



ARMENIA RENEWABLE
RESOURCES AND ENERGY
EFFICIENCY FUND

2019 APN CONFERENCE

Sept. 2019 Seoul, Korea

Karen Asatryan



ARMENIA GEOGRAPHY

AREA: 29.7 THS

km²

POPULATION: 3.0 MLN

CAPITAL: YEREVAN

OFFICIAL LANGUAGE: ARMENIAN

MAIN NATIONALITY: ARMENIAN



CURRENCY: ARMENIAN

DRAM

GDP 2018: \$11,54

BILLION

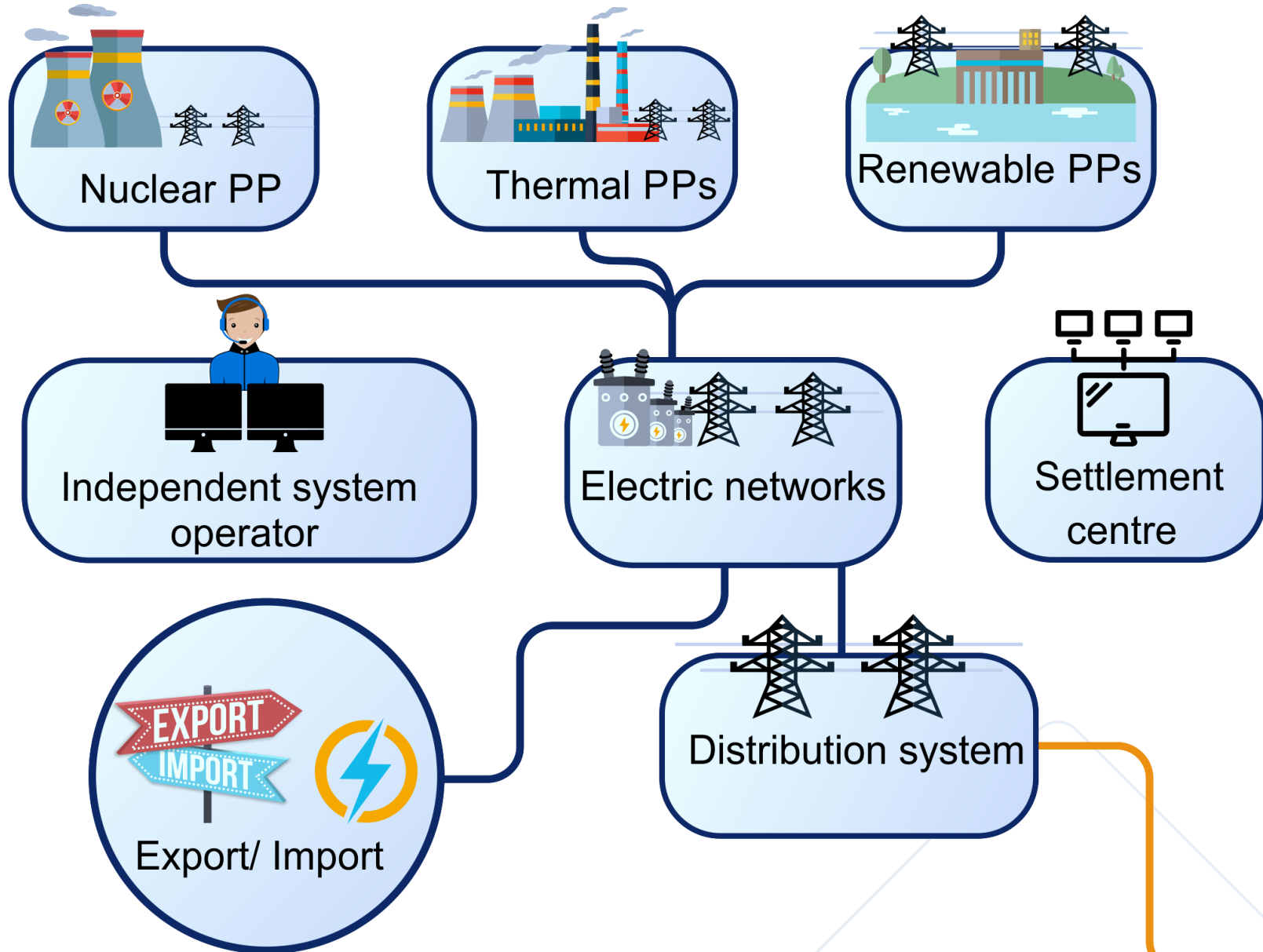
ARMENIA'S ECONOMIC 5.8

%

GROWTH 2018



ENERGY SYSTEM



**MINISTER OF TERRITORIAL
ADMINISTRATION AND
INFRASTRUCTURE OF RA**



**PUBLIC SERVICES
REGULATORY COMMISSION
OF THE REPUBLIC OF
ARMENIA**





ENERGY SYSTEM

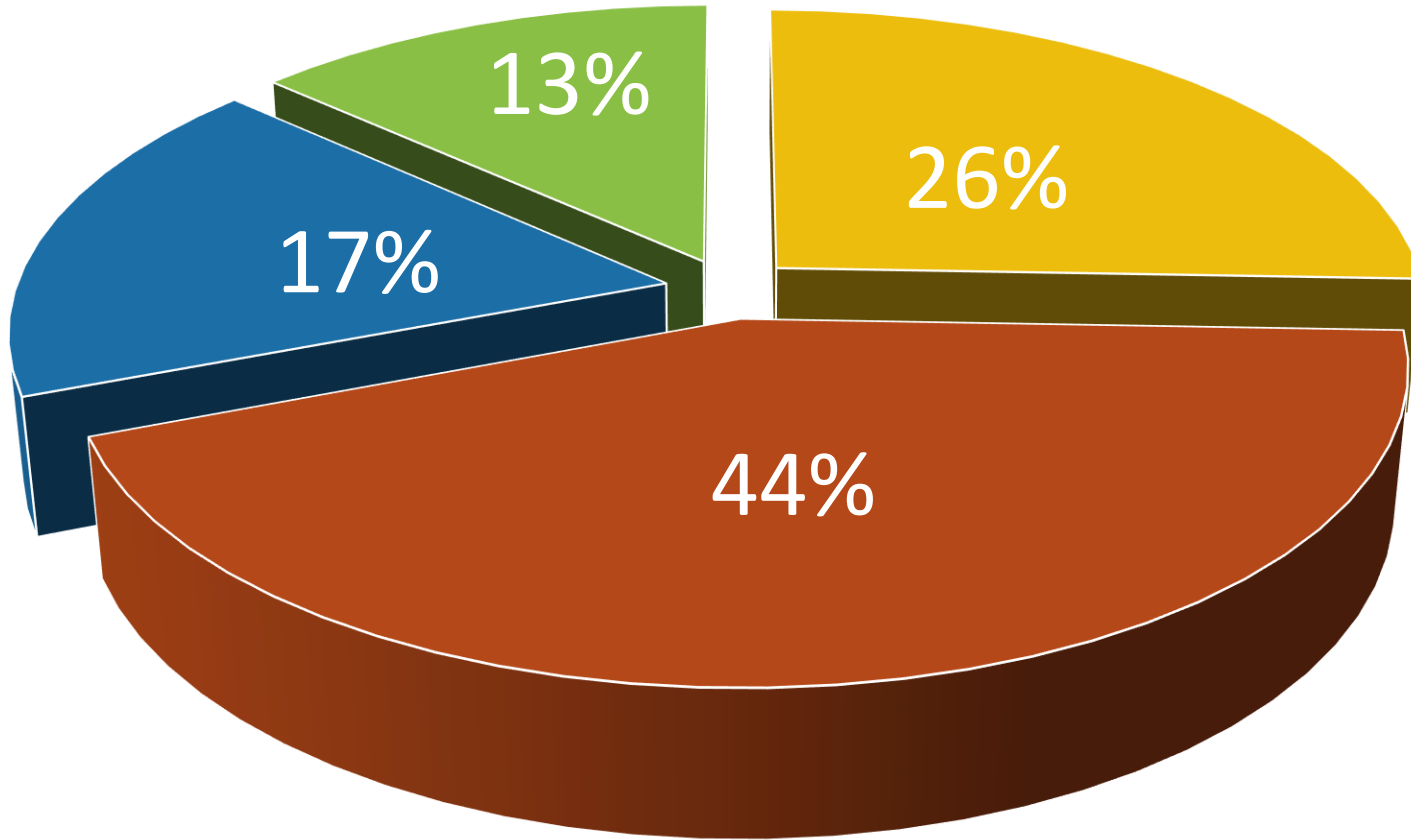
GENERATION CAPACITIES

- 1 NUCLEAR PP- 400 MW
- 3 THERMAL PP- 1800 MW
- 3 HPP (2 CASCADE) – 964 MW OPERATED
- 188 SMALL HPPTS – 369 MW OPERATED UNDER 30MW
