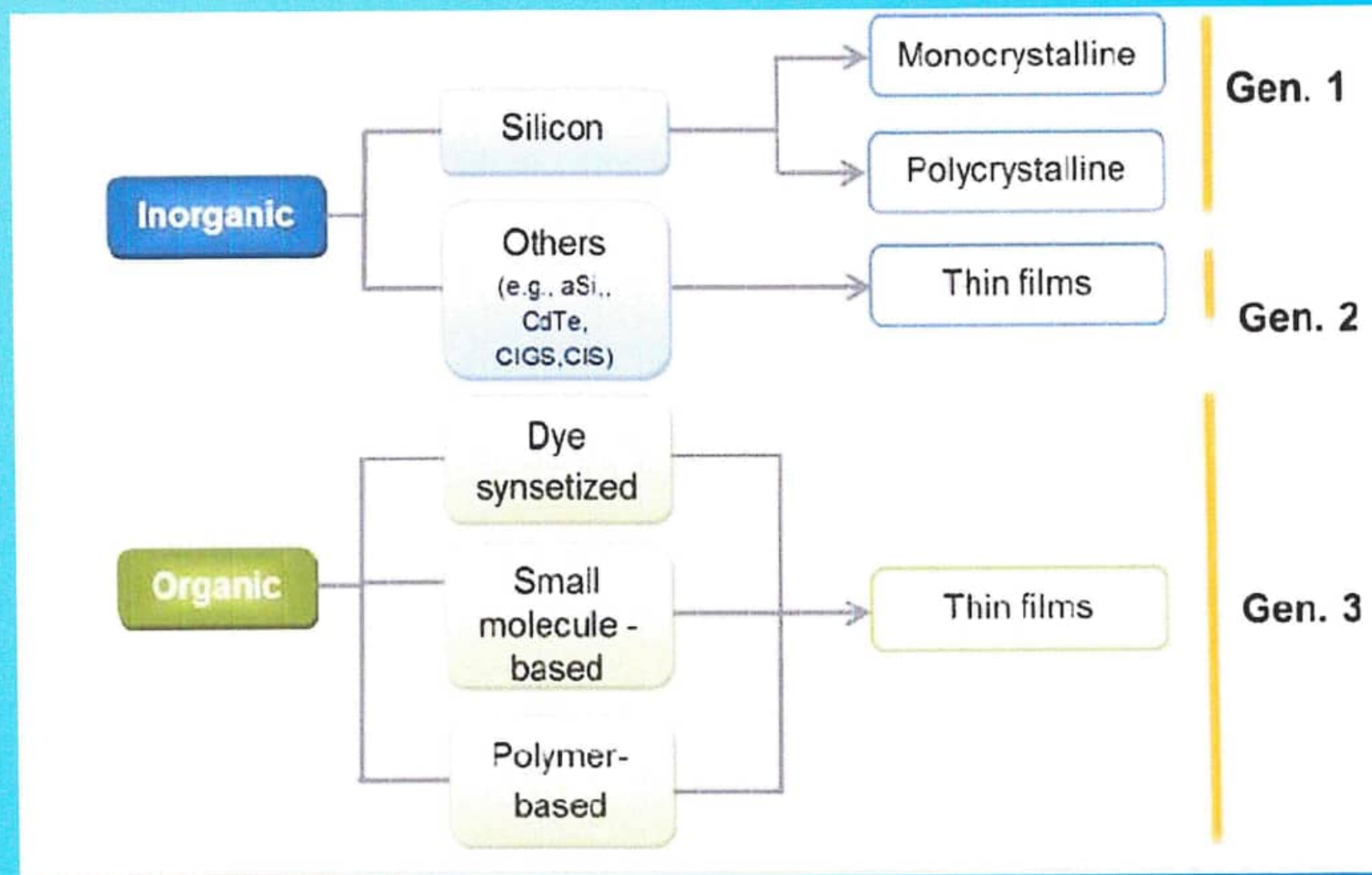


Principle

- Photovoltaic effect



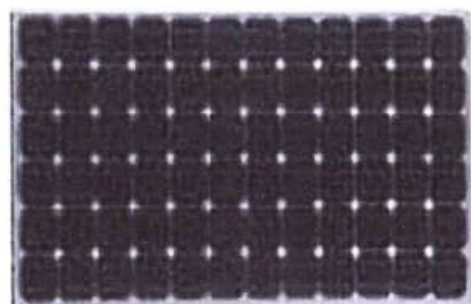
Solar PV cells



Monocrystalline Panels

Polycrystalline Panels

Thin Film Panels



Type

Efficiency

