



Strictly Confidential

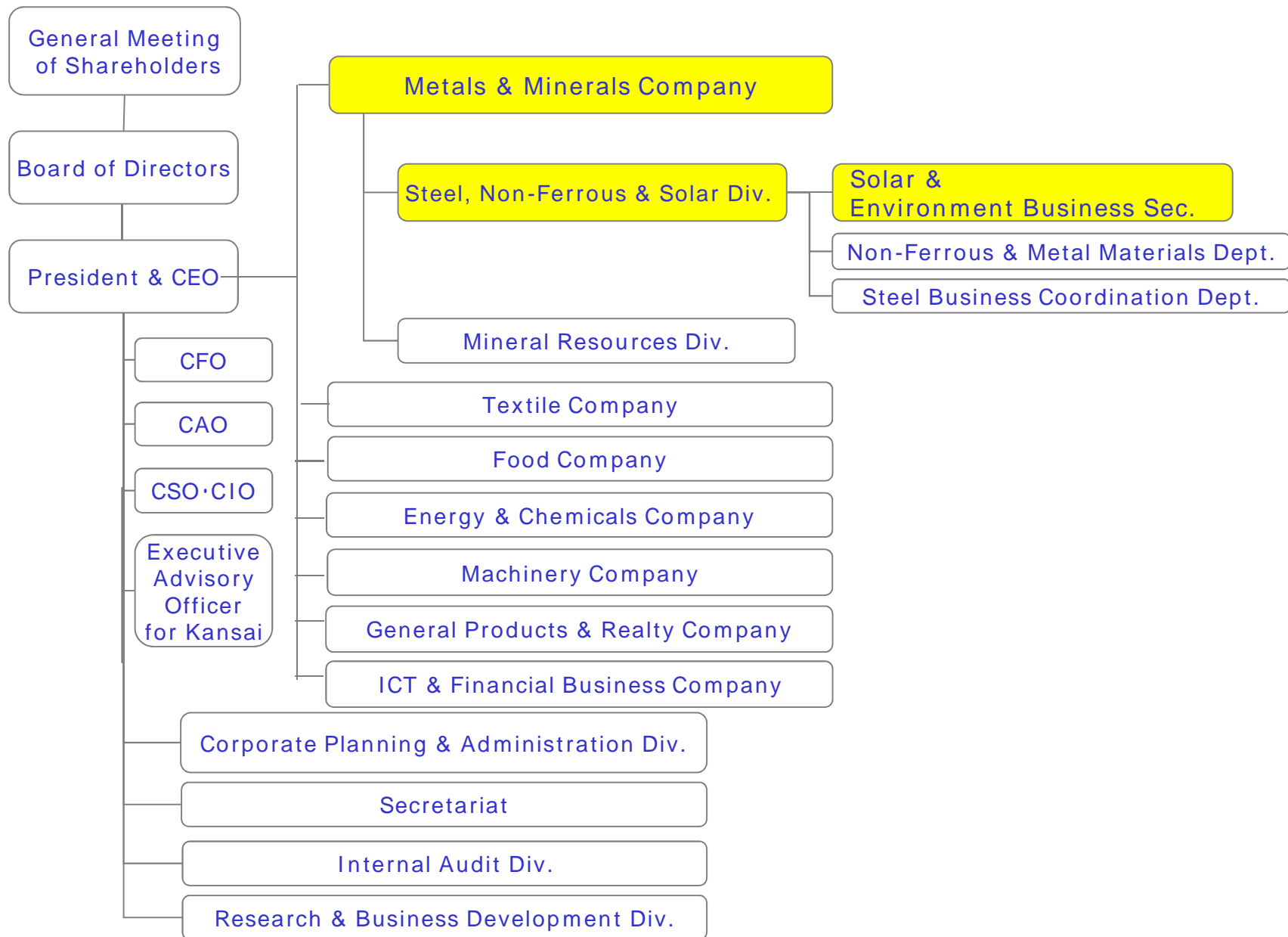
# Installation of Solar Power System and Energy Storage System to Commercial Facility