- 33 SMALL HPPTS – 66 MW UNDER CONSTRUCTION
- 9 SOLAR PV PLANT – 7 MW UNDER OPERATION 5 MW
- 27 SOLAR PV PLANT – 200 MW UNDER CONST. UP TO 5 MW
- MaSrk 1 - 55MW UNDER CONSTRUCTION



ENERGY SYSTEM

ELECTRICITY SUPPLY FROM POWER GENERATING PLANTS IN 2018 7424 MLN. KWH



■ Nuclear ■ Thermal ■ HPP ■ Renewable

PLANTS	MLN.KW H
THERM AL	3238.8
NUCLER	1898.1
HPP	1297.80
RE	989.44
SHPP	981.50
SOLAR	6.14
WIND	1.80

ARMENIA RENEWABLE RESOURCE AND ENERGY EFFICIENCY FUND

R2E2 FUND IS AN ENVIRONMENT FORMING INSTITUTION IN THE AREA OF RENEWABLE RESOURCES AND ENERGY EFFICIENCY. THE R2E2

- YEAR OF ESTABLISHMENT: 2006 BY GA,
- BOARD MEMBERS: 9 GOVERNMENT AND 2 PUBLIC REPRESENTATIVES,
- NUMBER OF WORKER: 25 PERSON,
- NUMBER OF PROJECTS: MORE THAN 15,
- AMOUNT OF INVESTMENT: OVER 40 MLN USD,