14% - 18% cell efficiency

12% - 14% cell efficiency

5% - 6% cell efficiency

Temperature Tolerance

0% +5%

-5% +5%

-3% +3%

Life Time

25-30 year life span

20-25 year life span

15-20 year life span

Durability

Hail resistant 25 year

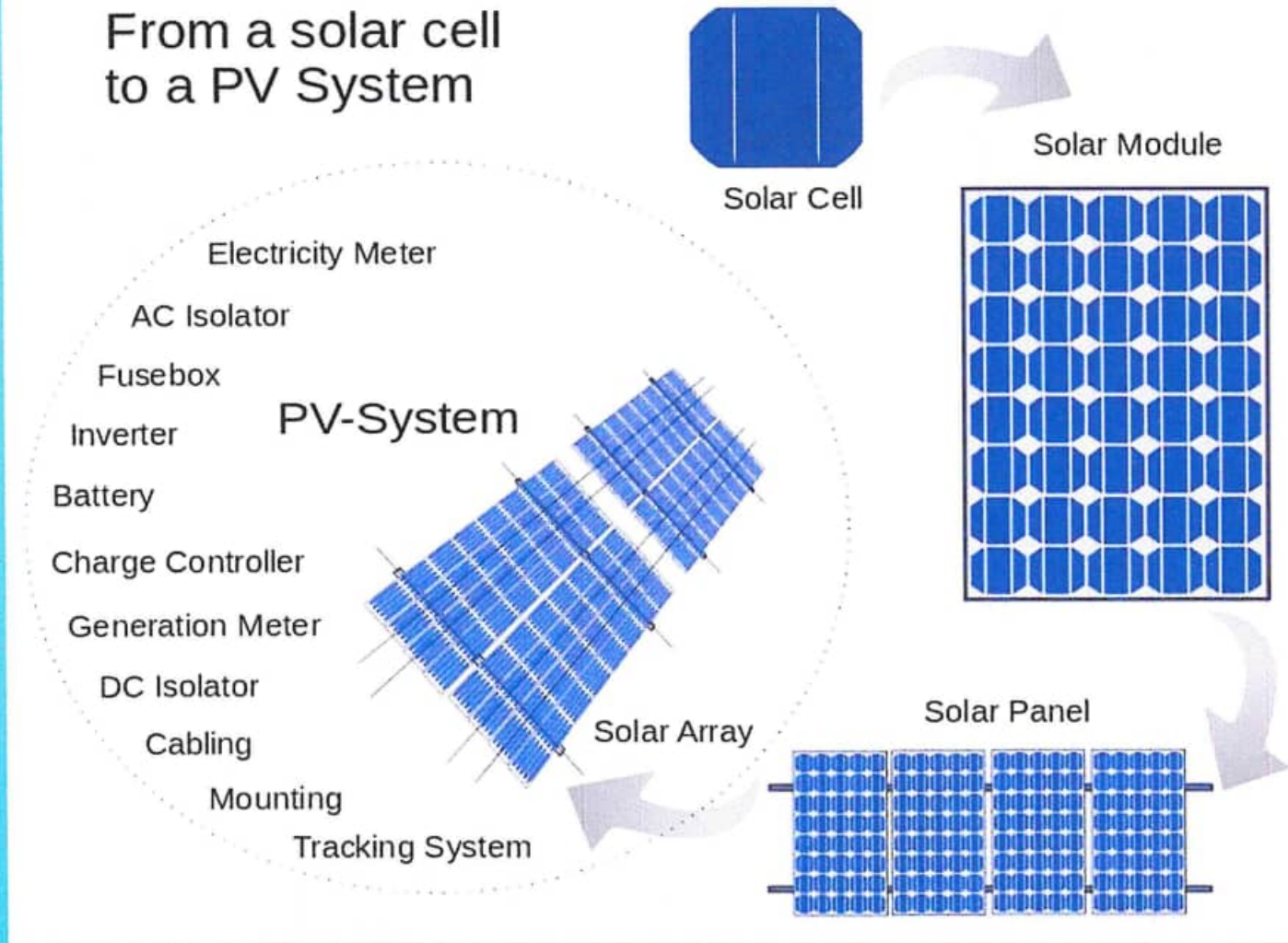
25 year P & M warranty

25 year P & M warranty

P & M

Cells to arrays

From a solar cell to a PV System



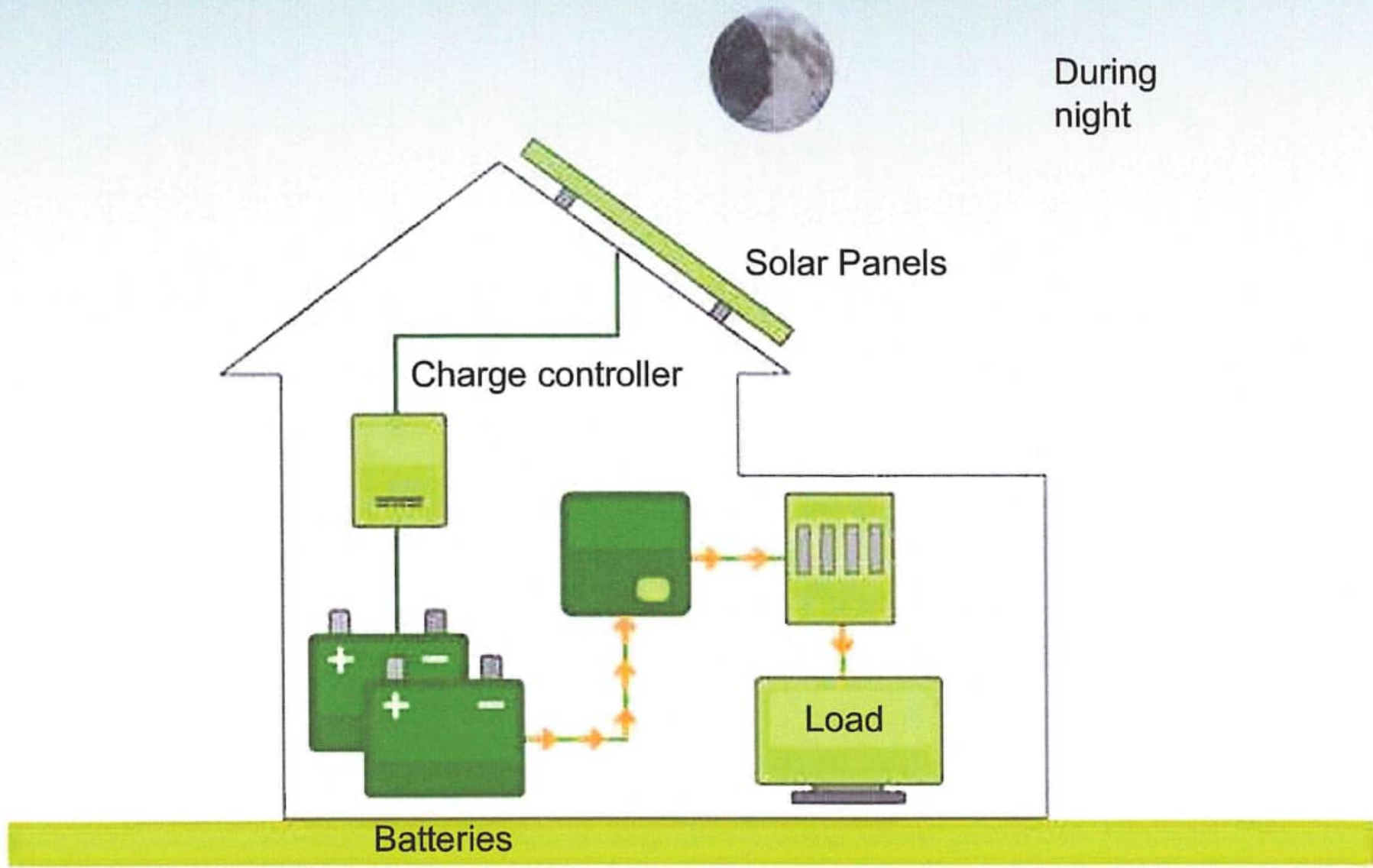
During
night

Solar Panels

