

Regulatory Aspects for Renewable Energy for Self-Consumption in the Kingdom of Saudi Arabia

Water & Electricity Regulatory Authority

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The Authority's Role

The authority was established to regulate the electricity sector and cogeneration in addition to district cooling technology in the Kingdom, with the aim of providing consumers with sufficient, reliable, high quality and efficient supplies, available at fair prices.

- In total there are more than 65 licenses that were issued for various related activities
- Establishing transparent, stable and non-discriminatory regulatory frameworks.
- Contribute to achieving the sustainability of the electricity sector in the Kingdom, in addition to improving the sector's efficiency in accordance with the strategic objectives of Vision 2030. Achieving these strategic objectives include:
 - Improving the efficiency of generation sector
 - Reducing the use of liquid fuels
 - Improving growth the level of environmental compliance
 - Enhancing the reliability of the electricity transmission network and enabling the integration of renewable energy sources in order to achieve the optimal energy mix targets
 - Automating and optimizing the distribution networks.

Objectives of The Regulations

-  Defining provisions for Renewable Energy Generation (REG) Systems for Self-Consumption
-  Setting up the regulatory requirements and the financial schemes related to grid connected systems
-  Establishing the necessary framework for billing arrangements of surplus energy export.
-  Safe construction, installation, maintenance and operation of renewable systems.
-  Provide protection to the consumers, and raising awareness.



Stages of The Regulations Development





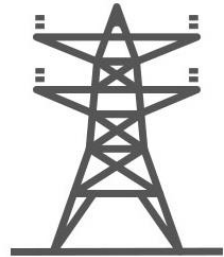
Key Initiatives for Renewable Energy Generation

Updating the Saudi Arabian Codes:

**Saudi Arabian
Distribution Code**



**Saudi Arabian
Grid Code**

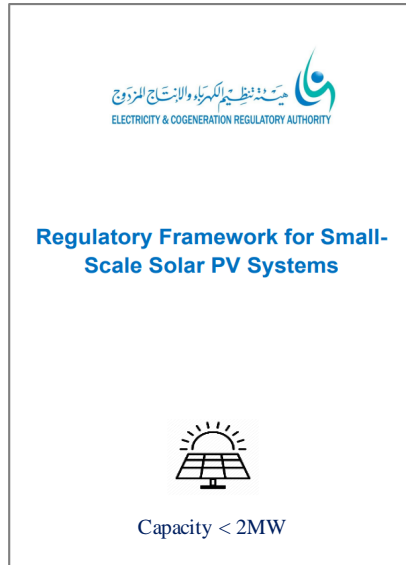


- Clarify the administrative aspects, definitions, roles and responsibilities of the connection process.
- Determining the technical and regulatory aspects of integrating renewable energy sources to the network (voltage control, protection, energy quality).
- Operational requirements

Regulations for Renewable Energy Generation

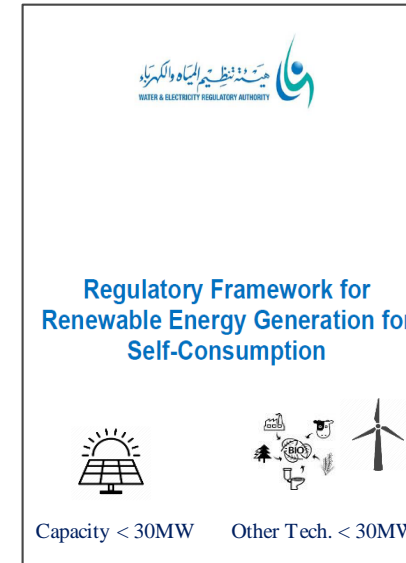
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Regulatory Framework for Small-Scale Solar PV Systems



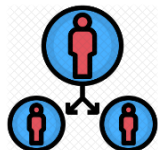
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Regulatory Framework for Renewable Energy Generation for Self-Consumption



Regulatory frameworks applies to:

Eligible consumers



Service providers



Any entity involved in the REG
(Consultant/contractor)



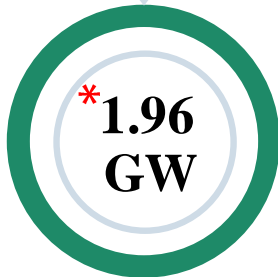
3% Maximum Cap. Allowed Per Regulation

Peak Demand (2022) = 65.3 GW

3% x 64.2 GW = 1.96 GW

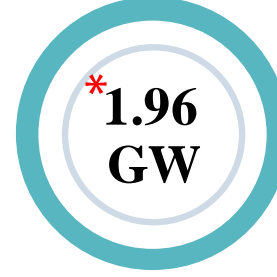
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Small-Scale Solar PV
System Regulation

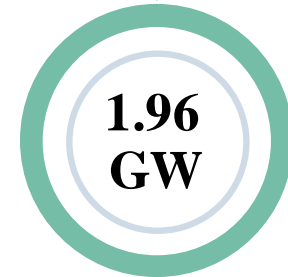


2

Renewable Systems Connected to
the Distribution Network



Renewable Systems Connected to
the Transmission Network



* Distributed depending on the peak demand of the geographical location

1


Regulatory Framework for Small-Scale Solar PV Systems

Introduction

1

The Regulatory Framework for Small-Scale Solar PV Systems

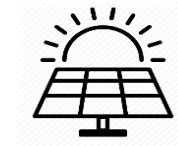
- Connection requirements for smaller than 2 MW photovoltaic (PV) systems



The screenshot shows the homepage of the Shamsi website, which is part of the Water & Electricity Regulatory Authority (WERA). The header includes the Shamsi logo and the WERA logo, along with a 'Householder Login' button and a currency symbol (£). The main navigation menu includes 'Home', 'About Shamsi', 'Qualified Consultants and Contractors', 'Services', 'Partners', and 'FAQs'. The main content area features a large heading: 'MAKE SURE OF THE BENEFITS OF GENERATING ELECTRICITY FROM SOLAR PV'. Below this heading is a sub-heading: 'Calculate the economic feasibility of using solar energy systems'. At the bottom of the main content area, there are four buttons: 'About Solar Energy', 'How to Install', 'Introduction to Shamsi', and 'How to use Shamsi'.