Solar & Environment Business Section  
ITOCHU Corporation

12<sup>th</sup> Jul 2017

# ITOCHU Organization Structure in 2017

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# Outline of the Project

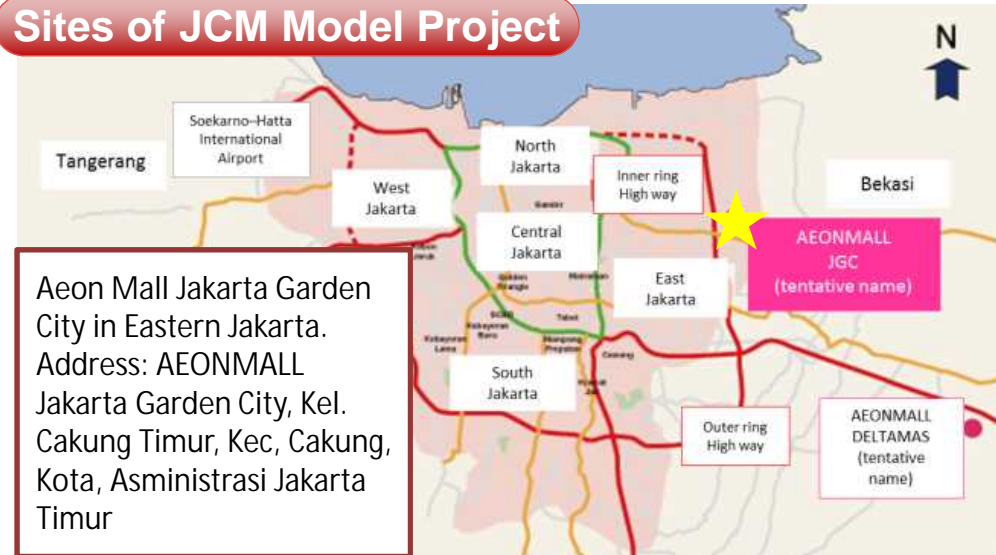
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## Back Ground

- ✓ Big demand for the electricity with economic growth in Indonesia.
- ✓ Renewable energy demand based on COP21.  
Contribution to Indonesia by Installation of PV and Battery!!

