TECHNICAL ASSISTANCE FOR RENEWABLE ENERGY AND ENERGY EFFICIENCY SUPPORT FOR MUNICIPALITIES AND UNIVERSITIES

TRAINING PROGRAM

ADDITIONAL COURSE NOTES

ENERGY EFFICIENCY AND RENEWABLE ENERGY LEGISLATION IN TURKEY

Ankara, 2021

ENERGY EFFICIENCY LEGISLATION IN TURKEY

This chapter covers the following topics:

- Legislation Concept
- History of the Energy Efficiency Legislation in Turkey
- Main Structure of Energy Efficiency Legislation
- Energy Efficiency Obligations
- Public Obligations
- Industrial Enterprises
- Energy Performance Contract
- Supports and Incentives

Energy Efficiency Legislation in Turkey

Ali Naci Işıklı

1.1. Legislation Concept

The legislation concept is defined in the Turkish Language Institution's Current Turkish Dictionary as "the whole body of laws, statutes, regulations, etc. in force in a country."[1]

Figure 1 illustrates the pyramid of the new legislation that has entered into force since the Constitutional Amendment of April 16, 2017. The lower levels of the pyramid must be in compliance with the higher levels.

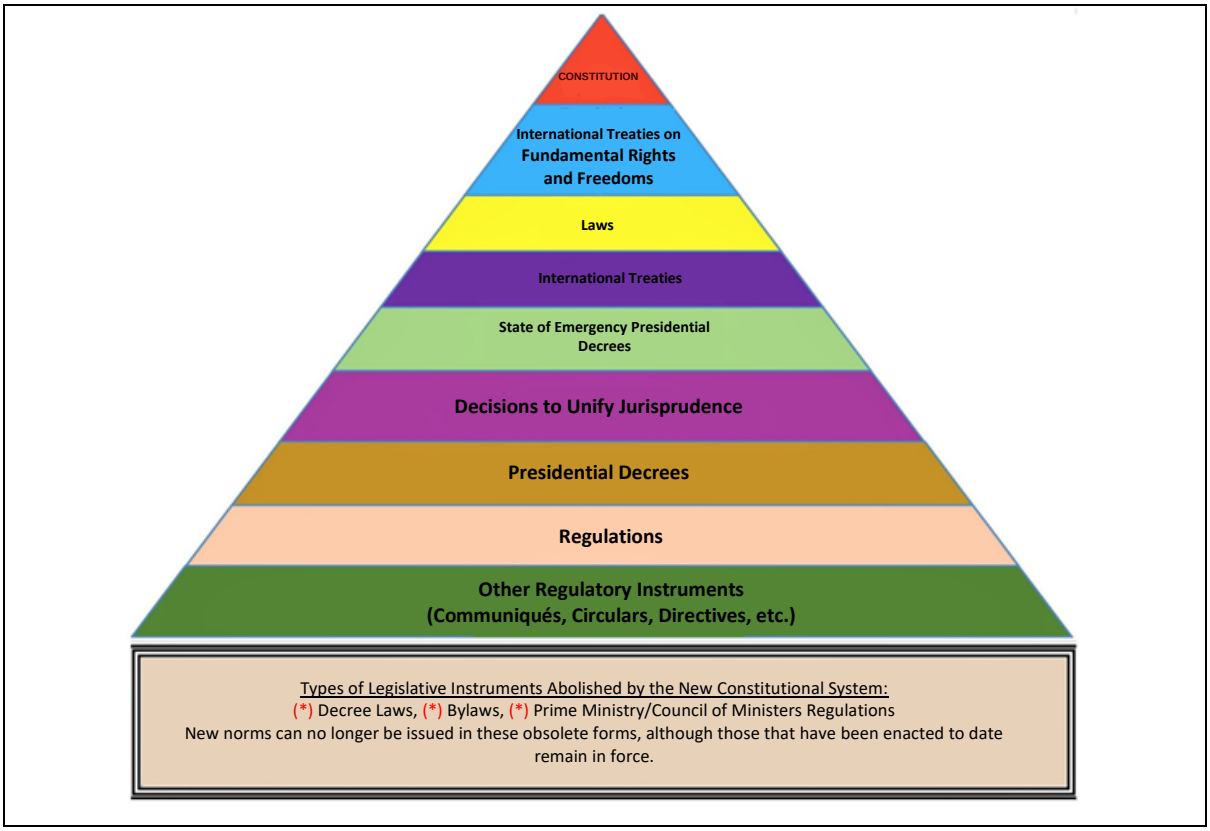


Figure 1: Legislative pyramid after the Constitutional Amendment of April 6, 2017[2]

1.2. History of the Energy Efficiency Legislation in Turkey

Turkey's focus on energy efficiency began officially with the "Regulation on Efficiency in Fuel Consumption of Heating and Steam Plants and Reduction of Air Pollution", published in Official Gazette no. 16102 of November 3, 1977, and continued with the "Regulation on the Thermal Insulation of Buildings", published in the Official Gazette on October 30, 1981.

Pursuant to the provisions of the "Regulation on the Measures to be Taken by Industrial Enterprises to Increase the Efficiency of Energy Consumption", published in the Official Gazette of November 11, 1995,

[1] https://sozluk.gov.tr/
[2] http://www.yahyaderyal.net/index.php?link=155

the **National Energy Savings Center** was established within the General Directorate of Electrical Power Resources Survey and Development Administration to carry out national and international activities related to energy efficiency. Its first concrete output was the "Energy Efficiency Strategy for Turkey", published in April 2004. This was followed by "Energy Efficiency Law" No. 5627, published on April 18, 2007.

The Energy Efficiency Law was followed by the "Regulation on the Allocation of Heating and Sanitary Hot Water Expenses in Central Heating and Sanitary Hot Water Systems", published on April 14, 2008, the "Regulation on Rules and Procedures for Increasing Energy Efficiency in Transportation", published on June 9, 2008, the "Regulation on Increasing Efficiency in the Use of Energy Resources and Energy", published on October 25, 2008 (renewed on October 27, 2011), the "Regulation on Energy Performance in Buildings", published on December 5, 2008, the "Regulation on the Eco-design of Energy-related Products", published on October 7, 2010, and the "Regulation on Energy Efficiency Audits", published on July 6, 2018. During this development process, revisions were made to the existing laws and regulations, some additional regulations were issued and secondary legislative actions were carried out.

Furthermore, the "Energy Efficiency Strategy Document 2012-2023", published on February 25, 2012 and the "National Energy Efficiency Action Plan 2017-2023", published on January 2, 2018 set forth the targets, methods and implementation plans.

The declaration of 2008 as "Energy Efficiency Year, and the Prime Ministry Circular on the "replacement of incandescent lamps in public buildings", the Presidential Circular on "15% Energy Savings in the Public", published on August 16, 2019, and the Presidential Decree on "Implementation of Energy Performance Agreements in the Public", published on August 21, 2020 are among the activities initiated to emphasize the issue.

1.3. Main Structure of Energy Efficiency Legislation

1.3.1. *Energy Efficiency Law*

The Energy Efficiency Law is the main legislation regulating energy efficiency efforts in Turkey. The first two articles of the law define its purpose and scope as follows:

> **The purpose of this Law** is to increase efficiency in the use of energy resources and energy in order to use energy effectively, avoid wastage, ease the burden of energy costs on the economy and protect the environment.
>
> **The Law covers** the rules and procedures for increasing and promoting energy efficiency in energy generation, transmission, distribution and consumption, at industrial establishments, buildings, power generation plants, transmission and distribution networks and in transport, and raising the awareness of the general public about energy and the utilization of renewable energy sources.