Regulatory Framework for Small-Scale Solar PV Systems



Smaller Than 2MW

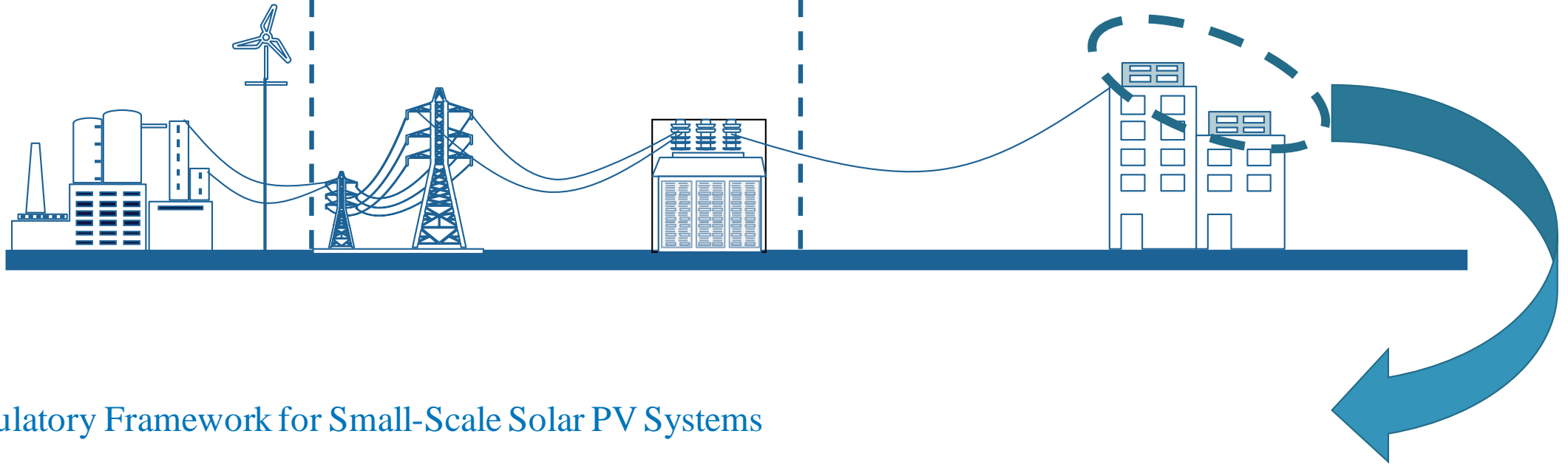


Regulatory Framework for Small-Scale Solar PV Systems

Generation Station

Transmission Network

Distribution Network



Regulatory Framework for Small-Scale Solar PV Systems

Any photovoltaic (PV) solar energy system with a capacity not exceeding (2) megawatts and connected to the distribution network for the purpose of self-consumption

Roles and Responsibilities



Important Elements of the Regulatory Framework

This regulatory framework applies to:

spark

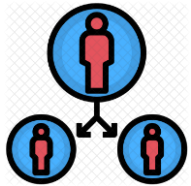
مدينة الملك سلمان للطاقة
King Salman Energy Park



الشركة السعودية للكهرباء
Saudi Electricity Company

Distribution Service Provider

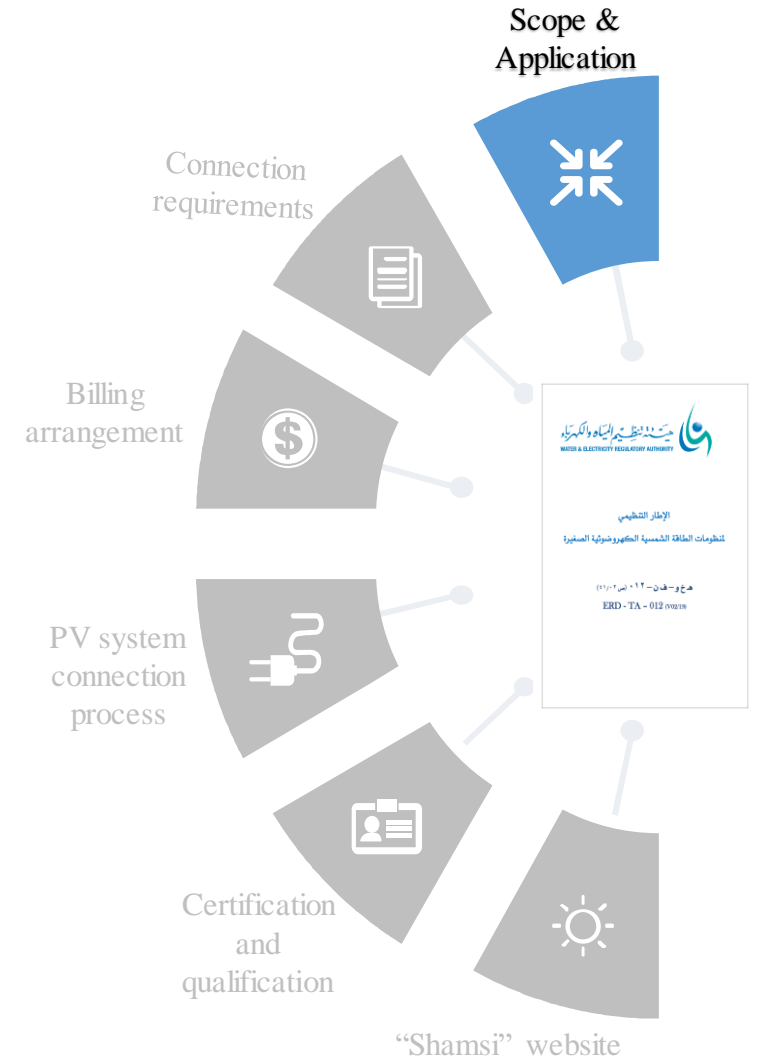
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Eligible consumers



Certified Consultant/Contractor and any other persons involved in the connection of the PV system



