



TURKEY'S RENEWABLE ENERGY MARKET AND INVESTMENT OPPORTUNITIES

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1. Renewable Energy Overview

Demand for energy and natural resources increases due to a growing economy and the population growth in Turkey. Over recent years, Turkey has seen the fastest growth in energy demand in the OECD, and according to IEA forecasts, is set to double its energy use over the next decade. Moreover, the Turkish Ministry of Energy's projections confirm that this trend will continue for the medium and long term.

Recent energy data indicate that Turkey is a net energy importer country, depending on such imports for 73% of its energy needs. This high rate of energy dependence has been the main driving force behind the formulation and implementation of new policies to commission local and renewable energy resources. The recent energy trend in Turkey has paved the way in legislative and practical terms for increasing renewables' share in total installed capacity and electricity generation.

Turkey has a substantial amount of renewable energy potential, and the utilization of this potential has been increasing over the last decade. As of the end of February 2018, hydro and wind resources constitute the vast majority of Turkey's renewable energy resources, accounting for 27,456 MW and 6,580 MW respectively of the total installed capacity of more than 86,100 MW. However, solar, biomass/biogas, and geothermal energy resources will also comprise a significant portion of the total capacity as rapid growth in utilization of these resources will be experienced in the coming years.

In the Electricity Energy Market and Supply Security Strategy Paper of May 2009, the primary goal was defined as to increase the share of domestic and renewable energy resources in the total installed power capacity. Turkey's ambitious vision for 2023, the centennial anniversary of foundation of the Republic, builds upon this foundation with targets for renewable energy resources that include:

- Increasing the share of renewables to 30 percent
- Maximizing the use of hydropower
- Increasing wind power installed capacity to 20,000 MW
- Increasing biomass installed capacity to 1500 MW
- Installing power plants with 1000 MW of geothermal and 5,000 MW of solar energy

Three models are in place in the Turkish renewable energy market in this new period: unlicensed, licensed, and the RE-Zone model.

1.1. Unlicensed Model

Renewable energy systems producing up to 1-megawatt (MW) of energy do not need a license, and are eligible for the specific Renewable Energy Support (RES) Support tariffs (YEKDEM in Turkish) indicated in Schedule-1 for the first ten years of the operation. Pursuant to the recent changes in the legislation, local content support is not provided for unlicensed projects unlike for the licensed ones. 3,919.2 and 46.9 MW of unlicensed capacity are installed in solar and wind respectively as of the end of February 2018.

1.1.1. General Procedures of Application for Unlicensed Projects

The procedure for unlicensed projects (up to 1 MW) is different from the licensed ones. The unlicensed projects do not require establishment of a company; the investor does not need to participate in a capacity bidding process (for projects applying for the same connection point/region); there is no time schedule for applications, unlike the licensed applications, which are received only during a specific time of the year; and there is no need to have metering data for the project site. The investor needs to apply to the relevant Network Operator (Distribution Company) with the following documents:

- Connection Application Form for unlicensed electricity generation
- The original or certified copy of the title deed or the rental contract for the project site
- Single-line diagram
- Bank receipt testifying to the payment of the application fee (596 TRY for capacities over 250 Kw)
- Fact sheet testifying to non-sensitive nature of the location (it should not be a fertile agricultural land)
- EIA exemption document from Provincial Directorate of Environment and Urbanization

The documents are evaluated by the relevant network operator and "invitation/call letters" are sent to the applicants considered eligible. Within the first 90 days of the announcement of the letters, the investor must apply to Turkish Electricity Distribution Company (TEDAŞ), the relevant body of the Ministry of Energy and Natural Resources responsible for project approval and completion of other steps. The investor must submit to TEDAS a file covering all technical details of the generation facility and, if exists, the connection line project.

Following the approval of TEDAS, a connection agreement is signed between the investor and the relevant network operator, which paves the way for launching the project. Before the launching of the project construction, the zoning status plan needs to be obtained from the relevant municipality, a requirement that may be completed before the approval of TEDAS.