## Sites of JCM Model Project



## Main System



Panasonic Module  
HIT 325w x 1560pcs  
= 507kWp



ABB Inverter  
50kw x 10pcs  
=500kWp



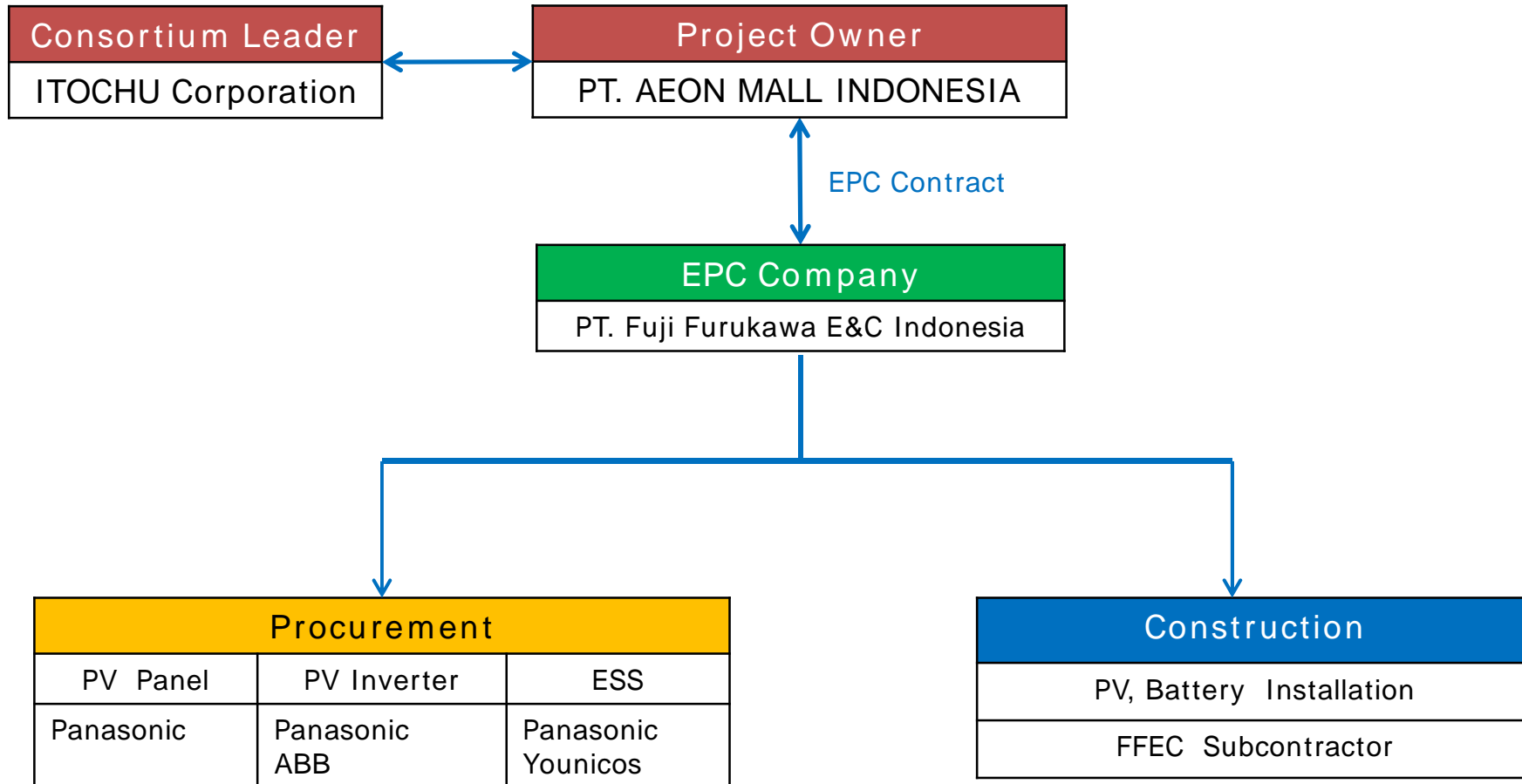
Yunicos ESS  
100kW/111kWh

# Project Scheme Diagram

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Consortium Agreement

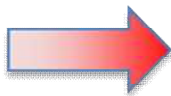


## GHG Mitigation Activity

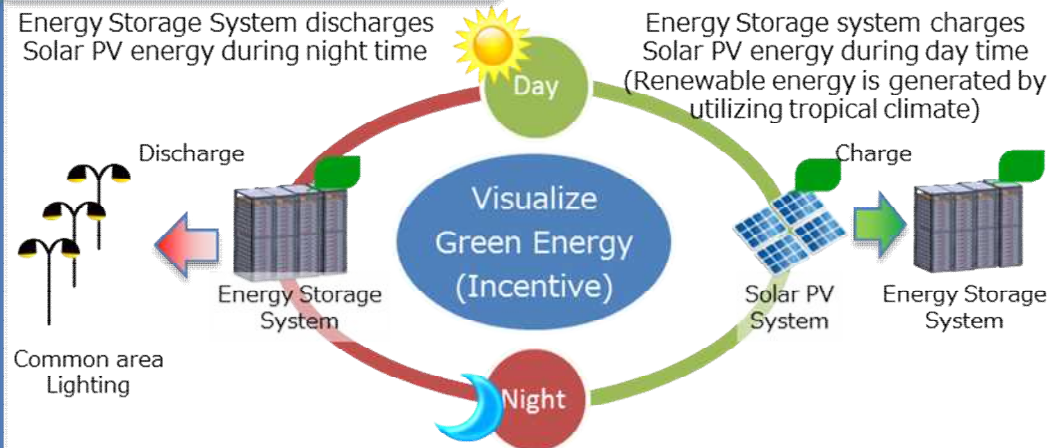
- ✓ The electricity from solar power system is supplied to lighting equipment.
- ✓ In a daytime, surplus power is charged to storage battery, and it is used during the night.
- ✓ The project achieves GHG mitigation by reducing a purchase of the electricity from the electric company.
- ✓ Estimated GHG emission reduction is 549t CO<sub>2</sub> / year.