The remaining part of the Law consists of 20 articles, two supplementary articles and seven provisional articles on the Energy Efficiency Coordination Board (this task is carried out by the Ministry of Energy and Natural Resources), authorizations, training/awareness/practices, supports/other practices, administrative sanctions (administrative fines), authorities of the Ministry, exceptions, etc.

1.3.2. Regulation on Increasing Efficiency in the Use of Energy Resources and Energy (EER)

This was developed to explain the implementation of Energy Efficiency Law No. 5627. It comprises 39 articles and 15 provisional articles, and has been amended four times to date, most recently on 14/03/2020.

1.3.3. Regulation on Energy Efficiency Audits

This consists of 20 articles and defines the rules and procedures regarding the auditing of the obligations and responsibilities of real or legal persons who are held "liable and responsible" according to Energy Efficiency Law No. 5627.

1.3.4. Regulation on Energy Performance in Buildings (BEP Regulation)

This sets forth the rules and procedures related to the effective and efficient use of energy resources and energy in buildings, the prevention of energy waste and the protection of the environment, and applies to new buildings and major renovations to existing buildings that require project changes. It governs the development of architectural, mechanical and electrical projects of buildings as well as the design, implementation, operation, periodic maintenance and auditing of thermal insulation, mechanical installation, heating and cooling systems, ventilation and air conditioning systems, sanitary hot water generation and distribution systems, automatic control, electrical installation and lighting systems, renewable energy sources, heat pump and cogeneration systems, and details of the Energy Performance Certificate (EPC). For new buildings to obtain an "occupancy permit", their projects and construction must be at least class C.

1.3.5. Regulation on the Eco-design of Energy-related Products

This defines the framework of the conditions that must be complied with in the design of energy-related products so that they can be placed on the market or put into service. It states that the products covered by the regulation will be determined by the implementation communiqués published by the authorized institutions, and that the products must bear the "CE" mark in order to be placed on the market. It regulates issues such as placement on the market or entry into service, the responsibilities of importers, markings, declarations of conformity, conformity assessments, national standards, requirements for components and sub-components, and implementation communiqués.

❖ **Major Circulars**

- Circular on Energy Efficiency in Public Procurement

❖ **Major Communiqués**

- Communiqué on the National Calculation Methodology of Energy Efficiency in Buildings
- Communiqué on Rules and Procedures for Calculating Energy Efficiency of Cogeneration and Micro-cogeneration Plants

❖ **Major Rules and Procedures for Implementation**

The instruments developed for the implementation of some of the issues in the energy efficiency law / regulation include:

- Rules and Procedures Regarding the Use of LED Luminaires for General Lighting
- The Implementation Rules and Procedures for the Issuance of Authorization Certificates to Institutions and Organizations Providing Energy Efficiency Services
- Implementation Rules and Procedures for Energy Efficiency Training and Certification Activities
- Implementation Rules and Procedures for Energy Efficiency Supports

1.3.6. Energy Efficiency Strategy Document 2012–2023

Target: By 2023, to reduce the amount of energy consumed per GDP of Turkey (energy intensity) by at least 20% when compared to 2011

Strategic Objectives:

- To reduce energy intensity and energy losses both in industry and in the services sector
- To reduce the energy demand and carbon emissions of buildings; to promote environmentally friendly sustainable buildings that use renewable energy
- To ensure market transformation in favor of energy-efficient products
- To increase efficiency in electricity generation, transmission and distribution, and to reduce energy losses and harmful environmental emissions
- To reduce fossil-fuel consumption per motor vehicle, to increase the share of public transport in road, sea and rail transport, and to prevent unnecessary fuel consumption in urban transportation
- To ensure effective and efficient use of energy in the public sector
  - *To reduce the annual energy consumption of buildings and facilities of public institutions by 20 percent by 2023*
  - *To discontinue the procurement of goods and services involving use of energy that does not meet the minimum efficiency criteria of the Ministry*
  - *To develop efficiency improvement projects based on the results of energy audits in the buildings and facilities of public institutions, and to use budget appropriations for maintenance and repair primarily for these projects*
  - *To gradually discontinue use of vehicles that have completed their economic life in the service of public institutions*
  - *To implement efficiency improvement actions in private-sector buildings and facilities through Energy Performance Contracts*
- To strengthen institutional structures, capacities and cooperation, to promote the use of advanced technologies and awareness campaigns, and to develop financing platforms outside the public sector.

1.3.7. National Energy Efficiency Action Plan 2017–2023

Main Target: To reduce primary energy consumption in 2023 by 14 percent when compared to 2017

Savings target: 23.9 million TOE, 8.4 billion USD, 66.6 million tons of CO_2 by the end of 2023

Actions: (6 categories, 55 *actions*)

- **Cross-cutting Areas** *(11 actions)*
  - ***Establish and Increase the Efficiency of Energy Management Systems***
  - *Develop a National Financing Mechanism for Energy Efficiency*
  - *Support Energy Efficiency Projects through Energy Efficiency Competitions*
  - *Develop Guides, Standard Contracts and Similar Bases Containing Technical, Legal and Financial Aspects for Energy Efficiency Projects*
  - *Develop Registration, Database and Reporting Systems for Energy Efficiency Activities*
  - *Improve Facilities and Effectiveness, Ensure the Coordination and Control of International Energy Efficiency Financing Schemes*
  - *Strengthen the Administrative and Institutional Structure*
  - *Conduct Awareness-raising and Training Activities on Energy Efficiency*
  - *Energy Efficiency Audits*
  - *Adopt Sustainability in Public Operations and Procurement*
  - *Establish an Obligation Program for Energy Distribution or Retail Companies*
- **Buildings and Services Sector** *(12 actions)*
  - *Identify and Share Best Practices on Materials and Technology in the Construction Sector*
  - *Create a Database of the Energy Consumption Data of Buildings*
  - *Set Energy Saving Targets for Public Buildings*
  - *Improve Energy Efficiency in Municipal Services*
  - *Rehabilitate Existing Buildings and Improve Energy Efficiency*
  - *Promote Central and District Heating/Cooling Systems*
  - *Increase the Energy Performance Certificate Ownership Ratio of Existing Buildings*
  - *Promote Sustainable Green Buildings and Sustainable Settlements*
  - *Promote Energy Efficiency in New Buildings*
  - *Improve the Energy Performance of Existing Public Buildings*
  - *Scale-up the Use of Renewable Energy and Cogeneration Systems in Buildings*
  - *Allocate Funds to Buildings of SME Category for Energy-efficiency Audit Programs and Audits*
- **Industry and Technology Sector** *(7 actions)*
  - *Scale-up Cogeneration Systems in Large Industrial Plants Using Heat*
  - *Provide Support to Increase the Number and Diversity of Energy Efficiency Projects in the Sector*
  - *Improve Efficiency in the Sector*
  - *Implement Energy Efficiency Performance Standards and Environment-friendly Design, Production and Labeling System in Appliances*
  - *Support Efficiency Improvement Projects in Industry*
  - *Mapping Energy Saving Potential in Industry*
  - *Improve Voluntary Agreements*
- **Energy Sector** *(10 actions)*
  - *Identify the Potential of Cogeneration and District Heating/Cooling Systems and Prepare a Road Map*
  - *Implement Efficiency Standards for the Natural Gas Infrastructure*
  - *Present Customers with Comparable and Detailed Bills, Create an Energy Data Platform for the Smart Management of Measurement Data*