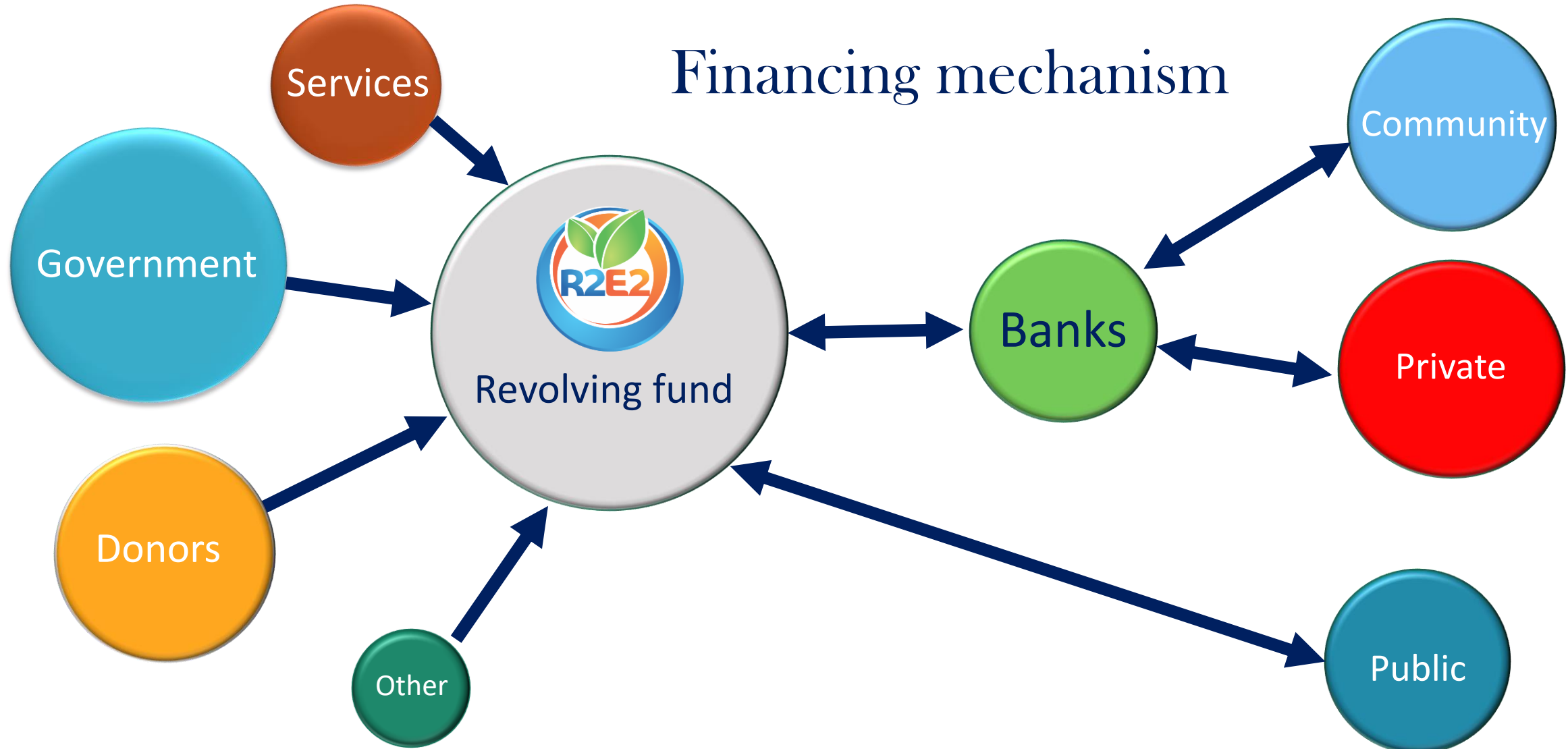


ARMENIA RENEWABLE RESOURCE AND ENERGY EFFICIENCY FUND

THE MAIN MISSION OF THE FUND

- FACILITATE/FINANCE INVESTMENTS IN RE AND EE SECTORS,
- PROMOTE RE AND EE MARKET DEVELOPMENT,
- CONTRIBUTE TO ARMENIAN'S ENERGY SECURITY,
- ON BEHALF OF THE GOVERNMENT ORGANIZE IMPLEMENTATION OF CREDIT AND GRANT PROJECTS PROMOTING THE SECTOR DEVELOPMENT,
- LEGAL REGULATORY IMPROVEMENT,
- INTRODUCTION AND IMPLEMENTATION OF INNOVATIVE PROJECTS IN RE&EE

ARMENIA RENEWABLE RESOURCE AND ENERGY EFFICIENCY FUND



UTILITY SCALE SOLAR POWER PROJECT

THE GRANT AGREEMENT BETWEEN THE REPUBLIC OF ARMENIA AND INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT WAS SIGNED ON JUNE 5, 2015 FOR PREPARATION OF UTILITY- SCALE SOLAR POWER PROJECT.