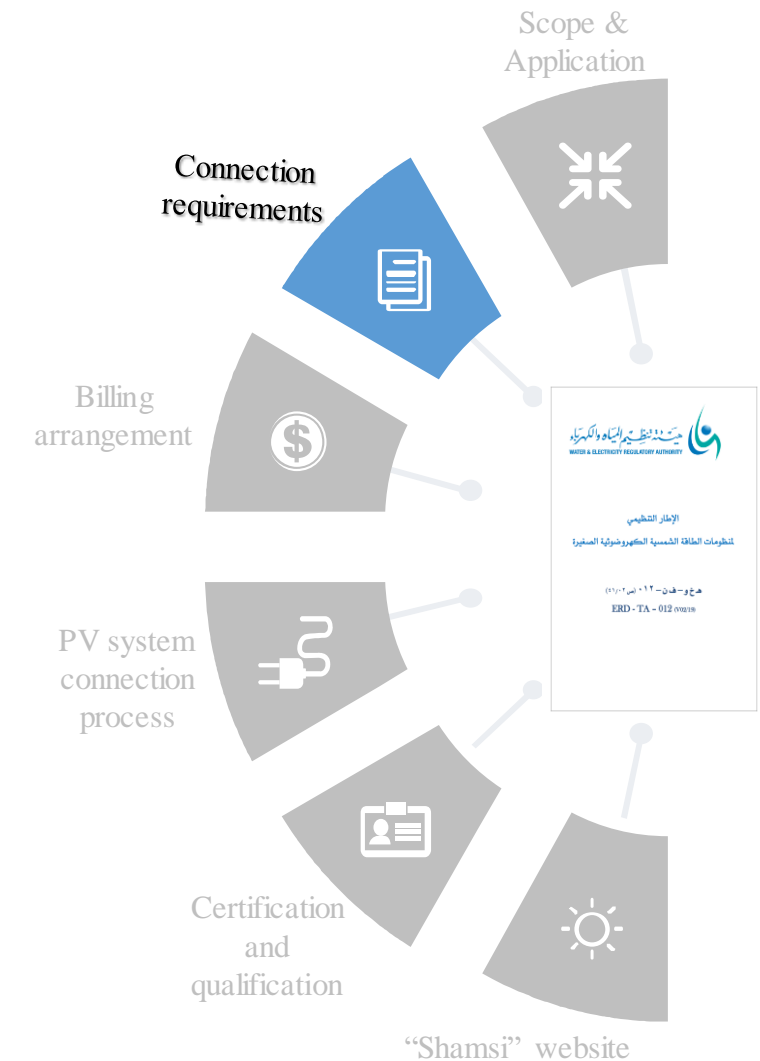
Important Elements of the Regulatory Framework

Small-scale solar PV system installation requirements

- The installation location must be at the consumer's premises
- Must not exceed (2) Megawatts and not less than (1) kilowatts
- The aggregated installed capacity must not exceed (5) megawatts for a single Electricity Department
- Safety compliance with the distribution system

Capacity of a single small-scale solar PV System project

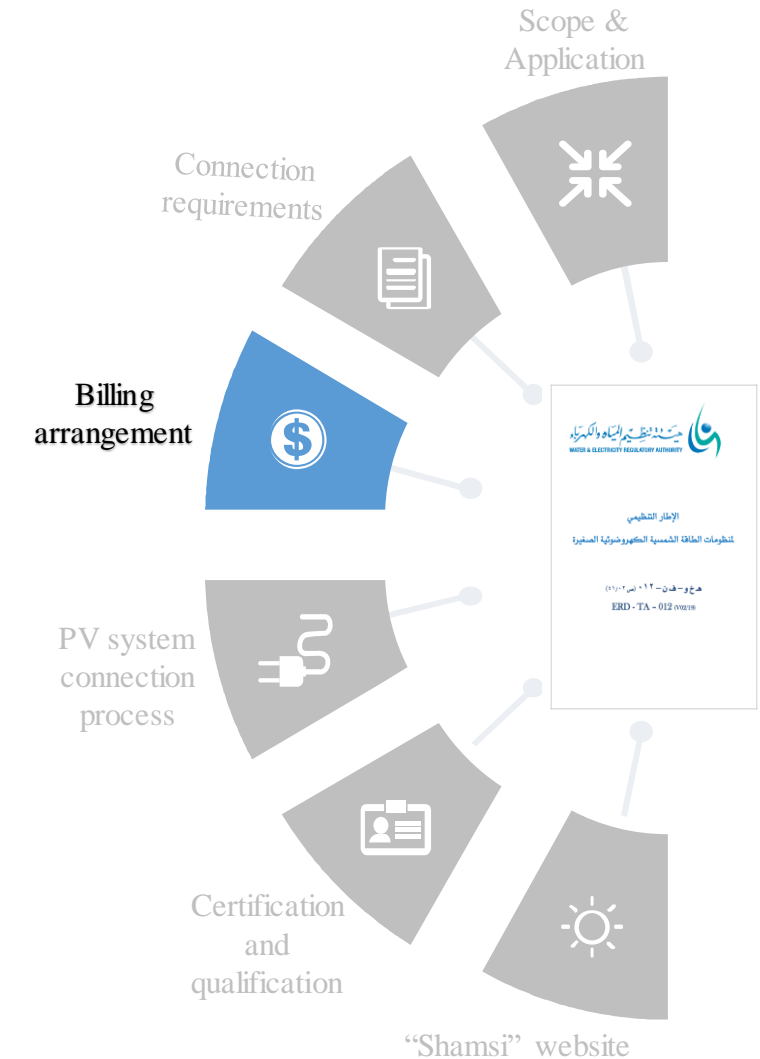
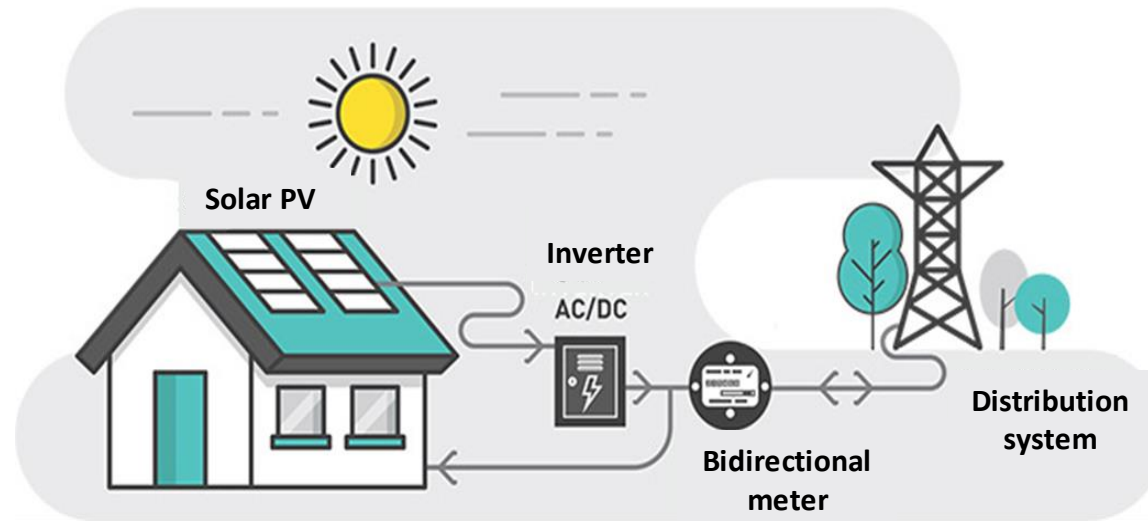
- **The system capacity shall not exceed the contracted load of the premises**