### Before

Large commercial building construction accelerated in urban area in Indonesia.  
**Energy demand rapidly increase** →  
High needs of renewable energy by utilizing tropical climate



### After



# Monitoring Diagram

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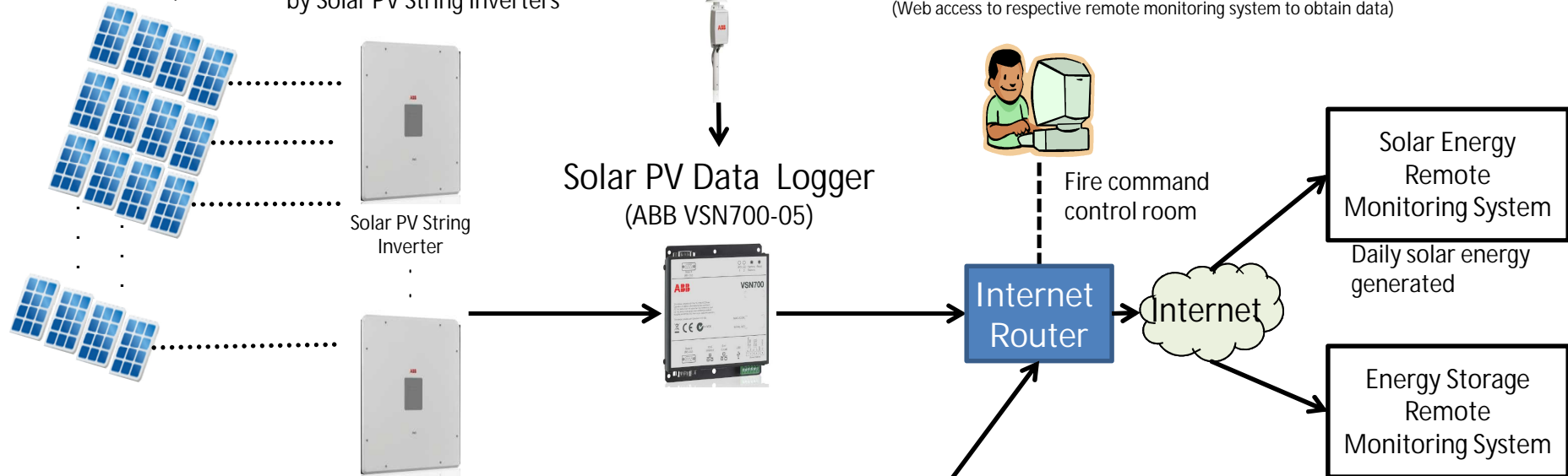
507 kWp Solar PV  
(1560 of solar panels)  
(Panasonic  
VBHN325SJ47)

Solar PV String Inverters  
(ABB TRIO-50.0-TL-OUTD)  
Daily solar PV energy generated  
by Solar PV String Inverters

Irradiance, wind and  
temperature sensor  
(ABB VBN 800-14)

Solar PV System and  
Energy Storage System  
Monitoring Panel

(Web access to respective remote monitoring system to obtain data)



Monitoring Place: Fire Command Control Room  
Monitoring Points:  
A. Daily Solar PV energy generated by Solar PV Inverters  
B. Daily Energy Storage System charge energy by Converter of Energy Storage System  
C. Daily Energy Storage System discharge energy by Converter of Energy Storage System  
Monitoring Method:  
▪ Solar Energy remote monitoring system and Energy storage remote monitoring system