FEASIBILITY STUDIES WERE CONDUCTED IN:

DASHTADEM 1 PV PLANT - **12.5MWP**

GAGARIN PV PLANT - **15.24MWP**

MASRIK 1 PV PLANT - **55MWP**

MASRIK 2 PV PLANT - **19.4MWP**

MERDZAVAN PV PLANT - **5.5MWP**

TALIN 2 PV PLANT - **12.5MWP**

NEGOTIATE FOR 150 MWP



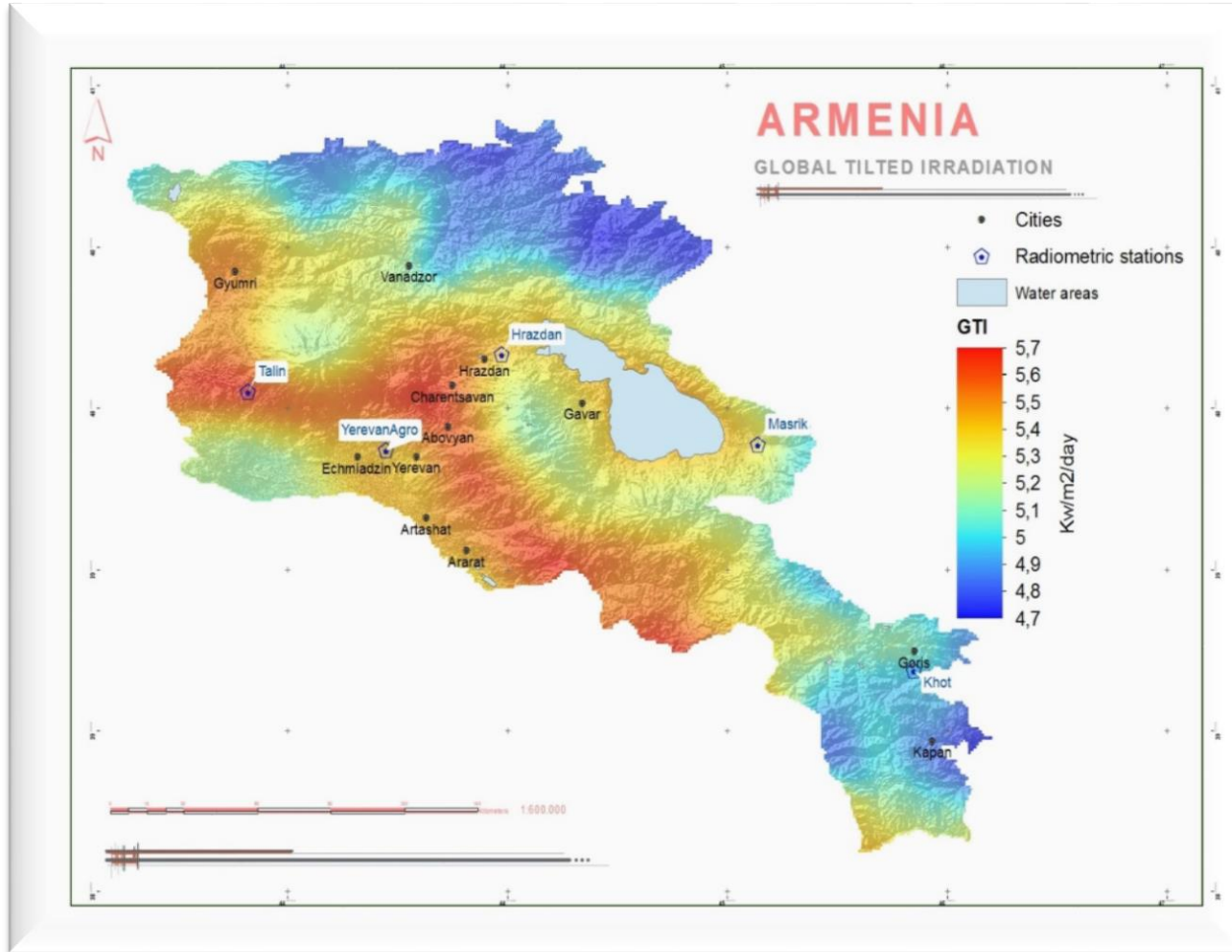


SOLAR ENERGY

AVERAGE 1,720 KWH/YEAR PER SQUARE METER, COMPARED WITH AN OF 1,000 KWH/YEAR IN EUROPE.

ONE QUARTER OF THE COUNTRY'S TERRITORY HAS AN ANNUAL

SOLAR ENERGY
IN A YEAR



MASRIK 1 PV PLANT - 55MW

- THE FIRST UTILITY-SCALE SOLAR PV PLANT OF 55 MW TO BE CONSTRUCTED IN THE REGION
- AS A RESULT OF TENDER THE LOWEST TARIFF WAS PROPOSED:
- THE PROPOSED TARIFF IS 0.0419 USD EXCLUDING VAT.
- THE GOVERNMENT SUPPORT AGREEMENT (GSA) HAS BEEN CONCLUDED BETWEEN THE GOVERNMENT OF THE RA AND FRV MASRIK CJSC ON JULY 18, 2018.
- PV PLANT LAUNCH DATE IS JANUARY 2021.