Charge controller

Load

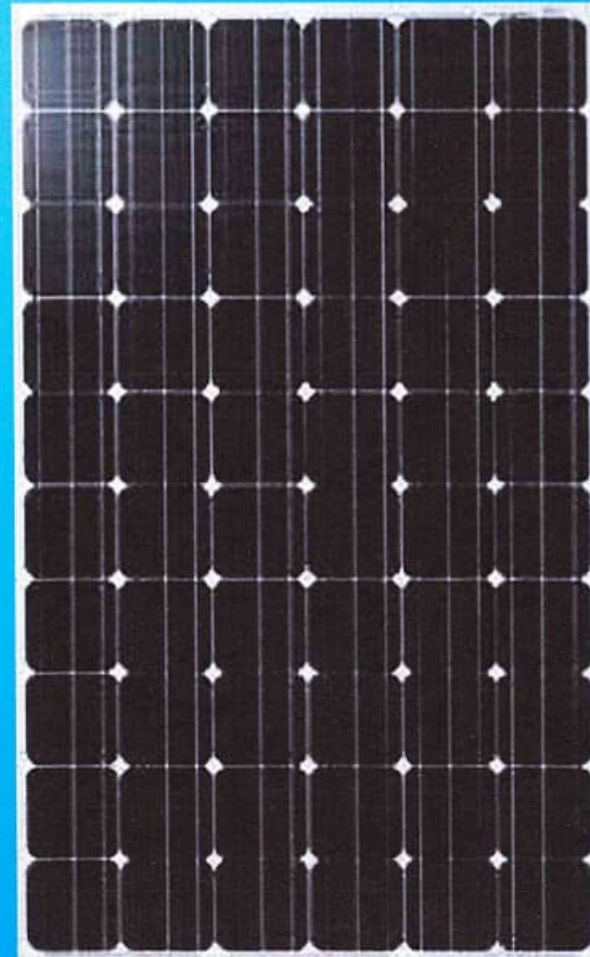
Batteries



PV modules

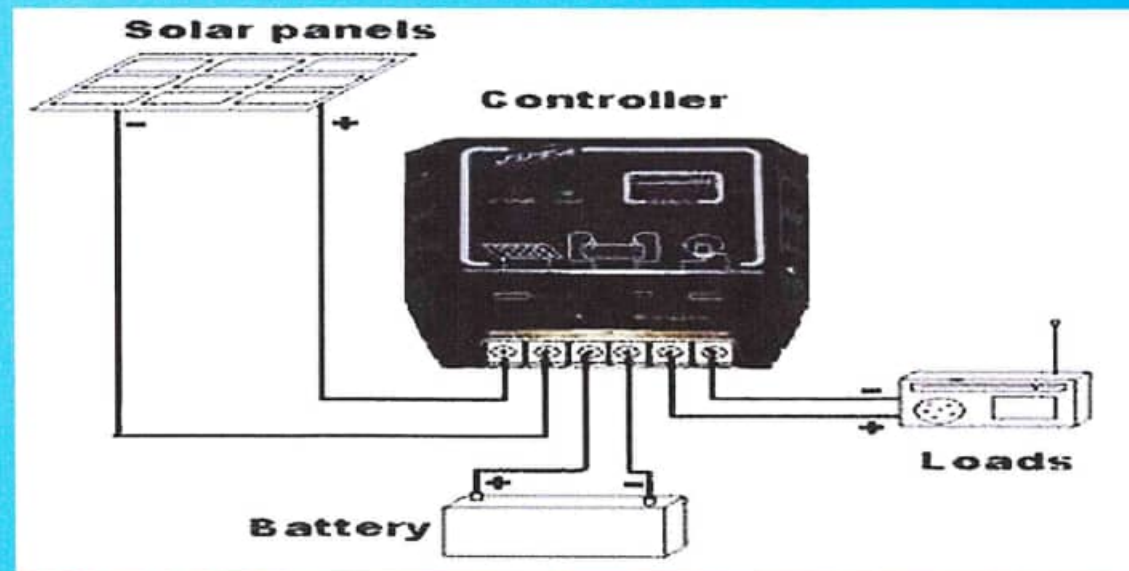
The assembly of solar cells in the form of a array

Converts sunlight into DC electricity.