In the final stage, the following procedures need to be completed by the investor:

- Application to the relevant network operator for preliminary acceptance
- Issuance of preliminary acceptance by the operator
- Installation of metering equipment by the operator
- Application to network operator for provisional acceptance
- Issuance of provisional acceptance by network operator
- Application to network operator for system usage agreement
- Signing of the system usage agreement between the investor and the operator

In January 2018, the Energy Market Regulatory Authority (EMRA) released the long-awaited Board Decision (Decision No. 7590 dated 28/12/2017) of "*Procedures and Principles on Application and Excess Power Purchasing for the Unlicensed Solar Generation Facilities with the Same Connection Point as the Consumption Facility*" in order to make easier installation of the solar facilities up to 10kw installed power and to lessen bureaucracy for the relevant facilities. This Decision will boost the small-scale investments of the households and industrial

entities on the rooftops and increase the market opportunities for the panel manufacturers. The facilities will benefit from the 13.3 USD cent/kwh purchasing power guarantee for the excess unutilized power. An additional amendment to the Income Tax Law was passed by the Parliament on "*exemption from income tax of those selling the excess electricity generated from the installations up to 10 kw on the rooftops or facades of the houses they own or rent*" which was published in the Official Gazette dated 27 March 2018. New legislative changes are underway and expected to be released soon to bring down more the bureaucratic steps and installation costs.

1.2. Licensed Model

Most of the power plants, including renewable energy ones, are constructed and operated on the licensed model, which deals with the types of investments over 1 MW installed capacity. In the case of solar and wind power investments, the investors apply to EMRA for pre-license in the first stage (based on the provincial capacities announced beforehand by the Electricity Transmission Company of Turkey-TEIAS). For both types of investments, the current regulation on licensing requires the applicants to have on-site metering data of at least a 1-year period that has been collected within the previous three years for the sites to be used for installation of power plants. *(For the licensed solar projects, applicants must also have metering data of at least 1-year period, but only half of the data must be collected on-site).*

Investors who apply to the EMRA for the same grid connection points/regions are subject to a bidding process that calls for reduction (reverse auction) from the RES Support (YEKDEM) tariffs (Schedule-1); the winners will be held to the reduced RES Support prices instead of the fixed tariff for the first ten years of operation. However, the investors' rights are reserved for the local content support that will apply to the facilities as identified in The Law No. 5346 (on Utilization of Renewable Energy Sources for The Purpose of Generating Electrical Energy) without being subject to any bidding or reduction.

The capacity allocation mechanism is only applicable to wind and solar power plants, which means that the investments based on other renewable energy resources such as geothermal, biomass etc. are not subject to capacity tenders.

1.2.1. General Procedures of Application for Licensed Projects

1.2.1.1. Application Process

In the case of wind and solar power plants, as underlined before, based on the announcement of the provincial capacities for the following year by TEIAS, EMRA issues a Board Decision defining the specific time schedule for the investors to submit an application for pre-license. The investors apply to EMRA for pre-license with the following documents:

- Pre-license Application form
- Certificate of authorization for real persons to represent the entity
- A copy (certified by trade registrar) of the Articles of Incorporation
- Fact sheet of the partnership structure of the company

- Fact sheet on company capital (at least 5% of the total planned investment is required – see the table-1 below on “investment amount per unit” EMRA Decision No:4709-4 dated 21/11/2013)
- Fact sheet on Generation Facility
- 1/25,000 and 1/5,000 scale maps covering facility location
- Single-line diagram
- Zoning status sheet
- Fact sheet (from Provincial Directorate of Food, Agriculture and Livestock) testifying to non-sensitive nature of the location (it should not be a fertile agricultural land),
- Guarantee letter (MW X 10,000 TRY-Upper Limit: 5,000,000 TRY, EMRA Board Decision No:4709-6 dated 21/11/2013)
- Pre-license application fee

Additional Documents Required Depending on Resource Type:

- For Hydroelectric power plants: original or certified copy of the fact sheet on “the eligibility to sign water usage agreement with the Administration of State Hydraulic Works”
- For Geothermal power plants: original or certified copy of the fact sheet on “the obtainment of the right to use relevant resources”
- For Wind and Solar power plants: A metering data report of at least 1-year period that has been collected within the previous three years (for solar at least 6-month on-site metering, for wind 1 -year on-site metering required)
- the factsheet on the ownership of the sites to be used for generation facilities