- *Harmonize the Legislative Framework on Electric Metering with the EU Acquis (Scale-up Smart Metering)*
- *Implement Minimum Performance Standards for Transformers*
- *Manage Peak Demand Arising from Heating and Cooling*
- *Improve Energy Efficiency in Public Lighting*
- *Improve Efficiency in Electricity Transmission and Distribution*
- *Improve Efficiency in Existing Power Generation Plants*
- *Build a Market Infrastructure for Demand-Side Response*

- **Transport Sector** *(9 actions)*
  - *Promote Energy-efficient Vehicles*
  - *Develop Benchmarking on Alternative Fuels and New Technologies*
  - *Develop and Improve Bicycle and Pedestrian Transport*
  - *Reduce Traffic Density in Cities: Discourage the Use of Automobiles*
  - *Promote Public Transport*
  - *Develop and Implement Institutional Restructuring for Urban Transport*
  - *Strengthen Maritime Transport*
  - *Strengthen Rail Transport*
  - *Compile Transport Data*
- **Agricultural Sector** *(6 actions)*
  - *Promote the Replacement of Tractors and Harvesters with Energy-efficient Models*
  - *Switch to Energy-efficient Irrigation Methods*
  - *Support Energy Efficiency Projects in the Agricultural Sector*
  - *Promote the Use of Renewable Energy Resources in Agricultural Production*
  - *Identify Agricultural Byproduct and Waste Potential to Produce Biomass and Promote their Use*
  - *Support Energy Efficiency in the Fisheries Sector*

Info box:

1- The most up-to-date versions of all laws and regulations can be found at https://www.mevzuat.gov.tr.
2- Energy efficiency legislation can be accessed at https://enerji.gov.tr/kurumsal-mevzuat and https://enverportal.enerji.gov.tr/.
3- The website of the Ministry of Energy and Natural Resources (MENR) Department of Energy Efficiency and Environment (DEEE) can be accessed at https://enerji.gov.tr/evced.

1.4. Energy Efficiency Obligations

According to the Energy Efficiency Law and the Regulation on Increasing Efficiency in the Use of Energy Resources and Energy, the buildings, industrial enterprises, organized industrial zones (OIZ) or power generation plants that have an energy consumption, total construction area, number of enterprises or generation capacity, respectively, above the values specified in Figure 2 are considered “liable“ to appoint an energy manager, or where applicable, to establish an energy management unit.

	Energy Manager	Energy Management Unit
Public Buildings	>10,000 m^2 or > 250 TOE	
Commercial and Service Buildings	> 20,000 m^2 or > 500 TOE	
Industrial Enterprises	> 1,000 TOE	> 50,000 TOE
Organized Industrial Zones (OIZs)		> 50 Enterprises
Power Generation Plants		> 100 MW

Figure 2: "Liabilities and Energy Management" in Energy Efficiency

Energy manager: A person who holds an energy manager certificate, who is responsible for carrying out the activities related to energy management in industrial enterprises or buildings covered by the law, and who reports to the management. The position of energy manager requires the person must:

- Have at least a bachelor's degree in engineering or from the mechanical, electrical, mechatronics or electrical-electronics departments of technical faculties;
- Have attended at least 40 hours of theoretical (module 1) and at least 40 hours of practical (module 2) training (80% attendance is required);
- Have obtained at least 70 points out of 100 in the central examination.

Audit/project certificate: This is a document issued by the Ministry or another authorized institutions related to the provision of training, auditing, consultancy and efficiency improvement project services in a building and/or industrial sector. In order to obtain an audit/project certificate, the following requirements must be met:

- To have at least a bachelor's degree in engineering.
- To have attended 40 hours of practical (module 3) training in addition to the 2 modules in the training for energy managers (80% attendance is required).
- To complete the audit/project homework under the guidance of the trainers within 6 months following the completion of the first three modules.
- To have obtained at least 70 points out of 100 in the central examination.

Energy management unit: This is the unit that operates directly under the energy manager and the management of the industrial enterprise or organized industrial zone with responsibility to carry out energy management practices.

1.5. Public Obligations

PUBLIC SECTOR

Definition: This refers to public institutions and organizations and their subsidiaries, public professional organizations, universities and local administrations.

The following section addresses energy efficiency legislation from the perspective of the public sector, and particularly municipalities and universities.

BUILDINGS:

Public buildings with an annual total energy consumption of no less than 250 TEP or a total construction area of no less than 10,000 m2 are considered "liable", responsibility for which rests with the "building management". If there is more than one independent building in a group of buildings or on a campus, the total construction area is the sum of the construction areas of the individual buildings.

Building: This refers to a building or a group of buildings used for residential, service provision or commercial purposes.

Building owner: This refers to the possessor of the building that has the right of ownership of the building, the usufruct owner, or in their absence, the natural or legal person whose use of the building is similar to that of a possessor.

Building management: This refers to the natural or legal person responsible for the operation and/or management of the building.

Company: This refers to the energy service company (ESCO) that has received an authorization certificate related to the provision of energy efficiency services within the framework of an authorization agreement entered into with the Ministry or with other authorized institutions.

Liabilities:

Appointing an Energy Manager:

- The management of public buildings with a total construction area of 10,000 square meters or more, or with an annual total energy consumption of 250 TOE or more, shall assign one of their employees with an energy manager certificate as the energy manager (except in cases as specified in article 36 of the Regulation). The energy manager, appointed from among the institution's employees, shall not provide energy management services for any building for which he is not responsible.
- In cases where it is not possible to appoint from among the employees of the institution, services shall be procured through contracts with energy managers or companies. No person holding an energy manager certificate shall provide services to more than three buildings. Each energy manager or audit/project expert acting on behalf of their company can serve a maximum of three buildings in total.
- To carry out energy management services more effectively, public institutions and bodies shall establish a central energy management unit within their institutional structure and carry out the relevant activities in the buildings covered by the law. The procedures for the establishment and operation of the energy management unit shall be carried out after obtaining the approval of the Ministry.
- For buildings with a total construction area of more than 10,000 square meters, the energy manager shall be communicated to the Ministry within one year following the issuance of the occupancy permit.
- Should the three-year average energy consumption of the public building be above 250 TOE, or if the energy consumption of a new building for the first year exceeds twice the defined limit value (500 TOE) (regardless of the three-year average), the energy manager shall be communicated to the Ministry within 60 calendar days.

- Replacements of the energy manager are to be notified to the Ministry within 60 days.

Consumption Notification:

- Annual data on the energy use of the liable buildings and their energy management activities need to be entered in the ENVER portal and submitted to the Ministry by the energy manager every year by the end of March.

Setting up an ISO 50001 Energy Management System:

- The TS EN ISO 50001 Energy Management System needs to be set up and documented in the liable buildings. Relevant institutions, bodies and businesses are responsible for keeping their energy management system up-to-date.
- For institutions covered by this scope as of January 2020, this provision shall be fulfilled by the end of 2023 at the latest.