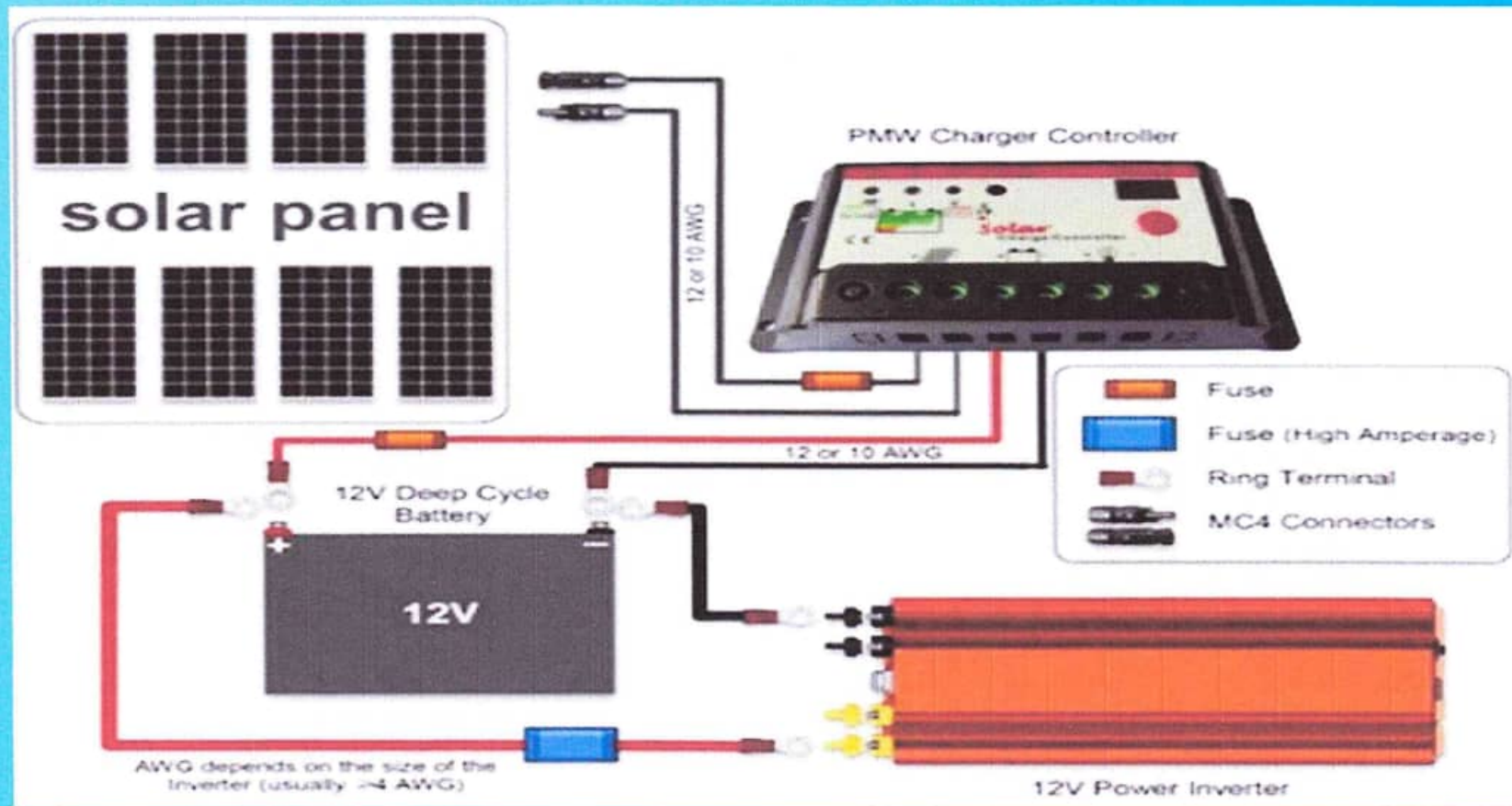
Solar Charge Controller

- Regulates the voltage and current coming from the PV panels going to battery and prevents battery overcharging and prolongs the battery life.