Important Elements of the Regulatory Framework

Net Billing meaning:

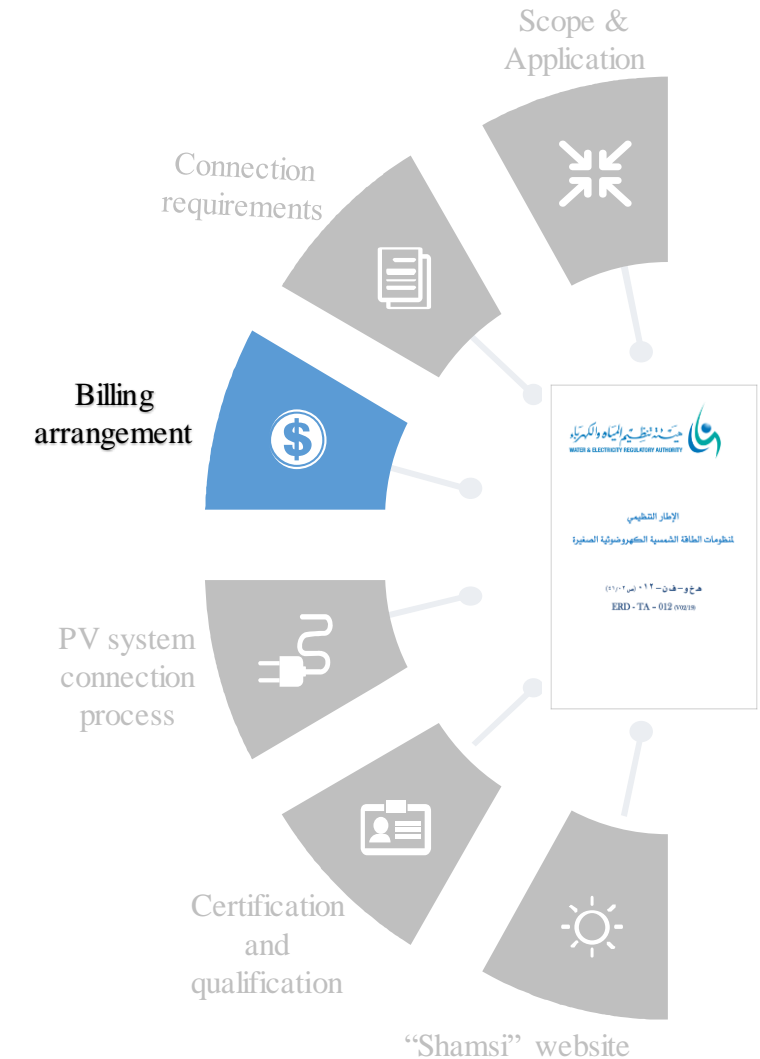
The energy exchange system and financial arrangements between the consumer and the distribution service provider, where the consumer gets electricity from the distribution service provider at the approved electricity tariff, while the surplus energy generated from small solar photovoltaic systems is exported to the electricity distribution system and recorded in the billing system as a financial balance.