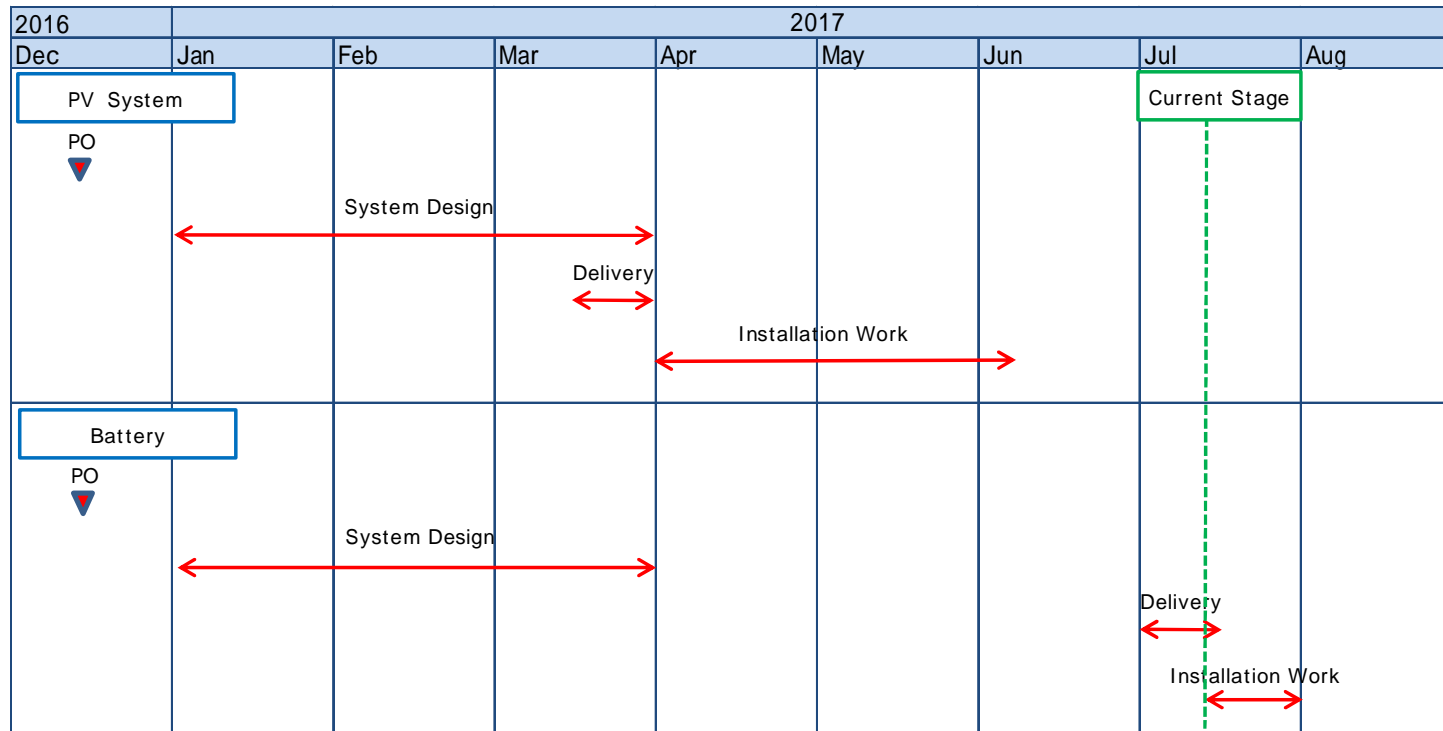


Energy Storage System  
(Y.Cube 100kW/111kWh)  
Energy storage system  
Daily charge energy data  
Daily discharge energy data  
by Converter