Mandatory Audits

- Liable buildings shall be audited every 7 years. As of 2020, institutions covered by this scope are to have their mandatory audit completed by the end of 2021, once only.
- These audits shall be carried out by companies hired by the institution that has the ownership of the building, or if a member of staff has a building audit/project certificate, the audit shall be carried out by the institution itself.
- A copy of the audit report and the implementation plans for any identified measures shall be sent to the Ministry, and the requested data shall be entered into the ENVER portal. The final audit reports shall be submitted to the Ministry by the end of March in the year following the audit year.
- Implementation projects for measures with a payback period of less than 3 years among the measures determined during the audit shall be prepared and implemented within 4 years.

Obligations under Presidential Circular No. 2019/18 of August 16, 2019 [3]

- A minimum of 15 percent energy efficiency is targeted to be achieved by the end of 2023 in public buildings with an annual total energy consumption of 250 TEP or more, or a total construction area of 10,000 m^2 or more.
- Consumption data of the relevant public buildings for 2016, 2017 and 2018 shall be submitted to the Ministry by the end of March 2020.
- To achieve the 15 percent energy efficiency target by the end of 2023, measures with a payback period of less than 10 years shall be implemented.
- Any work carried out for this purpose during the year shall be reported to the Ministry by the end of March the following year.
- As of the end of 2023, those that have achieved a saving rate below 14 percent shall be classified as “unsuccessful“, those with a 14–16 percent saving rate as “successful“, and those with a saving rate above 16 percent as “super successful“. Those who are unsuccessful shall submit a report containing the reasons for their failure to the Ministry by the end of 2024.

[3] https://enerji.gov.tr/duyuru-detay?id=39

1.6. Industrial Enterprises

Industrial enterprises with an annual total energy consumption above 1,000 TOE shall be considered "liable", and this responsibility shall be given to the "management".

Industrial Enterprise: This refers to any enterprise other than license owner legal persons that generate power, with a minimum annual energy consumption of 1,000 TOE, that operates as a member of a chamber of commerce and industry, or chambers of commerce or chambers of industry, and that are engaged in the production of any good.

Management: This refers to the possessor, usufruct owner, if any, or manager in charge of management on their behalf.

Liabilities:

Appointing an Energy Manager:

- The management shall appoint an employee who holds an energy manager certificate from among the employees of the industrial enterprises to ensure that energy management activities are carried out within industrial enterprises with an annual energy consumption of 1,000 TOE and above. The energy manager, appointed from among the workforce, shall not provide energy manager services to any industrial enterprise for which he is not responsible.
- In cases where it is not possible to appoint an employee, services shall be procured by entering into contracts with outside companies. Each energy manager or audit/project expert acting on behalf of their company can serve a maximum of three industrial enterprises in total.
- If the 3-year average energy consumption of the industrial plant is above 1,000 TOE, or if the energy consumption of a new industrial plant for the first year exceeds twice the defined limit value (2,000 TOE) (regardless of the three-year average), the energy manager is to be communicated to the Ministry within 60 calendar days.
- Replacements of the energy manager are to be notified to the Ministry within 60 days.

Consumption Notification

- Annual data on the energy use of the liable plants and their energy management activities need to be entered into the ENVER portal and submitted to the Ministry by the energy manager every year by the end of March.

Setting up an ISO 50001 EMS

- Liable plants must shall set up a TS EN ISO 50001 Energy Management System and document it. Relevant institutions, bodies and businesses are responsible for keeping their energy management system up-to-date.
- For institutions covered by this scope as of January 2020, this provision shall be fulfilled by the end of 2023 at the latest.

Mandatory Audits

- Industrial establishments with an annual energy consumption of 1,000 TOE or above shall be audited every 4 years. As of 2020, institutions covered by this scope are to have their mandatory audit completed by the end of 2021, once only.

- These audits shall be conducted by companies, or if there is any member of staff with an industry audit/project certificate among the employees, the enterprise shall conduct the audit itself.
- A copy of the audit reports and the implementation plans for the identified measures shall be sent to the Ministry, and the requested data shall be entered into the ENVER portal. The final audit reports shall be submitted to the Ministry by the end of March in the year following the audit year.
- Implementation projects for measures with a payback period of less than 3 years among the measures determined during the audit shall be prepared and implemented within 4 years.

1.7. Energy Performance Contract

Definition: This is a method that is widely used around the world for the financing of investments in energy efficiency projects from the achieved savings.

Implementation: A detailed audit to be carried out on the building or industrial enterprise (customer) by an ESCO will identify the necessary measures to increase energy efficiency, the amount of savings to be achieved, the cost of the investment to be made and the payback period. If a customer chooses to make this investment using the EPC method, the necessary investment is made through the allocation of funds as shown in Figure 3, and thus savings begin. The customer repays the company from these savings in accordance with the contract, and all the investment and savings made at the end of the determined period remain with the customer. Thus, the investment is made without the customer having to pay any extra amount. During the payback period, a measurement and verification method is employed to check whether the savings promised by the company have been achieved.

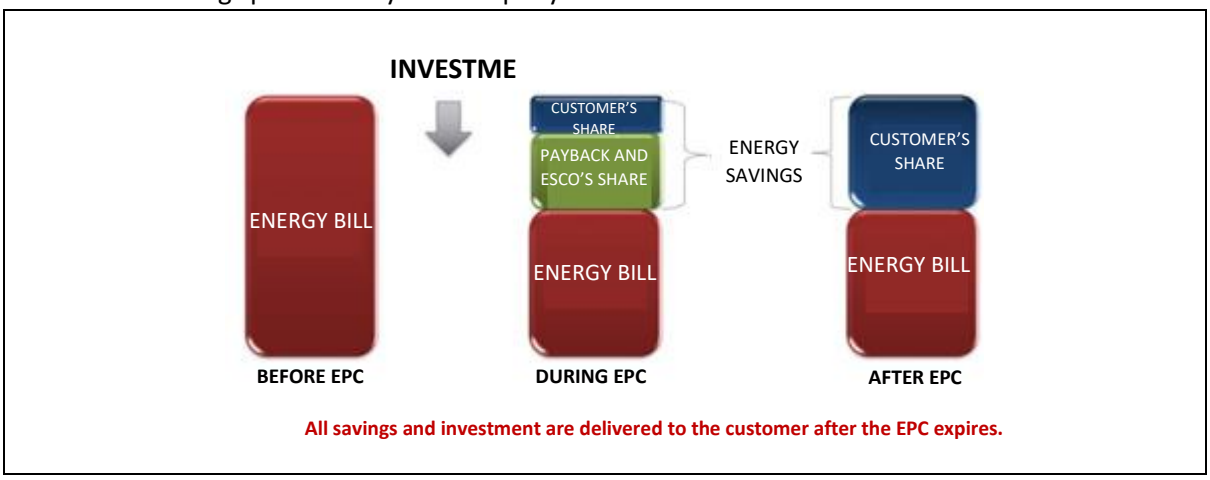


Figure 3: Implementation of an energy performance contract

Another convenience of EPC, as seen in Figure 4, is that the customer only deals with the ESCO rather than having to dea