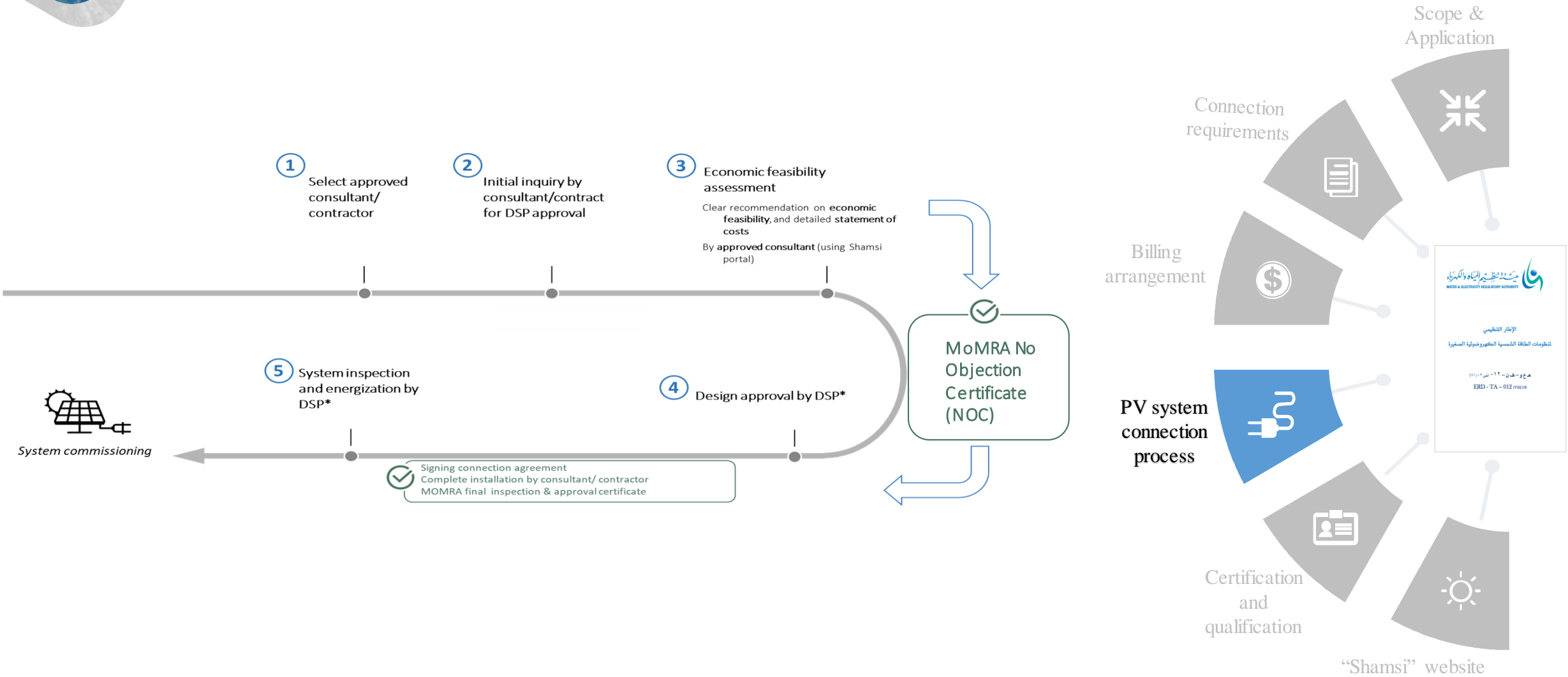
Important Elements of the Regulatory Framework

Connection Fees:

| Service | System Capacity (kW) | Fees (SAR) |
|-----------------------|----------------------|------------|
| Initial Enquiry | 50 or less | 150 |
| | More than 50 | 500 |
| REG System Connection | 50 or less | 550 |
| | More than 50 | 1,800 |
| Total | 50 or less | 700 |
| | More than 50 | 2,300 |



Important Elements of the Regulatory Framework



Important Elements of the Regulatory Framework

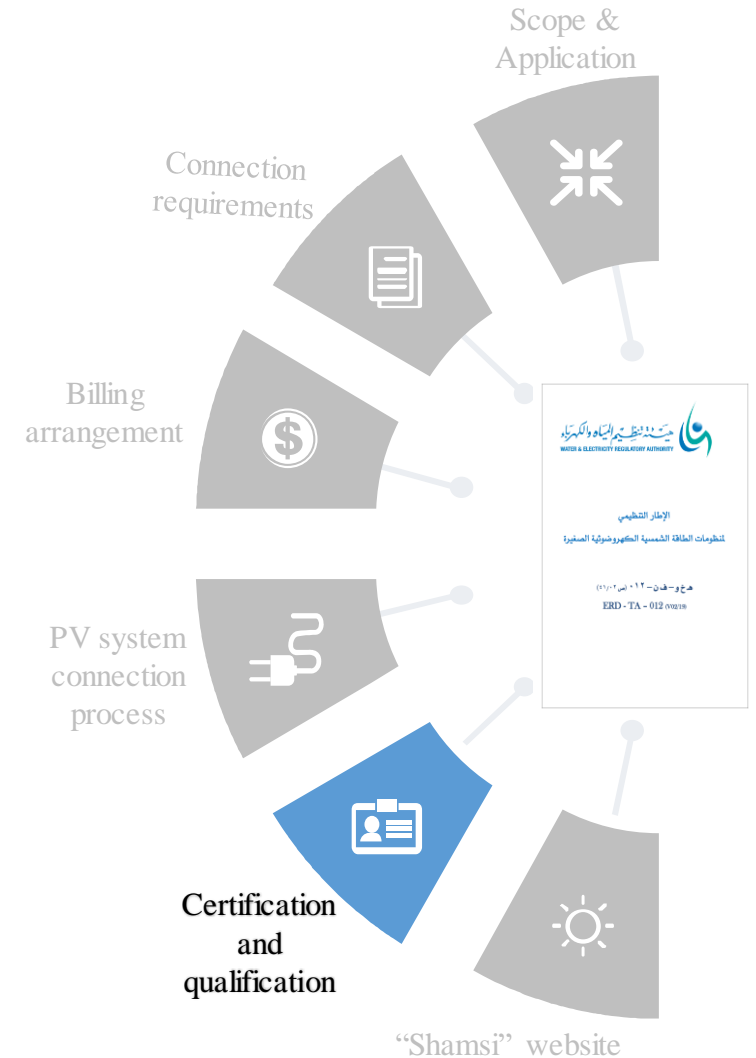
Certification and Qualification

- The Qualification Committee is responsible for approving the qualification of contractors and consultants who are allowed to design, inspect, install and maintain small solar PV systems.