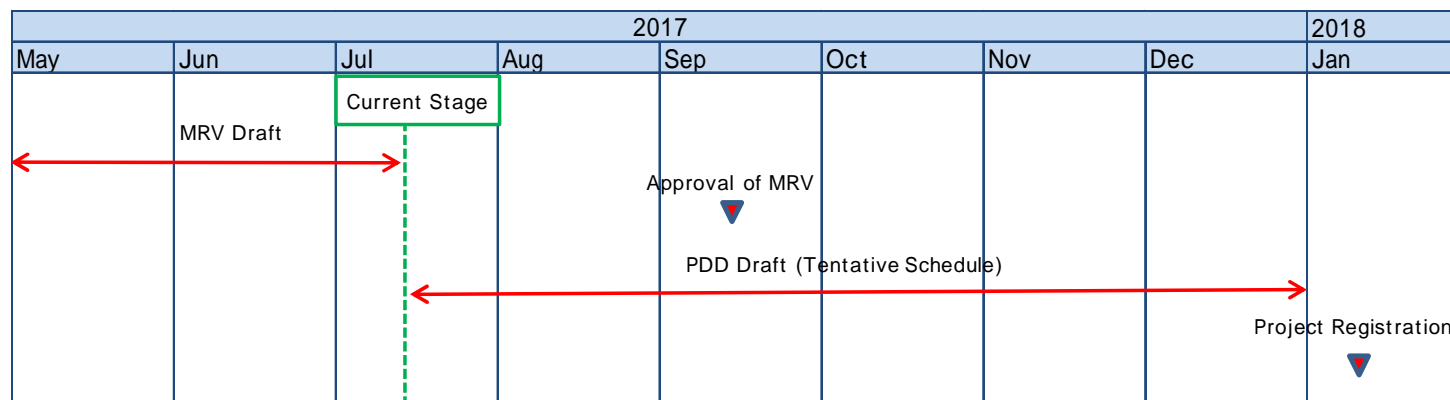
Daily battery charge energy  
Daily battery discharge energy



## 【System Installation】



## 【MRV】



[Location: Aeon Mall Jakarta Garden city]

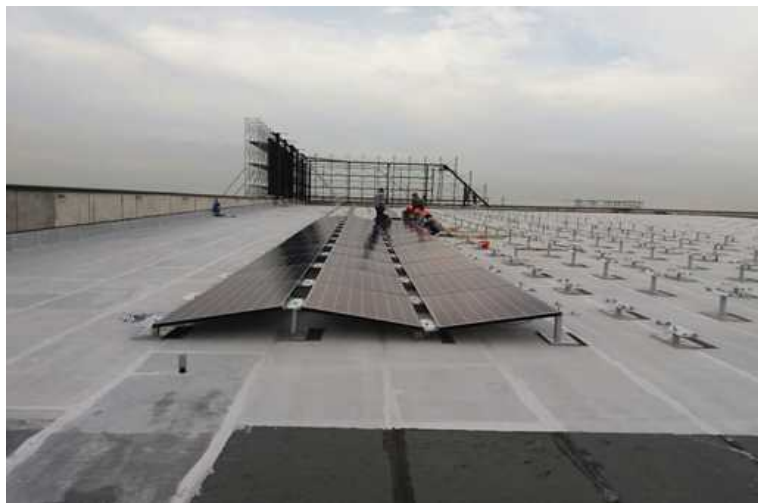
## Points of Attention

- ✓ Cooperation with the contractor of the Mall
- ✓ Confirmation of Import regulation (Use of domestic material)

PV Installation Work



PV Installation Work



PV Installation Completion





Present

Future

- ✓ Reduction of PV cost
- ✓ Easy operation & maintenance  
PV in self- consuming model,  
including residential market

- ✓ Reduction of Battery Cost
- ✓ Reinforcement of Electricity grid  
PV in industrial market, including IPP

## ITOCHU Solar Business

ITOCHU Corporation has accumulated the know-how of Solar business in the world, and followings are main sections.

1. Solar material trading
2. Solar system trading
3. Solar IPP in Japan and Spain

For "the Global Good", ITOCHU has continued to contribute to sustainable world, including Indonesia.

# THANK YOU !!



On the roof top of ITOCHU Headquarter building (70kW)