Contents of Solar PPP Project



1. Project Objective
2. Site Details
3. Transaction Structure
4. Overview - Project Agreements
5. Obligations of Developer
6. Selection Process
7. Implementation Timelines



Project Objective



Solar energy installation to support clean energy adoption measures of Government of Armenia



Objective of Project

- Development of grid connected solar power project at the designated Project Site in the Gegharkunik Marz of the Republic of Armenia



Project Installed Capacity

- Pre-Qualified Bidders are allowed to propose a Project Installed Capacity between 46 MW up to 55 MW as per their own due-diligence [Quoted Project Installed Capacity]



Implementation Model

- Design, Finance, Build, Own, and Operate (DFBOO) basis under one special purpose company (the Project Company) to be 100% owned by the Successful Bidder



Authority

- Armenia Renewable Resources and Energy Efficiency Fund (the Authority) by request of the Ministry of Energy Infrastructures and Natural Resources of RA is managing the process for selection of private developer

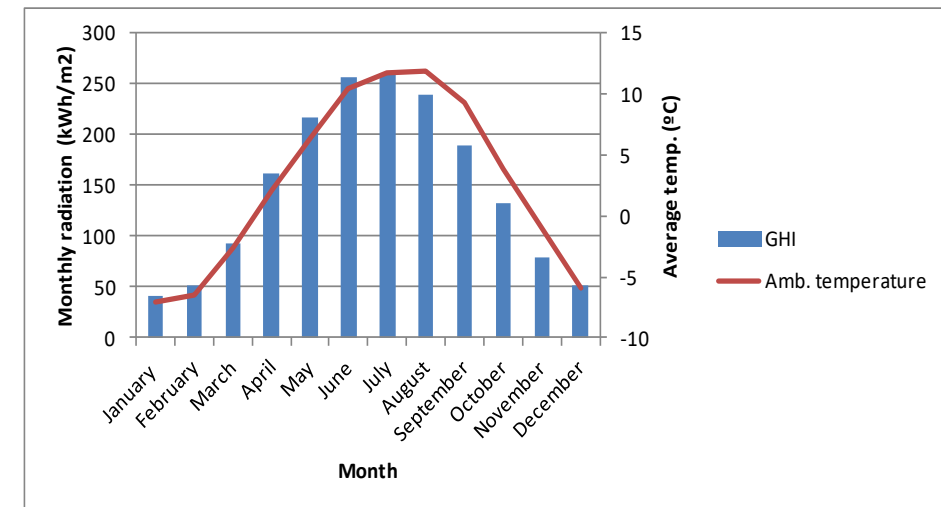
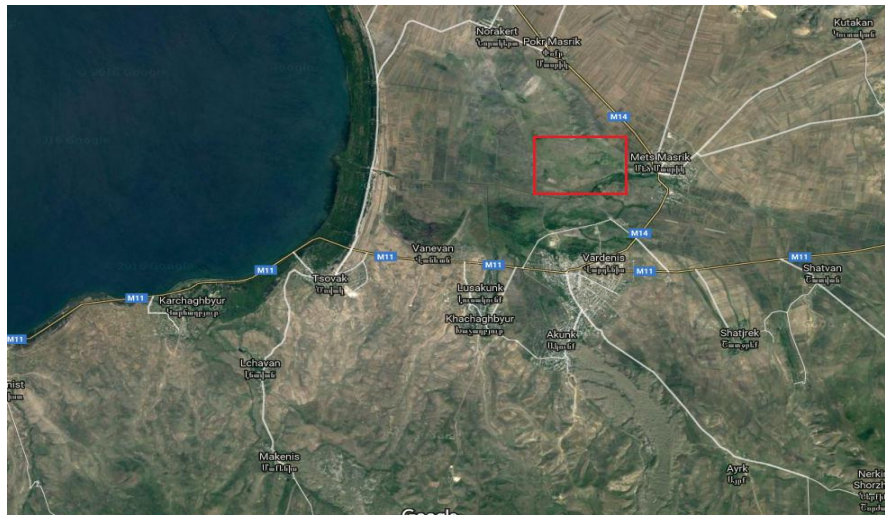
Solar Project Site Details