Table-1 Investment Amounts Per Unit for Fuel Sources

FUEL SOURCE	TOTAL INVESTMENT AMOUNT PER UNIT (TRY/MW_M)
Coal	1,500,000
Natural Gas / LPG	1,000,000
Fuel Oil / Nafta	1,000,000
Hydro	2,000,000
Wind	2,500,000
Geothermal	2,100,000
Biomass	1,900,000
Solar	3,000,000
Nuclear	6,000,000
Process waste heat	700,000
Others	1,400,000

Following submission of the documents above to the EMRA on the dates specified for pre-license applications, EMRA will evaluate whether the relevant documents fulfill the requirements. If the proposed location falls within the boundaries of a project land allocated through an international agreement, or for which a licensing process for a natural gas storage or refinery or oil storage is underway, the application is rejected. The generation license

applications for land are prioritized based on the fuel type, which means that domestic coal, imported coal, and renewable energy are given priority respectively.

The documents of the applicants are scrutinized, and a technical review is requested by EMRA from Directorate General for Renewable Energy under the Ministry of Energy. The authority also requests the official view of TEIAS and/or the relevant distribution company of which the project falls within the boundaries.

The investors who apply to the EMRA for the same grid connection points/regions will then be subject to a bidding process of TEIAS based on the reduction (reverse-auction) of the FIT prices indicated in the schedule-I.

1.2.1.2. The Requirements to be fulfilled during the pre-license period (between 24 months-36 months)

Once the preliminary license is granted, the investor will then be required to apply for and obtain the following permits and approvals:

- License Application form
- Certificate of authorization for real persons to represent the entity
- A copy (certified by trade registrar) of the Articles of Incorporation
- Fact sheet of the partnership structure of the company
- Obtainment of ownership/usufruct rights of the power plant site
- Approval for the zoning plan of the project site
- Preliminary construction plans for the facility
- Obtainment of relevant evaluations for environmental impact assessments
- Obtainment of the permit for technical interaction with military and civilian air services (for wind power plants)
- Obtainment of relevant evaluations pursuant to the Regulation on Military Forbidden Zones and Security Areas
- Finalization of the Water Usage Agreement with the Administration of State Hydraulic Works (for hydroelectric power plants)
- Application for system connection and usage agreements with TEIAS or the Relevant Distribution Company
- Finalization of the Agreement with the Relevant Authorities Regarding the acquisition of the right to use relevant resources (for geothermal power plants)
- License application fee
- Business deadline plan
- to increase the company capital to at least 20% of the total planned investment (see the table above on "investment amount per unit" EMRA Board Decision No:4709-4 dated 21/11/2013)
- Finalization of the Contribution Fee Agreement with TEIAS (for wind and solar power plants)
- A guarantee letter (based on the formula below – Upper Limit: 78,600,000 TRY) (the guarantee letter offered the in pre-license period is discounted)

INSTALLED POWER (MW _M)	PERCENTAGE TO APPLIED TO THE TOTAL PLANNED INVESTMENT (%)	FORMULA
$0 < P \leq 10$	3	$P \times IPU \times 0,03$
$10 < P \leq 100$	2	$IPU \times [0,3 + (P - 10) \times 0,02]$
$P > 100$	1	$IPU \times [2,1 + (P - 100) \times 0,01]$

P: Installed Power

IPU: Investment Amount Per-Unit (TRY/MW_m- see the table on "investment amount per unit" EMRA Board Decision No:4709-4 dated 21/11/2013)

The generation license period varies between 10 to 49 years. If the facility is not constructed within the allocated construction period, the license is cancelled. There are specific timelines for pre-license and construction periods (indicated in the tables below) identified pursuant to the EMRA Board Decision No. 4711 dated 21/11/2013.