Qualification Committee

Headed by a representative from the Ministry of Energy and representatives from:

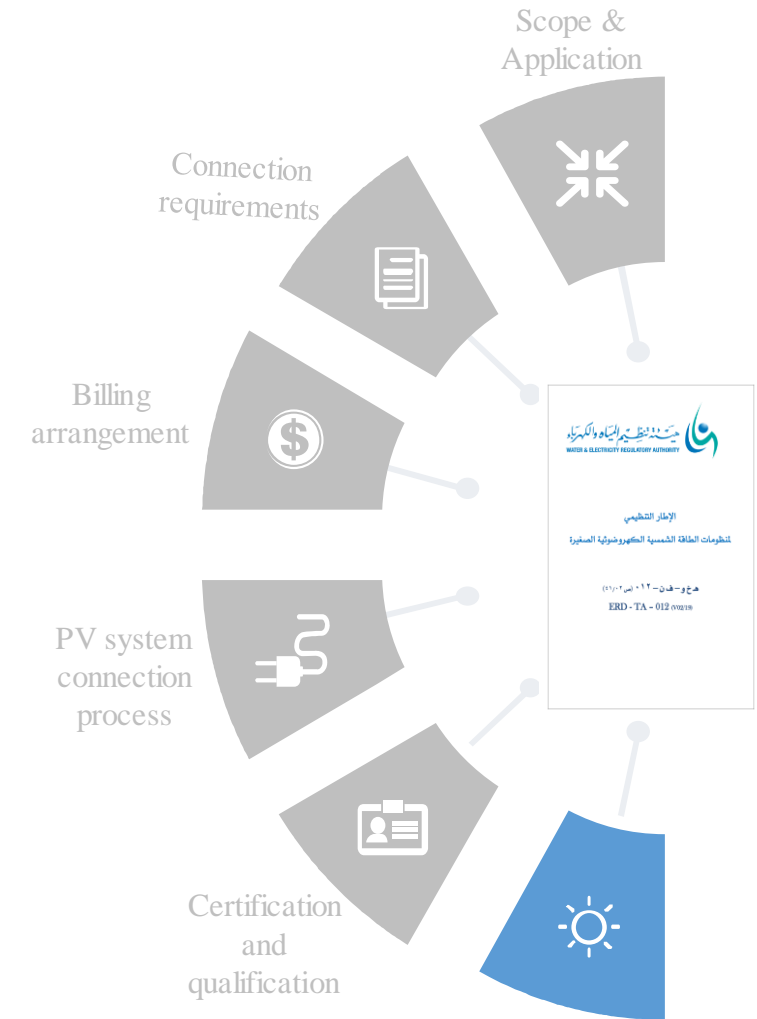
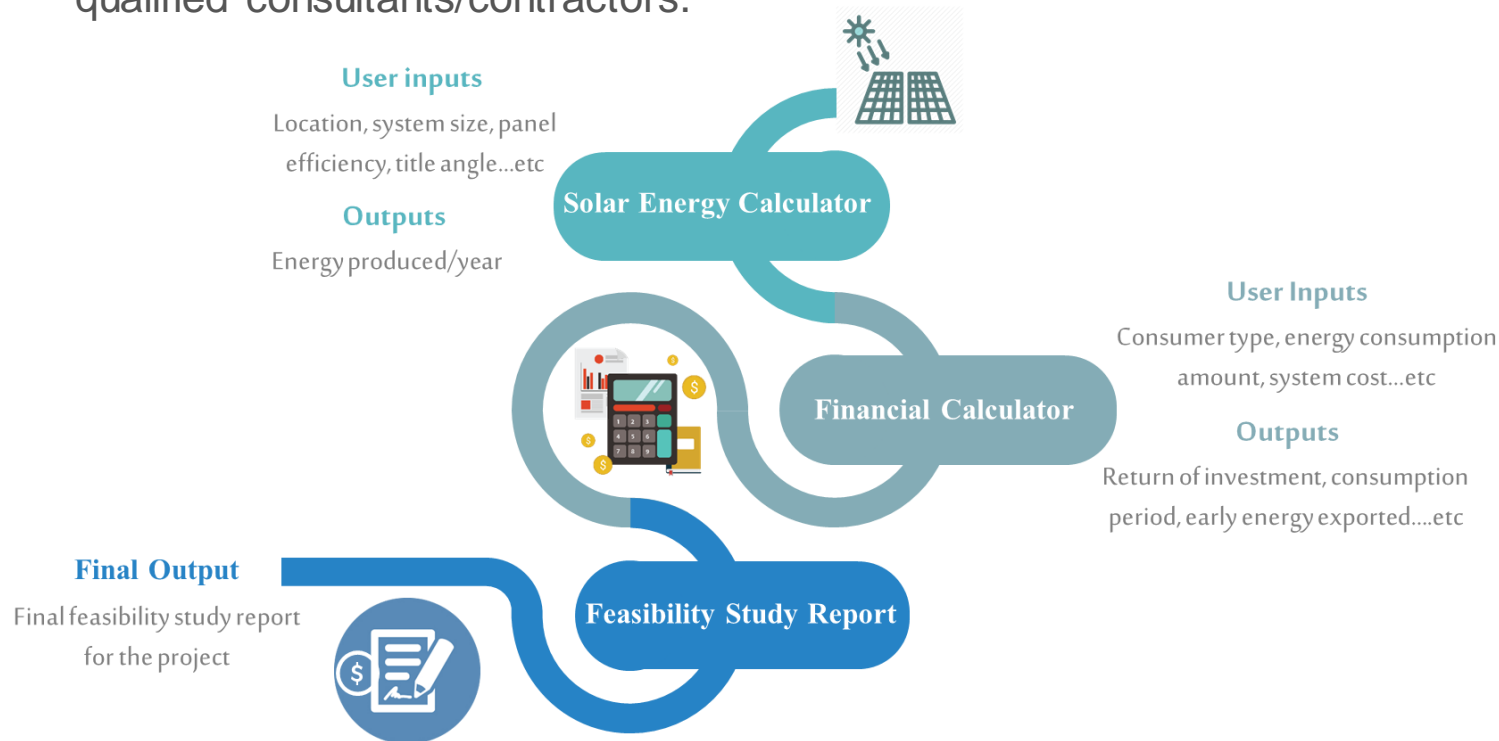
- Ministry for Electricity Affairs
- Water and Electricity Regulatory Authority
- King Abdullah City for Atomic and Renewable Energy
- Saudi Energy Efficiency Center
- Ministry of Commerce and Investment
- Ministry of Municipal and Rural Affairs and Housing
- Distribution Service Providers
- Two independent consultants



Important Elements of the Regulatory Framework

“Shamsi” website

The website aims to maximize the solar energy role in KSA by guiding the users in evaluating the expected benefit from solar panels installation through calculating the expected produced energy , providing financial feasibility and act as a liaison between interested householders and qualified consultants/contractors.