Location details and indicative solar resource details

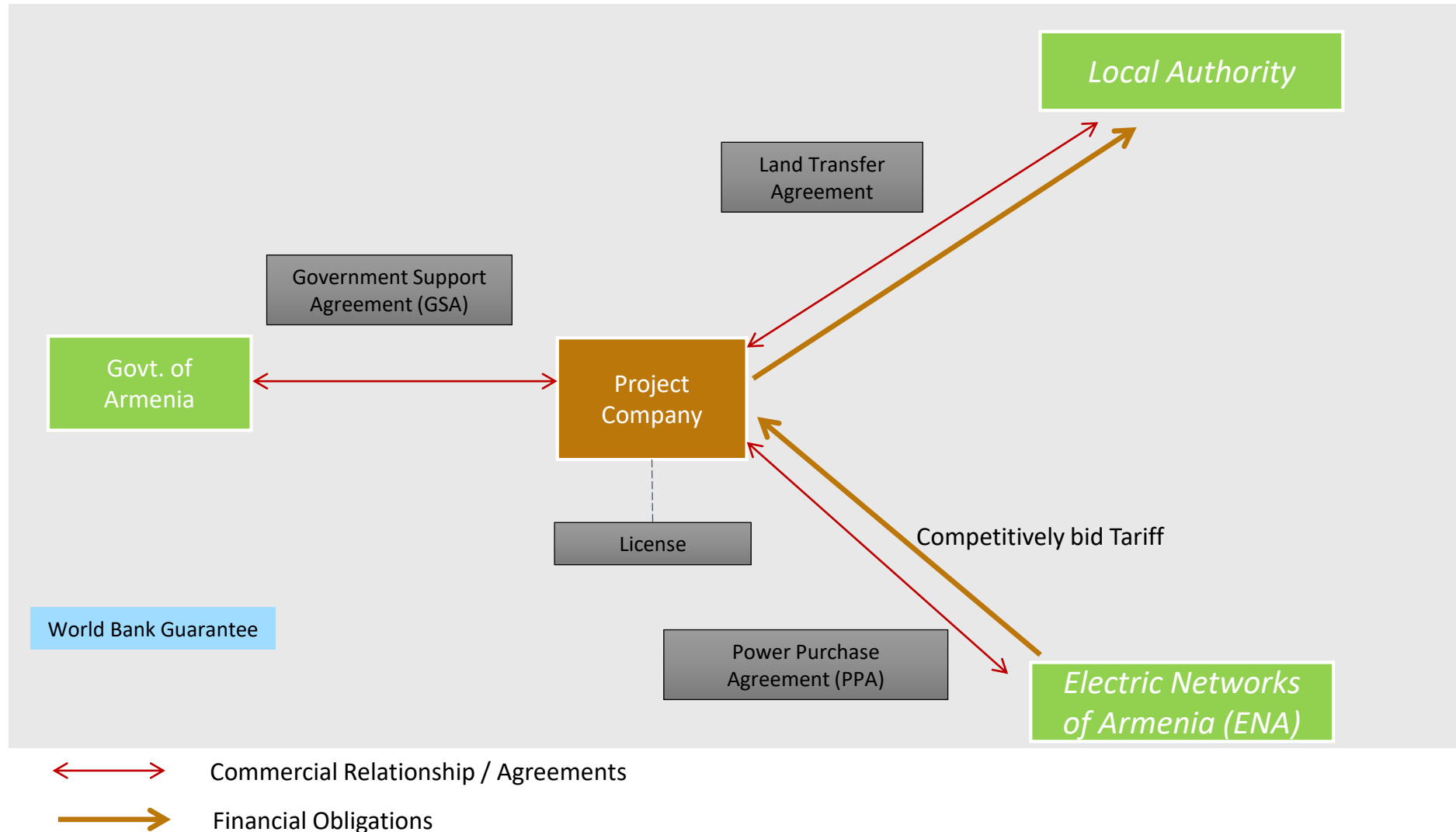
- Location: Mets Masrik, Gegharkunik marz (Armenia)
 - Lat: 40° 13.564' N; Long: 45° 43.565' E
 - Altitude: 1930 m above sea level
 - A ground measurement station installed next to the Project Site - recording solar resource measurements since May 20, 2016

ITEM	VALUE
Specific energy (kWh/kWp/year) at a Plant Availability of 99%	1607
Performance Ratio	82.0%