Pre-license Periods

Installed Power (P-MW)	Pre-license period (months)
$P \leq 5$	24
$5 < P \leq 50$	30
$50 < P$	36

Construction Periods

Type of Generation Facility	Installed Power (P-MW)	Construction Period (months)
Wind	$P \leq 10$	22
	$10 < P \leq 50$	30
	$50 < P \leq 100$	38
	$100 < P$	46
Geothermal	$P \leq 50$	38
	$50 < P$	46
Biogas/Biomass	$P \leq 10$	24
	$10 < P \leq 50$	30
	$50 < P$	38
Solar	$P \leq 10$	18
	$10 < P \leq 50$	30
	$50 < P$	38

1.2.2. Investment Opportunities for Licensed Wind Energy Market

The Energy Market Regulatory Authority (EMRA) recently published a notice to receive pre-license applications for 2 GW connection capacities for wind power plants in April 2020. The table below lists identified provincial capacities. The application process will take place as detailed in Section 1.2.1., and the applicants will be required to have on-site metering data of at least a 1-year period that has been collected within the previous three years for the sites to be used for installation of power plants. This means, the investors not having metering data for the possible investment areas need to take action to have metering stations installed that

would provide data for a 1-year period ending no later than April 2020. The applicants may also take the option of purchasing the project companies that have already installed metering stations for the one-year period prior to the preliminary license application dates. The applicants for the same grid connection points/regions will then be subject to a Bidding Process of TEIAS based on the reduction (reverse-auction) of the FIT prices indicated in the Schedule-I.

Provincial Capacities for 2 GW

CONNECTION CODE/PROVINCE	ALLOCATED CAPACITY (MW)	CONNECTION CODE/PROVINCE	ALLOCATED CAPACITY (MW)
01/Adana	50	24/Edirne	40
02/Adiyaman	30	25/Elazığ	30
03/Afyonkarahisar	40	26/Erzincan	20
04/Ağrı – Iğdır	20	27/Erzurum	20
05/Aksaray, Kırşehir, Nevşehir	50	28/Gaziantep – Kilis	30
06/Amasya, Samsun	40	29/Hatay	40
07/Ankara, Kırıkkale, Çankırı	50	30/Isparta	50
08/Antalya	60	31/İstanbul	20
09/Ardahan – Kars	20	32/İzmir	100
10/Artvin - Rize – Trabzon	20	33/Kahramanmaraş - Osmaniye	40
11/Aydın – Muğla	60	34/Karaman - Mersin	50
12/Balıkesir	50	35/Kayseri - Niğde	70
13/Bartın - Zonguldak – Karabük	20	36/Kırklareli	60
14/Batman - Mardin - Diyarbakır -Şanlıurfa	40	37/Kocaeli - Yalova	40
15/Bayburt - Gümüşhane – Giresun	20	38/Konya	50
16/Bilecik - Eskişehir – Kütahya	60	39/Malatya	80
17/Bingöl - Tunceli	20	40/Manisa	30
18/Bitlis - Muş	20	41/Ordu	40
19/Bolu - Düzce - Sakarya	30	42/Siirt - Şırnak - Hakkari	20
20/Burdur - Denizli - Uşak	50	43/Sivas	80
21/Bursa	60	44/Tekirdağ	60
22/Çanakkale	50	45/Tokat	50
23/Çorum - Kastamonu – Sinop	50	46/Van	20
24/Edirne	40	47/Yozgat	50
Total		2.000 MW	

2. Incentives for Licensed and Unlicensed Projects

2.1. Feed-in-Tariffs

Law No. 5346 provides for a purchasing guarantee to electricity generated from renewables. According to the support mechanism, licensed and unlicensed facilities generating electricity from renewables that are operational currently or will be in operation before December 31, 2020 benefit from the tariffs in Schedule I for a maximum term of 10 years from the operation date. However, the new licensed projects tender regulation for applicants to the same connection points calls for a reverse-auction from FIT Prices.

SCHEDULE I (Provision of the law dated 29/12/2010 and numbered 6094)	
Type of Production Facility Based on Renewable Energy Resources	Feed-in-tariff Prices Applicable (US Dollar cent/kWh)
a. Hydroelectric production facility	7.3
b. Wind power-based production facility	7.3
c. Geothermal power-based production facility	10.5
d. Biomass-based production facility (including landfill gas)	13.3
e. Solar power based production facility	13.3

2.2. Local Content Support

Law No. 5346 also provides for local content support for domestically manufactured equipment used in the relevant licensed generation facility. The current legislation calls for at least a 55% local content ratio in order to be granted an incentive for a component of the generation equipment. However that doesn't mean full granting of the incentive; if the investor complies with the minimum threshold of 55% for a component of equipment, it is granted only 55% of the incentive. For each and every part above the 55% local content ratio, the investor is granted multiple incentives as listed in Schedule II.