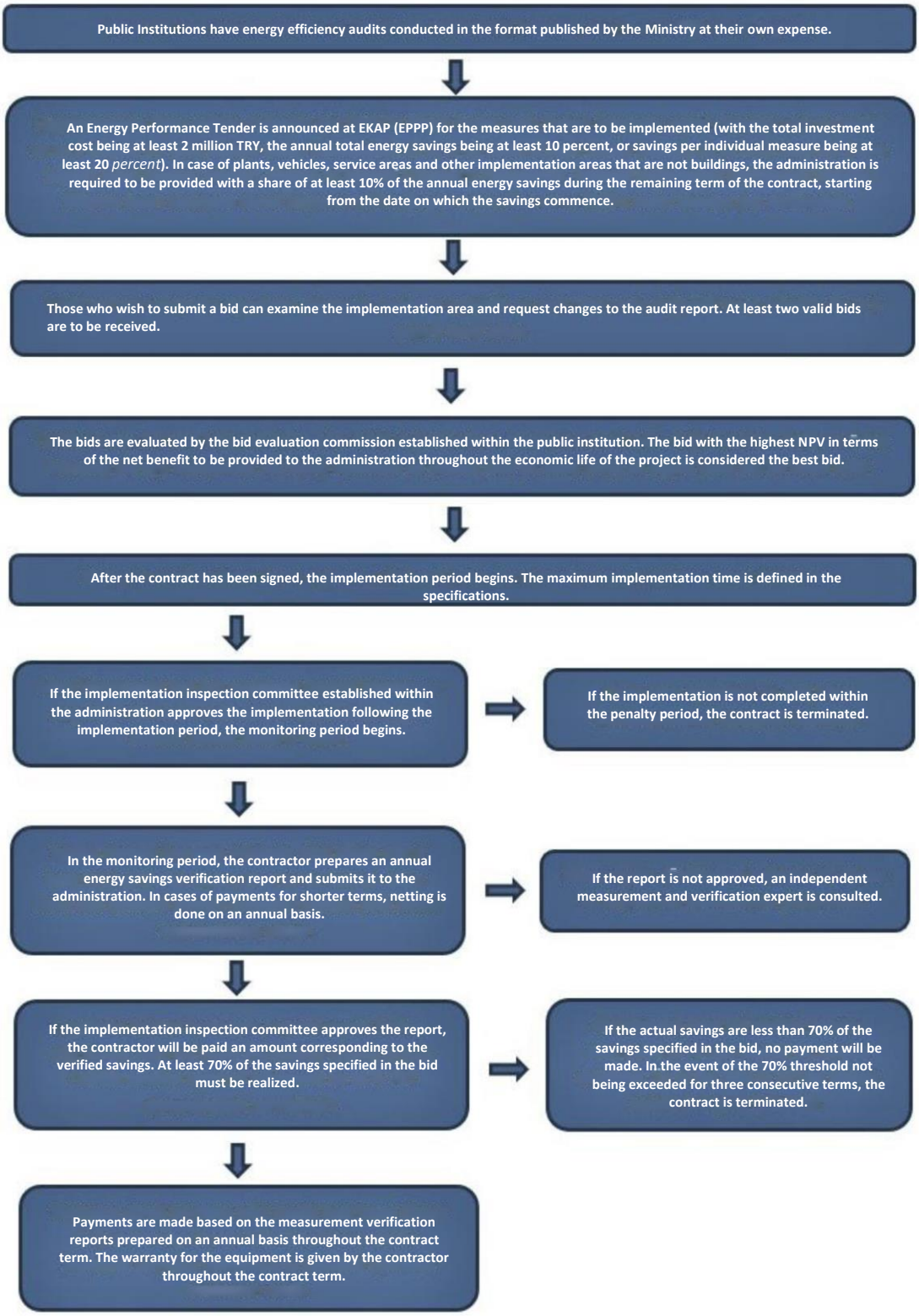


Figure 5: Summary workflow for EPC implementation in the public sector [4]

[4] DEEE

1.8. Supports and Incentives

Various supports are provided by the public for the implementation of energy efficiency projects. Some of these supports can be listed as follows[5]:

- **Efficiency Improvement Projects (EIPs):**

30 percent of energy efficiency projects up to 5,000,000 TRY is given in grants to industrial enterprises that meet the conditions specified in the Energy Efficiency Regulation and Implementation Rules and Procedures for Energy Efficiency Supports. A company can apply for a maximum of five project supports in a year.

- **Voluntary Agreements (VA):**

20 percent of the energy expenditures for the year in which the agreement is concluded (up to 1,000,000 TRY) is given in grants to industrial plants that meet the conditions specified in the Energy Efficiency Regulation and the Implementation Rules and Procedures for Energy Efficiency Supports, and reduce their energy intensity by at least 10 percent within 3 years.

- **5th Region incentives:**

Regardless of the region in which they operate, manufacturing plants that meet the conditions specified in the Decision on State Aid for Investments and that have an annual consumption no less than 500 TOE can receive VAT exemption, customs duty exemption, social security employer premium support, interest support, tax reduction and other similar supports for projects that achieve a 15 percent increase in energy efficiency on a facility or process basis (per unit product), and that have a payback period of less than 5 years.

[5] Since support from public institutions to public institutions, EIP, voluntary agreements, 5th region incentives, KOSGEB incentives, etc. are not included.

RENEWABLE ENERGY LEGISLATION IN TURKEY

This chapter covers the following topics:

- Overview of Turkey's Renewable Energy Legislation
- Licensed Power Generation
- Renewable Energy Resource Area (YEKA) Model
- Unlicensed Power Generation

2. Renewable Energy Legislation in Turkey

Faruk Telemcioğlu

2.1. Overview of Turkey's Renewable Energy Legislation

In Turkey, renewable energy activities are carried out in accordance with the renewable energy sources legislation. The two pillars of this legislation are Electricity Market Law no. 6446 and Law no. 5346 on the Utilization of Renewable Energy Sources for Power Generation. Regulations, Presidential Decisions, Energy Market Regulatory Authority Decisions, Communiqués, Rules and Procedures, and other legislation containing provisions related to the electricity market constitute the legal infrastructure that regulates the electricity and renewable energy market in our country. A summary table of this legal infrastructure is given below.

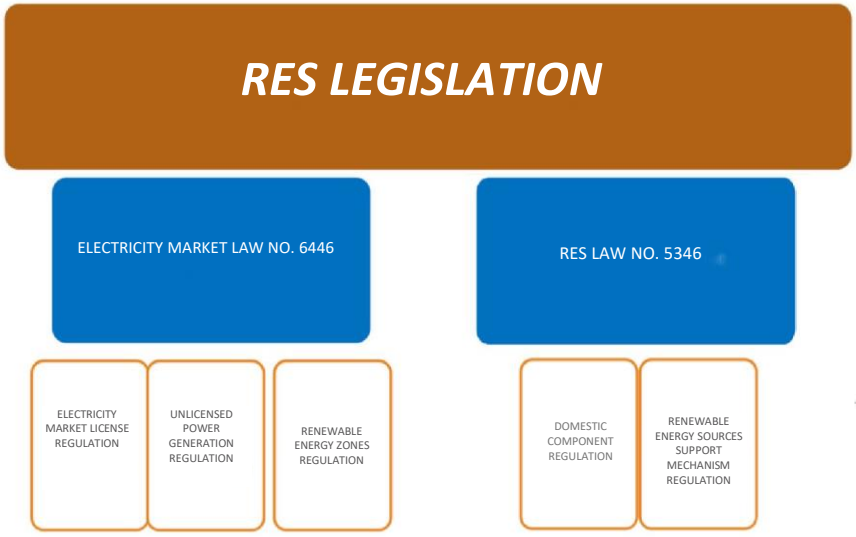


Figure 1: Legal infrastructure regulating the electricity and renewable energy market in Turkey

According to its Strategic Plan covering the period 2019–2023[6], the Ministry of Energy and Natural Resources aims to increase the ratio of installed power from domestic and renewable energy sources from 59 percent to 65 percent.