Transaction Structure

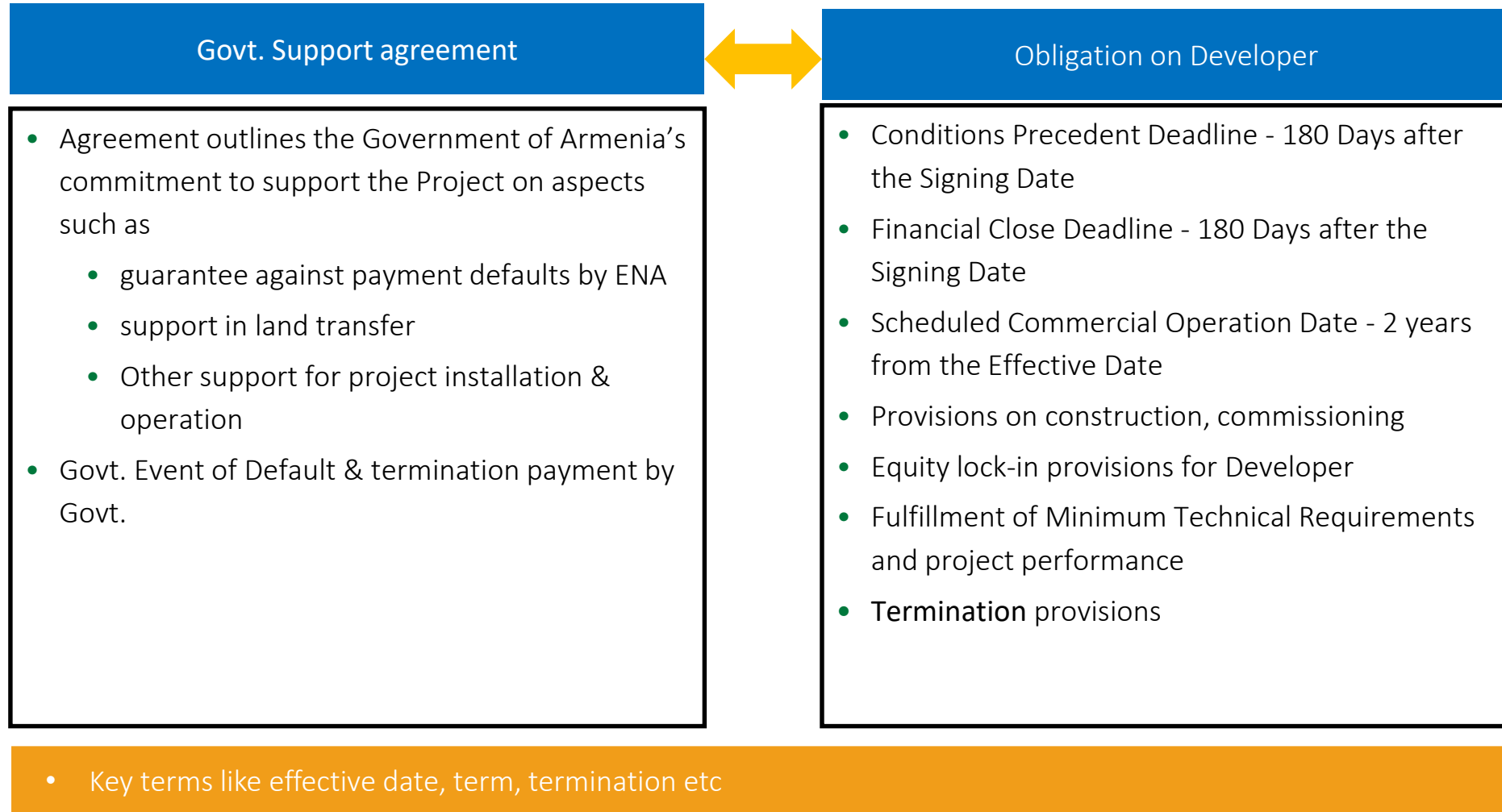
Commercial relationships & obligations



Overview of Government Support Agreement



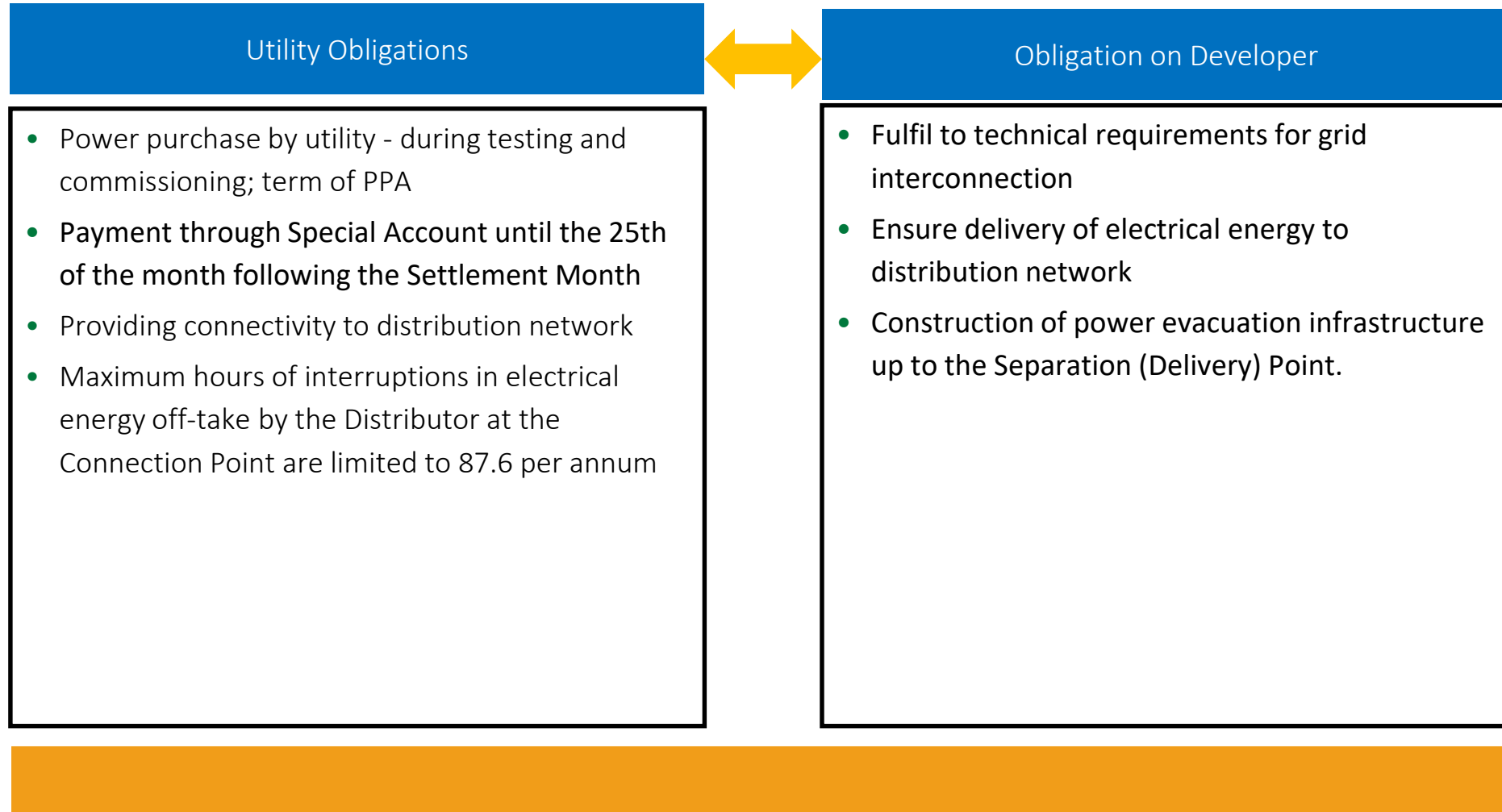
Key Points



Overview of Power Purchase Agreement (PPA)



Key Points



Overview of License



Key Points

License – Key provisions

- License specifies the terms of the license to be granted to the Project Company,
 - its various rights and obligations,
 - Tariff adjustment mechanisms, etc.
- Adjustment of Tariff to address fluctuations
 - Electrical Energy Tariff is calculated annually during 20 years after the first decision of the PSRC on Electrical Energy Tariff determination enters into force
 - Adjustment of Electrical Energy Tariff conditioned by the change in the **Official Exchange Rate** and **Inflation** in the previous Calculation Period
- License may not be sold, transferred or pledged to third parties, except as envisaged by law
- Endorsed by the PSRC

Overview of Land Transfer Agreement



Key Points

Land to be donated by Mets Masrik Community of Gegharkunik to the Authority

Land to be transferred to Developer at NO COST

Land to be used ONLY for the Solar power project

Land Transfer Agreement to be shared shortly

Obligations of Developer/Bidder



Key points

1. Project shall have a total nominal capacity output between 46 MW and 55 MW
2. Project Company shall be established and incorporated in the Republic of Armenia
3. Project will be designed, constructed and operated at the cost of the Successful Bidder
4. A Pre-Qualified Bidder shall not have any conflict of interest with the Selection Process
5. Fees & Guarantees :

Description	Amount/ Value
Project Preparatory Fee	AMD 40,000,000 (Forty Million Armenian Drams)
Local Area Development Fee (for Mets Masrik Community)	AMD 80,000,000 (Eighty Million Armenian Drams)
Bid Security, in the form of Bank Guarantee (to Authority)	USD 1,000,000 (One Million US Dollars)