“Shamsi” website



“Shamsi” Website

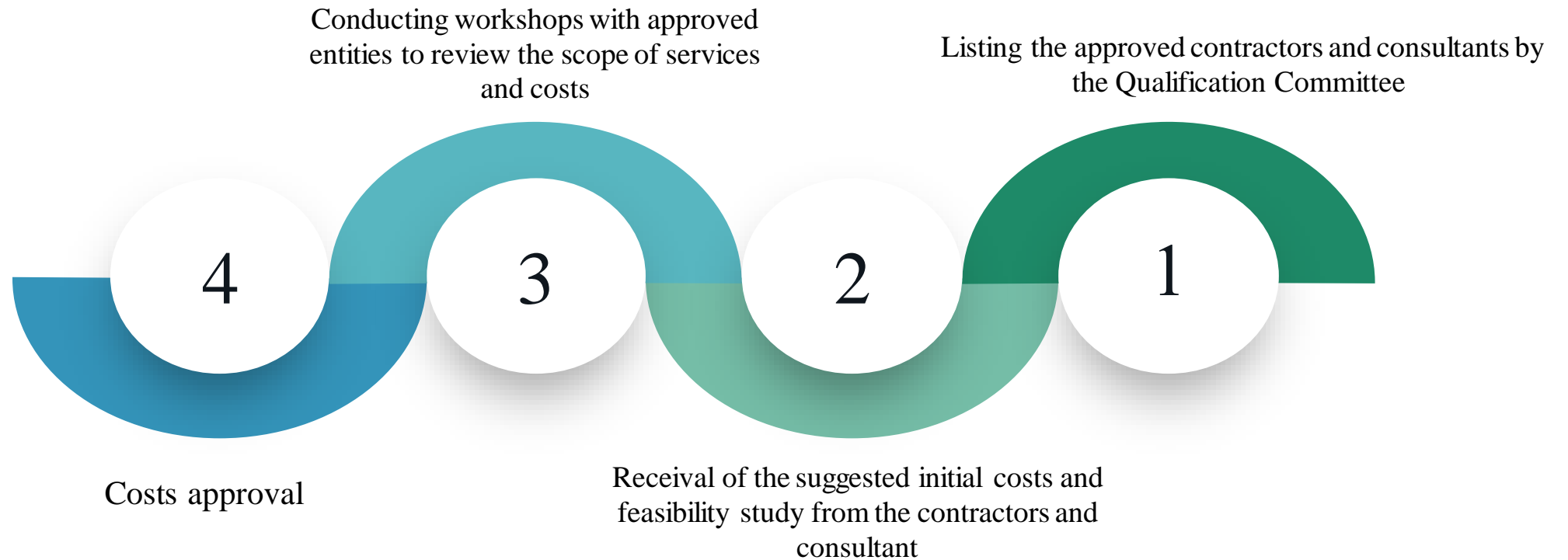


Website views: 125,762
Number of uses of the solar calculator: 33,440
Number of uses of the financial calculator: 17,871

Shamsi website: <https://shamsi.gov.sa/>



The Authority's role in determining the services costs of contractors and consultants



| Capacity of the small-scale solar PV system | Feasibility study | Initial inquiry |
|---|------------------------------|-----------------------|
| Less than 100 kW | Not more than 500 SAR | Not more than 200 SAR |
| More than 100 kW | Depends on supply and demand | |

2

Regulatory Framework for Renewable Energy Generation for Self- Consumption

2

Regulatory Framework for Renewable Energy Generation for self-consumption

- Requirements other renewable technologies, including photovoltaic above 2 MW
- Requirements for off-grid renewable systems
- The maximum allowed capacity per premises is 30MW



Regulatory Framework for Renewable Energy Generation for Self-Consumption



Capacity
< 30MW



Other Tech.
< 30MW



Allowed Configurations

1

Self-consumption on premises for distribution network



2

Self-consumption on premises for transmission network



3

Self-consumption for off-grid systems



Important Elements of The Regulation

Scope and applications

Requirements for grid connected and off-grid systems

Billing arrangement

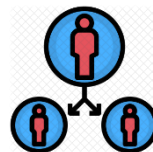
Connection Process

This regulatory framework applies to:

Entities



Any entity involved in the PV system (Consultant/contractor)