As part of efforts to promote the use of domestic resources, the following targets have been set to strengthen the market position of renewable energy sources in 2020 and beyond:

- Increase installed solar power capacity to 10,000 MW by 2023;
- Increase installed wind power capacity to 11,883 by 2023;
- Increase installed hydroelectric power capacity to 32,037 MW by 2023;
- Increase installed geothermal and biomass power capacity to 2,884 MW by 2023.

[6] The Strategic Plan is available at https://sp.enerji.gov.tr/amac4.html

To achieve these targets, three different investment models have been created to encourage investments in renewable energy in Turkey. In this new period, the energy market and its legislation has three parts: Licensed Generation, Unlicensed Generation and Renewable Energy Zone (REZ). Despite the existence of these three models, note that power can be generated in two ways under Electricity Market Law No. 6446. The REZ model is essentially a special application of the licensed generation method.

The permission document that every investor who wants to enter the energy market must have is called a “license“. It is a document issued by the Energy Market Regulatory Authority (EMRA) that ensures the creation of a financially strong, stable and transparent energy market in which actors can operate in a competitive environment subject to the provisions of private law, and that independently regulates and inspects this market for a minimum of 10 and a maximum of 49 years so that electricity, natural gas, petroleum and LPG are provided to consumers in an adequate, high quality, continuous, low-cost and environment-friendly manner. Investors who obtain this document cannot transfer, sell or rent it without the consent of EMRA.

For investors who apply to EMRA to obtain a license to enter the energy market, a pre-license document is issued by EMRA for a certain period of time so that they can obtain the necessary approvals, permits, licenses and the like to start the generation plant investment and the ownership or usufruct of the area where the generation plant will be established. Investors who fail to fulfill the obligations within the specified period for the pre-license will not be granted a license.

Investors who want to enter the electricity market are subject to the Electricity Market License Regulation published in Official Gazette no. 28809 of 02.11.2013. The purpose of the Regulation is to set forth the rules and procedures for the issuance of pre-licenses and licenses in the electricity market, as well as the rights and obligations of pre-license and license holders. The Regulation covers the pre-licenses and licenses that the electricity market players are required to obtain to operate in the market, as well as the basic provisions related to these licenses, the licensing procedures, and the rights and obligations of the legal persons holding a pre-license or license.

The licenses that can be obtained from EMRA in the electricity market are as follows:

- Generation license
- Organized Industrial Zone (OIZ) generation license
- Transmission license
- Market operating license
- Distribution license
- Organized Industrial Zone distribution license
- Supplier license

Projects for public institutions involving a generation license or unlicensed generation, and the application and acceptance processes related to these projects will be covered in detail in the YEVDES training program. The current practices of local governments and public institutions related especially to hydroelectric, biogas and landfill gas projects are included in the training course topics.

It is necessary to obtain a pre-license before applying for a generation license. In some cases, if the license conditions are met, the license can be obtained directly without the need for a pre-license.

A pre-license is an authorization for the procedures and transactions related to the licensing process. The duration of the pre-license, which cannot exceed 36 months, is determined by EMRA.

Pre-license and license files must contain the documents specified in Article 10 of the Regulation. These documents are as follows:

1. License Application Form (License Regulation, Annex 4.1)
2. Authorization Document
3. Articles of Association of the Legal Entity
4. Shareholding structure documents
5. Control Statement/Document (License Regulation, Annex 4.2)
6. Documents showing the current capital of the legal person
7. License Fee Bank Receipt
8. Schedule for the completion of the plant
9. Certificate of Guarantee (License Regulation, Annex 4.3)
10. Transaction Documents to be Completed in the Pre-License Period
11. Non-Prohibition Statement

Legal persons subject to the provisions of private law that apply for a pre-license must have been established as a joint stock company or limited liability company, in accordance with the provisions of Turkish Commercial Code No. 6102. In addition, the shareholders and founders must prove that they have not subject to a ban[7] pursuant to Article 5(8) of Electricity Market Law No. 6446.

Aside from applications based on wind, solar, hydraulic, geothermal, biomass power or local mines, applications for pre-licenses must contain the decision required to be obtained under the Environmental Impact Assessment (EIA) Regulation published in Official Gazette no. 29186 of 25/11/2014.

Applicants are required to document that they have the ownership or usufruct of the land of the plant to be established.

For pre-license applications based on hydraulic resources, applicants are required to submit a copy of the Water Use-Right Agreement or a document showing that they are entitled to enter into a Water Use-Right Agreement with the approval of the State Hydraulic Works (DSI), and the DSI's approval for the units based on auxiliary resources.

Applications to be made under this Regulation must contain wind or solar measurements, and must have been made in accordance with the standard within the last 8 years.

Pre-license applications shall be reviewed within 20 working days and announced on EMRA's website if no missing documents are identified. The announcement shall be kept on the website for 10 days to allow any objections.

Applications made after the deadline for the announcement for pre-license applications shall not be accepted. Applications for another pre-license in the market in which the announcement is made, or applications for a pre-license or license to engage in storage activities in the natural gas market, or refining and/or storage activities in the oil market, shall be returned or rejected.

[7] The aforementioned paragraph reads as follows: "(8) A legal entity whose license has been revoked, including the shareholders holding 10 percent or more of this legal entity, and the chairman and members of the board of directors of the legal entity, including those who left office within the one year of the date of revocation, shall not be able to obtain a license, apply for a license, have direct or indirect shares or sit on the board of directors of any legal entity applying for a license for a period of three years." For the full text of the Law see https://www.mevzuat.gov.tr/MevzuatMetin/1.5.6446.pdf

For pre-license applications, opinions are sought from TEIAŞ and/or the legal entity holding the distribution license in the distribution region in which the generation plant is located. In addition, the result of the technical evaluation made by the General Directorate of Energy Affairs (GDEA) must be positive.

For cases listed under Article 16 of the Electricity Market License Regulation, the pre-license application shall be rejected[8].

A private legal entity holding a pre-license, generation license or distribution license may apply to the Energy Market Regulatory Authority (EMRA) in the following cases related directly to its operations:

a) Decision of public interest;

b) Establishment of servitude;

c) Permission to use;

d) Renting;

e) Decision to assign the property of public institutions and bodies, other than the property of the Treasury;

f) Request for change of pasture allocation purpose.