Local Content support, which may be considered as an extra bonus, is added to the FIT prices of the relevant renewable energy generation facility. This additional tariff is provided for a term of five (5) years from the starting date of operation for a particular generation facility. Local content support is not provided for unlicensed facilities.

Principles and procedures relating to the definition, standards, certification, and inspection of the scope of domestic production in Schedule II are regulated by the Regulation dated 19.06.2011 on Domestic Manufacturing of the Equipment Used in Facilities Generating Electricity from Renewable Energy Resources.

SCHEDULE II			
(Provision of the law dated 29/12/2010 and numbered 6094)			
Type of Facility	Local Production	Local Contribution (US Dollar cent/kWh)	Content
A-Hydroelectric production facility	1- Turbine	1.3	
	2- Generator and power electronics	1.0	
B- Wind power based production facility	1- Blade	0.8	
	2- Generator and power electronics	1.0	
	3- Turbine tower	0.6	
	4- All of the mechanical equipment in rotor and nacelle groups (excluding payments made for the blade group and the generator and power electronics.)	1.3	
C- Photovoltaic solar power based production facility	1- PV panel integration and solar structural mechanics production	0.8	
	2- PV modules	1.3	
	3- Cells forming the PV module	3.5	
	4- Invertor	0.6	
	5- Material focusing the solar rays onto the PV module	0.5	
D- Intensified solar power based production facility	1- Radiation collection tube	2.4	
	2- Reflective surface plate	0.6	
	3- Sun tracking system	0.6	
	4-Mechanical accessories of the heat energy storage system	1.3	
	5-Mechanical accessories of steam production system that collects the sun rays on the tower	2.4	
	6- Stirling engine	1.3	
	7- Panel integration and solar panel structural mechanics	0.6	
E- Biomass power based production facility	1- Fluid bed steam tank	0.8	
	2- Liquid or gas fuel steam tank	0.4	
	3- Gasification and gas cleaning group	0.6	
	4- Steam or gas turbine	2.0	
	5- Internal combustion engine or stirling engine	0.9	
	6- Generator and power electronics	0.5	
	7-Cogeneration system	0.4	
F- Geothermal power based production facility	1- Steam or gas turbine	1.3	
	2- Generator and power electronics	0.7	
	3- Steam injector or vacuum compressor	0.7	

2.3. Acquisition of Land

Designated forested areas, land privately owned by the Treasury, or land under the disposal of the state in its entirety, can be utilized for the purposes of the renewable energy generation if permission is granted by the Ministry of Environment and Forestry or the Ministry of Finance. Forestry Peasant Development Revenue and Forestation and Erosion Control Revenue are not charged to the renewable energy generation facilities.

Permission, lease, easement, and usufruct permission fees are discounted by 85% for renewable energy generation facilities during the initial ten years of investment and operation of power transmission lines, including those under operation.

2.4. Incentives for Pre-license/License/System Usage Fees and Taxes

Pursuant to the Article 43.4 of the Electricity Licensing Regulation, for the facilities generating electricity from the local natural resources and the renewables, the license holders are not required to pay the yearly license fees for the first eight years following the date of completion of the power plants. Yearly license fees are calculated based on the following formula: total electricity generated in kWh X 0.003 cent/TRY.

Furthermore, pre-license and license application fees (listed in the Table-2 and Table-3) for these facilities are discounted by 90% as well.

Table-2 Pre-license Application Fees

INSTALLED POWER "P(MW)"		
0 < P ≤ 10 MW	7,000	(seven thousand) TRY
10 < P ≤ 25 MW	13,800	(thirteen thousand and eight hundred) TRY
25 < P ≤ 50 MW	20,700	(twenty thousand and seven hundred) TRY
50 < P ≤ 100 MW	34,500	(thirty-four thousand and five hundred) TRY
100 < P ≤ 250 MW	69,000	(sixty-nine thousand) TRY
250 < P ≤ 500 MW	138,000	(one hundred and thirty-eight thousand) TRY
500 < P ≤ 1000 MW	207,000	(two hundred and seven thousand)TRY
P > 1000 MW	345,000	(three hundred and forty-five thousand) TRY