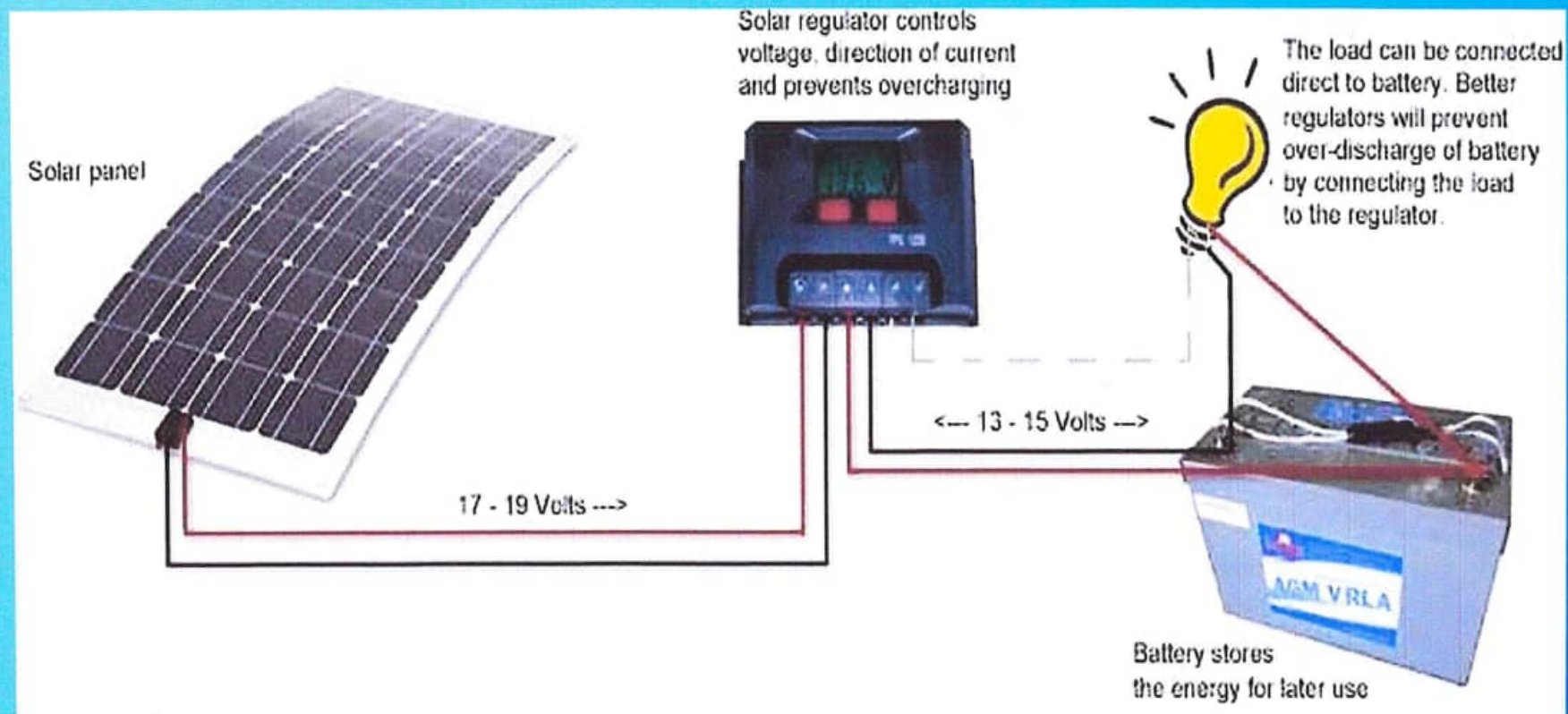
Inverter

- Converts DC output of PV panels or wind turbine into a clean AC current for AC appliances or fed back into grid line. Inverter capacities is expressed in kVA