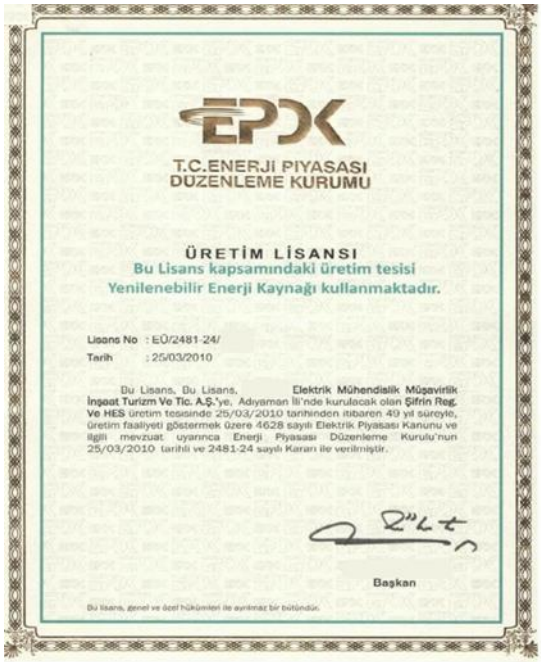
If it is concluded that the obligations for obtaining a pre-license have been met in due time, the legal person in question shall be granted a generation license with a decision of EMRA. Generation licenses based on renewable energy sources shall contain the annual maximum amount that the licensee plant can generate and its current installed power. In determining the annual maximum amount that can be generated, as written on the pre-license or license for generation based on hydraulic resources, the annual maximum generation amount reported by the General Directorate of State Hydraulic Works shall be used, whereas in the case of generation plants based on other renewable energy sources, the generation amount corresponding to the capacity factor in the table below shall be used.

Table 1: Capacity factor by renewable energy source (%)

Source	Hours	Capacity Factor (%)
Wind	4,000	45
Solar	2,000	22.8
Biomass	7,500	85
Geothermal	8,000	92

A request for license renewal can be made by applying in writing to EMRA no earlier than 12 months and no later than 9 months before the expiry of the current license period, and in the event of the applicant being a distribution company and the incumbent supply company, no earlier than 15 months and no later than 12 months before the expiry of the current license period.

[8] For the full text of the article and the Regulation, see https://www.epdk.gov.tr/Detay/Icerik/3-6727/electric-piyasasi-lisans-yonetmeligi



T.C. ENERJİ PIYASASI
DÜZENLEME KURUMU

ÜRETİM LİSANSI
Bu Lisans kapsamındaki üretim tesisi
Yenilenebilir Enerji Kaynağı kullanmaktadır.

Lisans No : EÜ/2481-24/
Tarih : 25/03/2010

Bu Lisans, Bu Lisans, Elektrik Mühendislik Müşavirlik İnşaat Turizm Ve Tic. A.Ş.'ye, Adıyaman İli'nde kurulacak olan Şifrin Reg. Ve HES üretim tesisinde 25/03/2010 tarihinden itibaren 49 yıl süreyle, üretim faaliyeti göstermek üzere 4628 sayılı Elektrik Piyasası Kanunu ve ilgili mevzuat uyarınca Enerji Piyasası Düzenleme Kurulu'nun 25/03/2010 tarihli ve 2481-24 sayılı Kararı ile verilmiştir.

Başkan

Bu lisans, genel ve özel hükümleri ile ayrılmaz bir bütündür.

Figure 2: Sample generation license issued by EMRA

The validity of the license is terminated automatically at the expiry of the license period, or by a decision of EMRA in the event of the bankruptcy of the license holder, upon the request of the license holder, or if the conditions for the issuance of the license have been lost or the obligations have not been fulfilled.

The rights and obligations of license holders and generation license holders are explained in detail in Articles 28 and 29 of the Electricity Market License Regulation[9].

9 For detailed information, see https://www.epdk.gov.tr/Detay/Icerik/3-0-86-3/elektriklisans-islemleri

Generation license fee:
The fees to be charged in 2021 for a pre-license and license, an annual license, license renewal, pre-license and license amendment, and a copy of a pre-license and license in accordance with Article 43 of the Electricity Market License Regulation, are as follows:

a) Generation:

For pre-license:

(1) Pre-license fees:

Installed power "P(MW)"		
0 <P ≤ 10 MW	10,600	(ten thousand six hundred) TRY
10 <P ≤ 25 MW	20,600	(twenty thousand six hundred) TRY
25 <P ≤ 50 MW	30,900	(thirty thousand nine hundred) TRY
50 <P ≤ 100 MW	51,500	(fifty one thousand five hundred) TRY
100 <P ≤ 250 MW	103,000	(one hundred and three thousand) TRY
250 <P ≤ 500 MW	205,900	(two hundred and five thousand nine hundred) TRY
500 <P ≤ 1,000 MW	308,800	(three hundred and eight thousand eight hundred) TRY
P> 1,000 MW	515,000	(five hundred and fifteen thousand) TRY

(2) 10% of the pre-license fee is collected from legal entities that apply for a pre-license to establish a generation plant based on domestic natural resources and renewable energy sources.

(3) Pre-license amendment fee: If the new installed power value arising from the increased installed power exceeds the value range before the amendment, the amendment fee shall be the difference between the pre-license fee corresponding to the pre-amendment value range and the pre-license fee corresponding to the new value range. In cases where the value range is not exceeded, and in the event of other amendments, the amendment fee shall be 10,500 (ten thousand five hundred) TRY (In cases of generation plants based on domestic and renewable energy sources, the amendment fee shall be 10% of the calculated pre-license amendment fee. However, this fee cannot be less than 10,500 (ten thousand five hundred) TRY.)

(4) Pre-license copy fee: 2,200 (two thousand two hundred) TRY.

For a generation license:

(1) License Issuance Fees:

Installed power "P(MW)"		
0 < P ≤ 10 MW	10,600	(ten thousand six hundred) TRY
10 <P ≤ 25 MW	20,600	(twenty thousand six hundred) TRY
25 < P ≤ 50 MW	30,900	(thirty thousand nine hundred) TRY
50 < P ≤ 100 MW	51,500	(fifty one thousand five hundred) TRY
100 <P ≤ 250 MW	103,000	(one hundred and three thousand) TRY
250 < P ≤ 500 MW	205,900	(two hundred and five thousand nine hundred) TRY
500 < P ≤ 1,000 MW	308,800	(three hundred and eight thousand eight hundred) TRY
P > 1,000 MW	515,000	(five hundred and fifteen thousand) TRY

(2) 10% of the license fee is collected from legal entities that apply for a license to establish a generation plant based on domestic natural resources and renewable energy sources.

(3) Annual license fee: 0.003 (three-thousandths) kurus per kWh based on gross production (including domestic consumption)

(4) License renewal fee: 50% of the license issuance fee. Licenses can be renewed for a maximum of 49 years each time upon the request of the license holder, starting from the expiry of the license period and observing the minimum periods prescribed in the Law.

The methods to be followed for license applications in various fields are presented in the figures below. Accordingly, the application process for wind and solar power generation license can be summarized schematically as follows.