Table-3 License Application Fees

INSTALLED POWER "P(MW)"		
0 < P ≤ 10 MW	7,000	(seven thousand) TRY
10 < P ≤ 25 MW	13,800	(thirteen thousand and eight hundred) TRY
25 < P ≤ 50 MW	20,700	(twenty thousand and seven hundred) TRY
50 < P ≤ 100 MW	34,500	(thirty-four thousand and five hundred) TRY
100 < P ≤ 250 MW	69,000	(sixty-nine thousand) TRY
250 < P ≤ 500 MW	138,000	(one hundred and thirty-eight thousand) TRY
500 < P ≤ 1000 MW	207,000	(two hundred and seven thousand)TRY
P > 1000 MW	345,000	(three hundred and forty-five thousand) TRY

Pursuant to Provisional Article 4 of the Electricity Market Law No. 6446, for all types of generation plants (including renewables) that will be operational by December 31, 2025, transmission system usage fees are discounted by 50% for the first five years of operation.

In the Table-4 below are listed the system usage fees determined by the Energy Market Regulatory Authority (EMRA) for the generators connected to the transmission system. There

are 14 different tariff zones across Turkey, each representing different substations. On the generation side, there are three types of tariffs used for total system usage calculation per year: *system usage fee for installed power*, *system usage fee for actual energy inflow (in terms of MW/hour)*, and *system operation fee (in terms of MW/hour)*. The varying tariff in the first column is paid to TEIAS as a fixed amount per MW for the total installed power. The fixed tariffs in the second and third columns are multiplied with the actual energy inflow (in terms of MW/hour) into the transmission line from the power plant. The total amount of all three tariffs represents the sum that must be paid to TEIAS every year. However, the bills are calculated and paid to TEIAS monthly.

Pursuant to the Provisional Article 4 of the Electricity Market Law No. 6446, during the investment periods of the generation facilities, all official transactions related to the generation facilities shall be exempt from the fees and also the relevant papers prepared shall be exempt from stamp duty.

Table-4 System Usage Fees

TARIFF ZONE	GENERATION SYSTEM USAGE	GENERATION SYSTEM OPERATION
	(TL/MW-Year)	(TL/MWhour)
1	24,053.17	5.51
2	26,222.96	5.51
3	26,462.47	5.51
4	26,804.96	5.51
5	27,970.58	5.51
6	29,392.94	5.51
7	29,561.60	5.51
8	32,561.70	5.51
9	33,840.99	5.51
10	37,577.48	5.51
11	39,579.35	5.51
12	41,270.89	5.51
13	43,039.91	5.51
14	46,167.30	5.51

2.5. Investment Incentives

Pursuant to the Council of Ministers' Decision No. 2012/3305 on the "State Aids for Investments" the renewable energy generation facilities benefit from the General Investment Incentive Scheme, which covers exemption from VAT and Customs Duties for all machinery and equipment used in the relevant power plant. Regardless of the region where investment takes place, all projects meeting both the specific capacity conditions and the minimum fixed investment amount are supported within the framework of the General Investment Incentives Scheme. The minimum fixed investment amount is TRY 1 million in Regions 1 and 2, and TRY 500,000 in Regions 3, 4, 5 and 6. However, for solar power plants, the General Incentive Scheme is only applied for those utilizing locally manufactured panels.



Major investment incentive instruments are:

Exemption from customs duties:

Customs tax exemption for imported machinery and equipment for projects with an investment incentive certificate.

VAT exemption:

VAT exemption for imported or domestically purchased machinery and equipment for projects with an investment incentive certificate.

3. Renewable Energy Resource Zones (YEKA/RE-Zone) Model and RE-Zone Tenders

3.1. General Overview of the RE-Zone Model

The Ministry of Energy and Natural Resources issued a Regulation on Renewable Energy Resource Zones on October 9, 2016 in the Official Gazette. The Regulation introduced a new investment model to support renewable energy investments and incentivize local manufacturing of renewable generation assets. The main purposes of the Regulation are to use renewable energy resources much more efficiently and effectively by identifying renewable energy zones on the public, treasury, or private-owned territories; to realize the renewable energy investments much more rapidly; to manufacture renewable energy equipment in Turkey; to use locally-manufactured equipment/components; and to contribute to research and development activities through technology transfer.