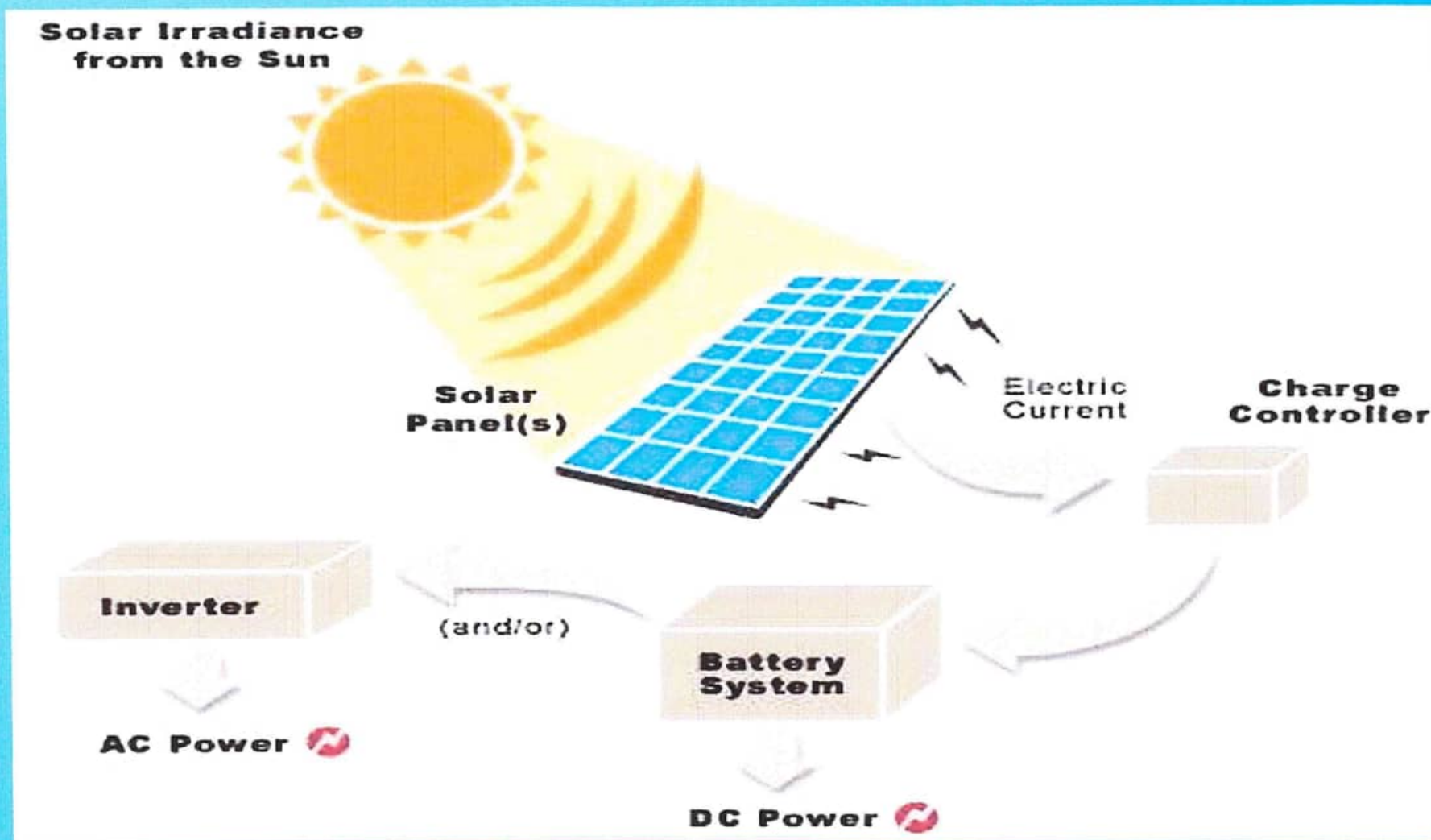


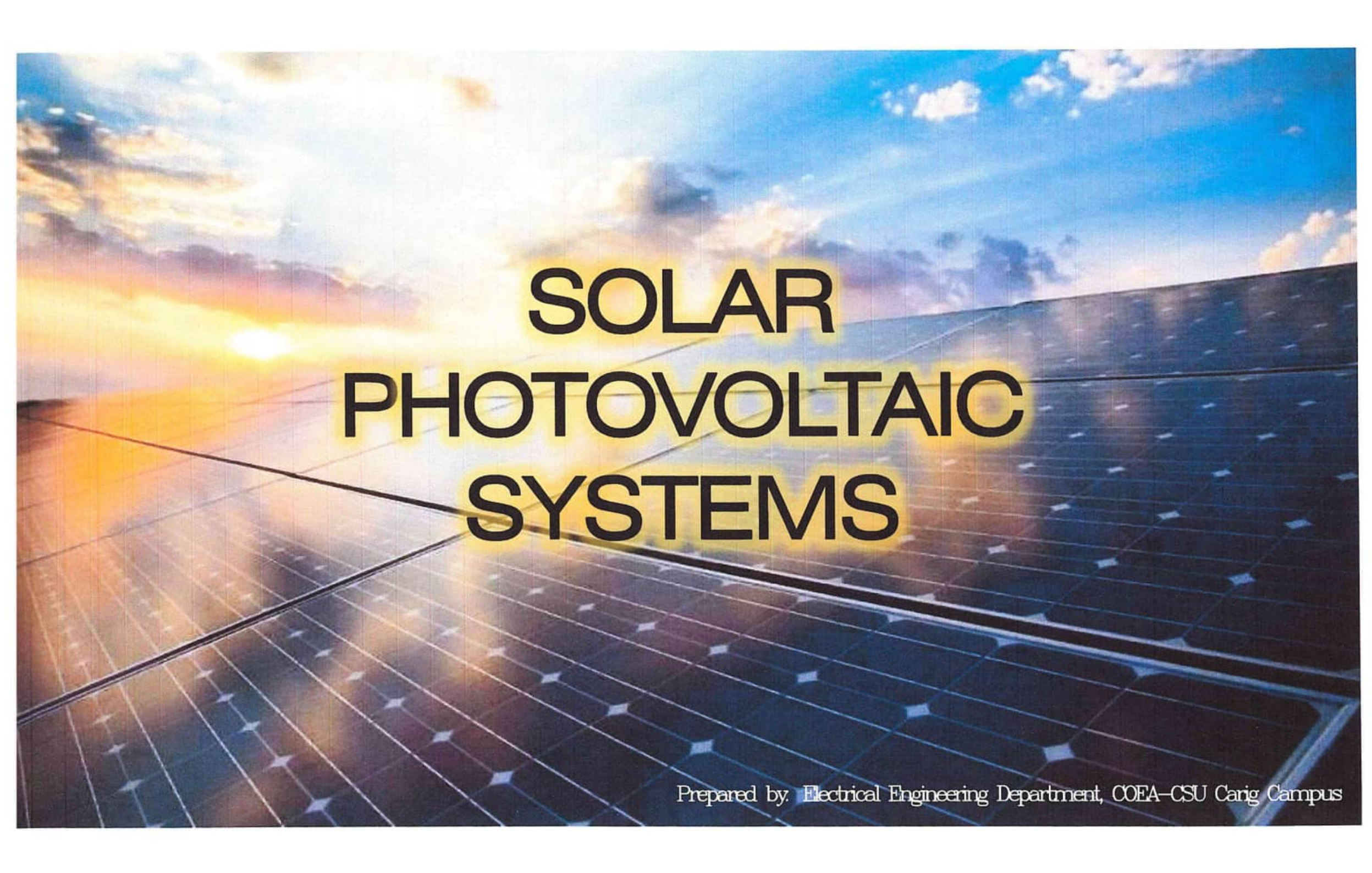
Battery

- Stores energy for supplying to electrical appliances when there is a demand.



Design of solar PV system



The background image shows a vast field of solar photovoltaic panels stretching towards the horizon. The sun is low on the left side, creating a strong lens flare and illuminating the sky with warm orange and yellow tones. The sky transitions to a deep blue with scattered white clouds. The solar panels are dark blue with a grid of silver lines, and their reflection is visible on the wet-looking surface.

SOLAR PHOTOVOLTAGIC SYSTEMS

Prepared by: Electrical Engineering Department, COEA-CSU Carig Campus



Republic of the Philippines
Cagayan State University
Carig Campus

Title of Training: INSTALLATION AND OPERATION OF SOLAR PV (POWER) SYSTEM

Venue Sitio Bundayok, Basao, Gattaran, Cagayan

DATE: February 19, 2021

PARTICIPANTS PROFILE

[illegible]