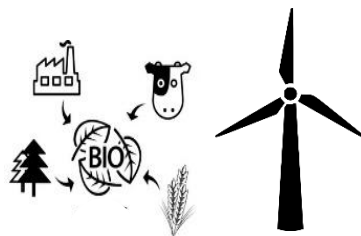


Eligible consumers

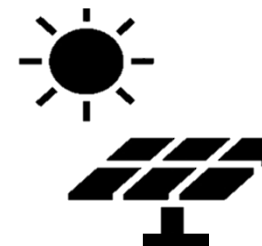


Service providers

Technologies



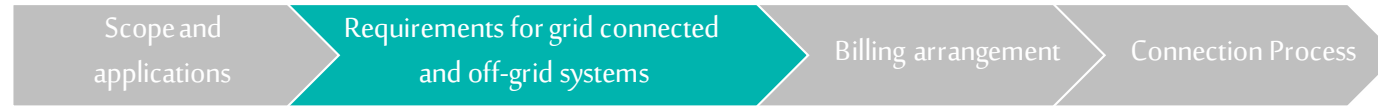
< 30MW




< 30MW




Important Elements of The Regulation



Off Grid Systems

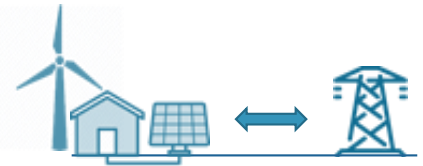


Generation and consumption on the same premises




Not exceeding 30MW


Grid Connected Systems



Generation and consumption on the same premises



Shall not exceed the contracted load



Not exceeding 30MW

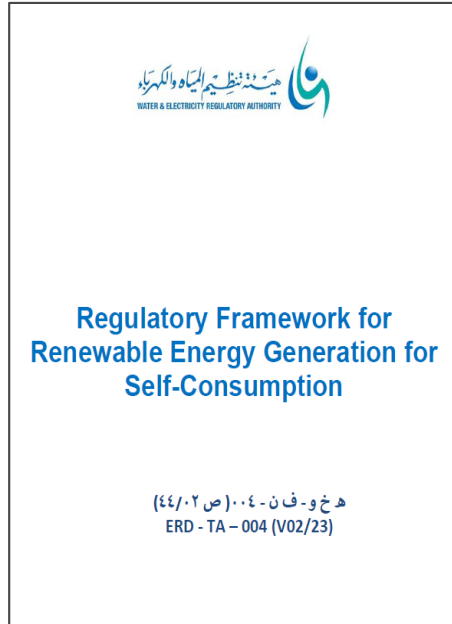
Important Elements of The Regulation

Scope and applications

Requirements for grid connected and off-grid systems

Billing arrangement

Connection Process



Compliance with Regulatory framework



Compliance with standards and codes



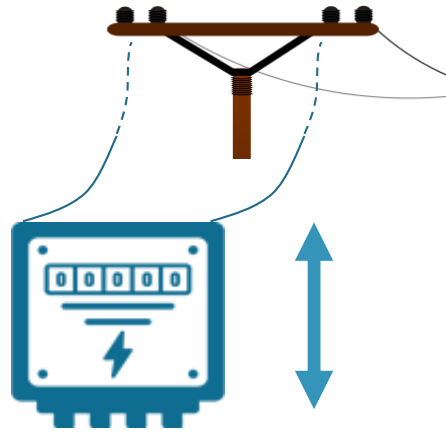
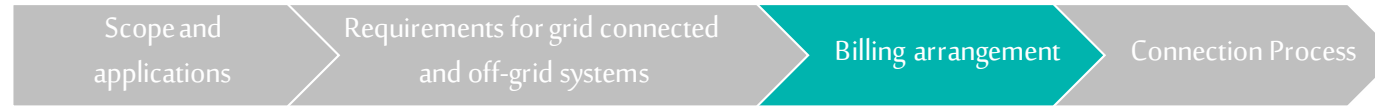
-Obtaining WERA's Study Permit before the start any preparatory work for the purpose of establishing REG systems (including preparing planning, conducting studies and announcing publicly)
- Obtaining WERA's Generation licensee before construction works



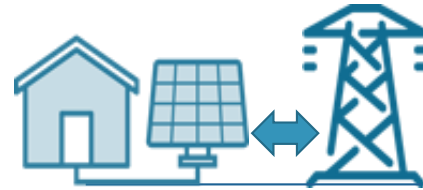
Maintaining the REG system



Important Elements of The Regulation



Net billing arrangement a mandatory arrangement for energy exchange



Applicable for grid connected systems



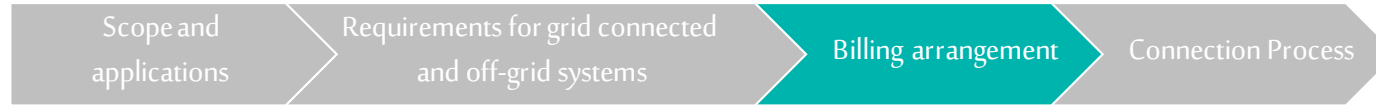
The financial balance can be utilized for several consumption accounts under the same Eligible Consumer



The accrued financial balance for Spill energy is (12) months from the date accrued



Important Elements of The Regulation

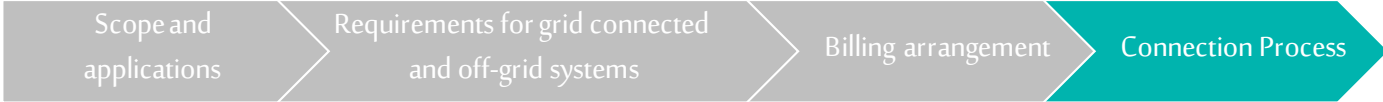


Connection Fees:

| Service | System Capacity (kW) | | Fees (SAR) |
|---------------------------|--------------------------------------|--------|------------|
| REG System Application | 1 | 4,000 | 1,500 |
| | 4,001 | 30,000 | 5,000 |
| REG System Connection | 1 | 4,000 | 15,000 |
| | 4,001 | 30,000 | 30,000 |
| REG System Re-inspection* | 20% of the REG System Connection fee | | |

* In the event that the REG Systems is disconnected due to violation of the terms and conditions of the Connection Agreement, the Eligible Consumer may apply for re-inspection of these Systems after making the required amendments or remedying any remarks of the Service Provider.

Important Elements of The Regulation



1 Grid Connected



2 Off grid



*WEARA's work permit is required, before proceeding with any work related to the project including planning or public announcement

Thank you

WERA
www.wera.gov.sa

هيئة تنظيم المياه والكهرباء
WATER & ELECTRICITY REGULATORY AUTHORITY





Allowed Configurations Per Regulation

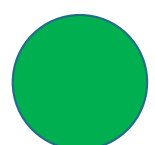
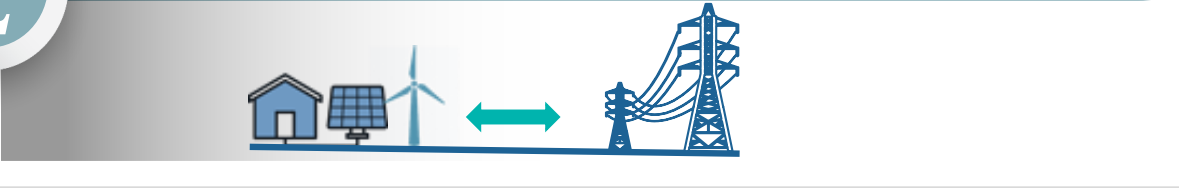
Regulatory Framework for Small-Scale Solar PV Systems

Regulatory Framework for Renewable Energy Generation for Self-Consumption

1 Self-consumption at premises for distribution network



2 Self-consumption at premises for transmission network



3 Self-consumption for off-grid systems