Performance Bank Guarantee, in accordance with the terms of the GSA	USD 1,620,000 (One Million Six Hundred Twenty Thousand US Dollars)

Selection Process

Technical & Financial evaluation



Bid Opening & Evaluation

- Technical Evaluation :
 - First Step : Technically responsive bid check
 - Second Step : Bidders meeting RFP requirements to be declared as Technically Qualified
 - Bidder to provide Quoted Project Installed Capacity : Option from 46 MW to 55 MW
- Financial Evaluation :
 - Financial Proposals of technically qualified bids shall be opened
 - Bid tariff : USD/kWh

Selection of Successful Bidder

- Preferred Bidder – Lowest quoted Bid Tariff
- Authority will issue the Letter of Award (“LOA”) to the Successful Bidder

POST AWARD STAGE TIMELINES



	Event	Post Award Stage Schedule
A0 (B8)	Issuance of Letter of Award	Zero (Reference) Date (Z_0)
A1	Payment of Project Preparatory Fee	$Z_0 + 14$ Days
A2	Fulfilment of Performance Bank Guarantee Obligation in respect of GSA	Condition Precedent for A4
A3	Transfer of Local Area Development Fee by Selected Bidder	Condition Precedent for A4
A4	Signing of GSA with the Government of the Republic of Armenia/ Ministry of Energy Infrastructures and Natural Resources of RA	$Z_0 + 20$ Days
A5	Transfer of land title and physical possession to the Project Company	$Z_0 + 35$ Days (Conditions precedent for A7, A8)
A6	Fulfilment of Performance Bank Guarantee Obligation in respect of License	Condition Precedent for A7
A7	Application to PSRC for a License; Issue of License by PSRC	$Z_0 + 50$ Days
A8	Signing of PPA with ENA	$Z_0 + 65$ Days
A9	Financial Close Deadline for the Project	A4 + 180 Days (as per draft GSA)



THANK YOU

Karen Asatryan

Director

Armenia Renewable Resources and Energy Efficiency (R2E2) Fund

29/1 Sayat-Nova Ave., 0001 Yerevan, RA

Phone: +(374-10) 58 80 11, 54 51 21, E-mail: info@r2e2.am URL: www.r2e2.am