A renewable energy resource zone (RE-Zone) and its electrical connection capacity utilization rights can be offered to an eligible entity under the “Allocation on the Condition of Local Manufacturing” or “Allocation on the Condition of Using Locally-Manufactured Equipment” mechanisms.

In the first mechanism, the legal entity being offered the RE-Zone and its connection capacity utilization rights must establish an equipment manufacturing factory in Turkey according to the standards and the terms of references (ToR). A Research and Development (R&D) Center must be established by the legal entity as well. In the R&D Center, activities must be implemented for a certain period of time and in line with the pre-determined obligatory conditions like budget, number of employees, and staff qualifications. In this mechanism, locally-manufactured equipment and other local components that are defined in the ToR must be used in the RE-Zone.

In the second mechanism, the RE-Zone and its electrical connection capacity utilization rights are given to a legal entity who wins the competition and commits to procure locally-manufactured equipment and other related local components (balance of the plant) for the power plant from available Turkish factories. The equipment and components must have certain levels of local content ratios as defined in the ToR's and be compatible with the national or international standards.

Unlike the licensed projects that are subject to reverse-auction from the RES Support tariffs and are eligible for further local content support as required by the Law 5346, the bidding process for RE-Zone projects calls for a reduction from a specific ceiling price that covers both the FIT and local content support. This means that the winning legal entities will not be entitled to extra local content support. However, the PPA term in RE-Zone model goes far beyond the FIT period (currently ten years) required in the Law, and this period has been determined as 15 years for the 1 GW solar power plant tender for Karapınar RE-Zone-1 and in the 1 GW Wind RE-Zone Tender.

In 2017, Turkey finalized the largest-ever solar and wind power reverse-auctions based on the first mechanism. On March 20, 2017 a consortium of Turkey's Kalyon Enerji and South Korea's Hanwha Q CELLS won the tender for the construction of a 1-GW solar power plant in the Karapınar district of the Central Anatolian province of Konya. The winning bid was a price of USD 6.99 cent/kWh. The tender – held in a reverse auction where the ceiling price per kWh was USD 8 cent/kWh – will see 1 GW of installed capacity along with a manufacturing factory for photovoltaic (PV) equipment coming online over the next two years. Under the terms of the tender, the power purchase contract will be valid for 15 years, and the solar equipment used must be domestically sourced. The total investment in this solar energy mega project is estimated at USD 1.3 billion. The solar power plant will be operational for 30 years and meet the energy needs of more than 600,000 households. The project company will also be conducting R&D activities in Turkey for at least 10 years with the employment of at least 80% local staff.

2017 also saw Turkey hold one of the largest wind tenders, calling for 1 GW power installation and establishment of a local wind turbine factory. A consortium of German giant Siemens and Turkey's Türkerler and Kalyon Enerji Holdings won the billion-dollar wind energy tender on Aug. 3, offering the lowest power purchasing price to the Government at USD 3.48 cent/kWh. The turbine assembly plant will in the first stage supply locally-manufactured components to the 1 GW capacity RE-Zone WPPs. The plant must be set up within 21 months following signing of the Agreement according to the standards and work plans submitted in the application

stage. The WPPs will be licensed for at least a 30-year period and will not benefit from any additional premium or support from the RES Support mechanism.

3.2. RE-Zone Tender Plans for 2018

The Ministry of Energy and Natural Resources recently announced the following potential sites for new wind and solar RE-Zone projects for which tenders will be held in 2018. Details of the new tenders, such as the allocation mechanism (new factory or procurement from local manufacturers), localization rate, and ceiling price will be released in the coming months.

Potential RE-Zone Sites

TYPE	PROVINCES	LOCATION SIZE
Wind	Edirne (Saros)	476.8 km ²
Wind	Çanakkale (Gelibolu)	283.7 km ²
Wind	Kırklareli (Kıyıköy)	337.8 km ²
Solar	Hatay (Erzin)	75.67 km ²
Solar	Niğde (Bor)	25,53 km ²
Solar	Şanlıurfa (Viranşehir)	23,1 km ²