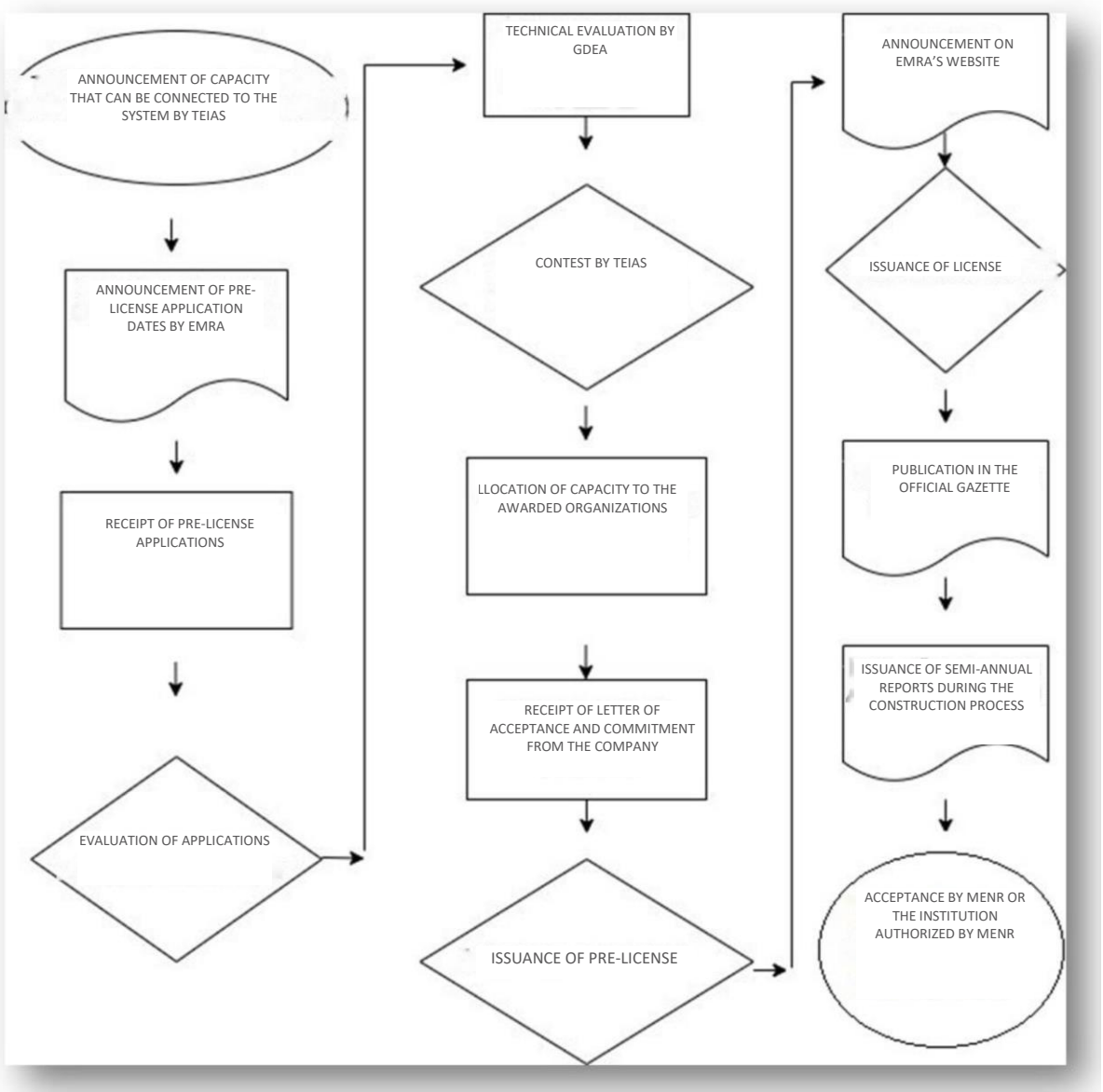


Figure 3: Steps in wind and solar license application process

The hydroelectric power generation license application process can be summarized schematically as follows.

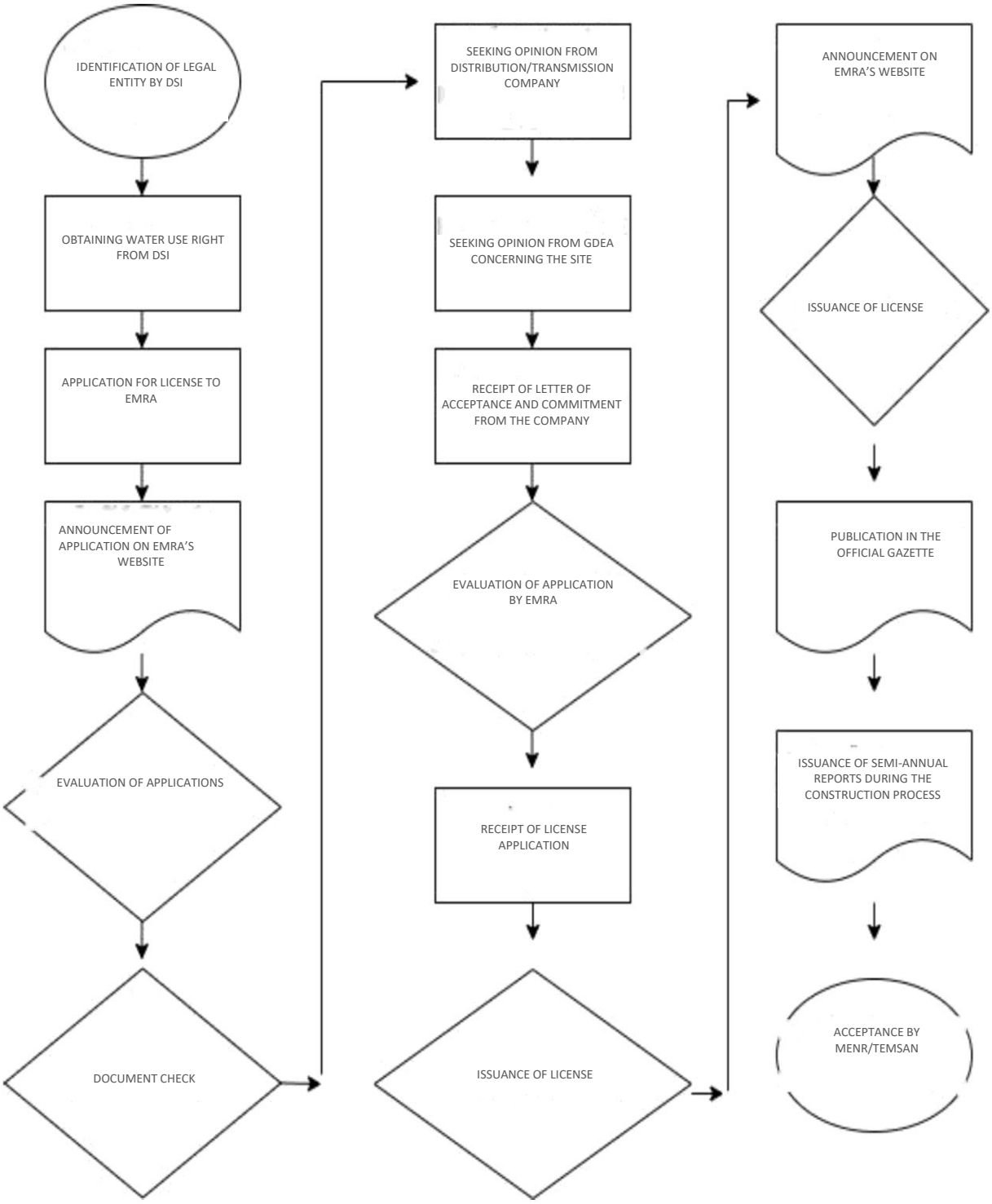


Figure 4: Steps in the hydroelectric power generation license application process

The thermal power generation license application process can be summarized schematically as follows:

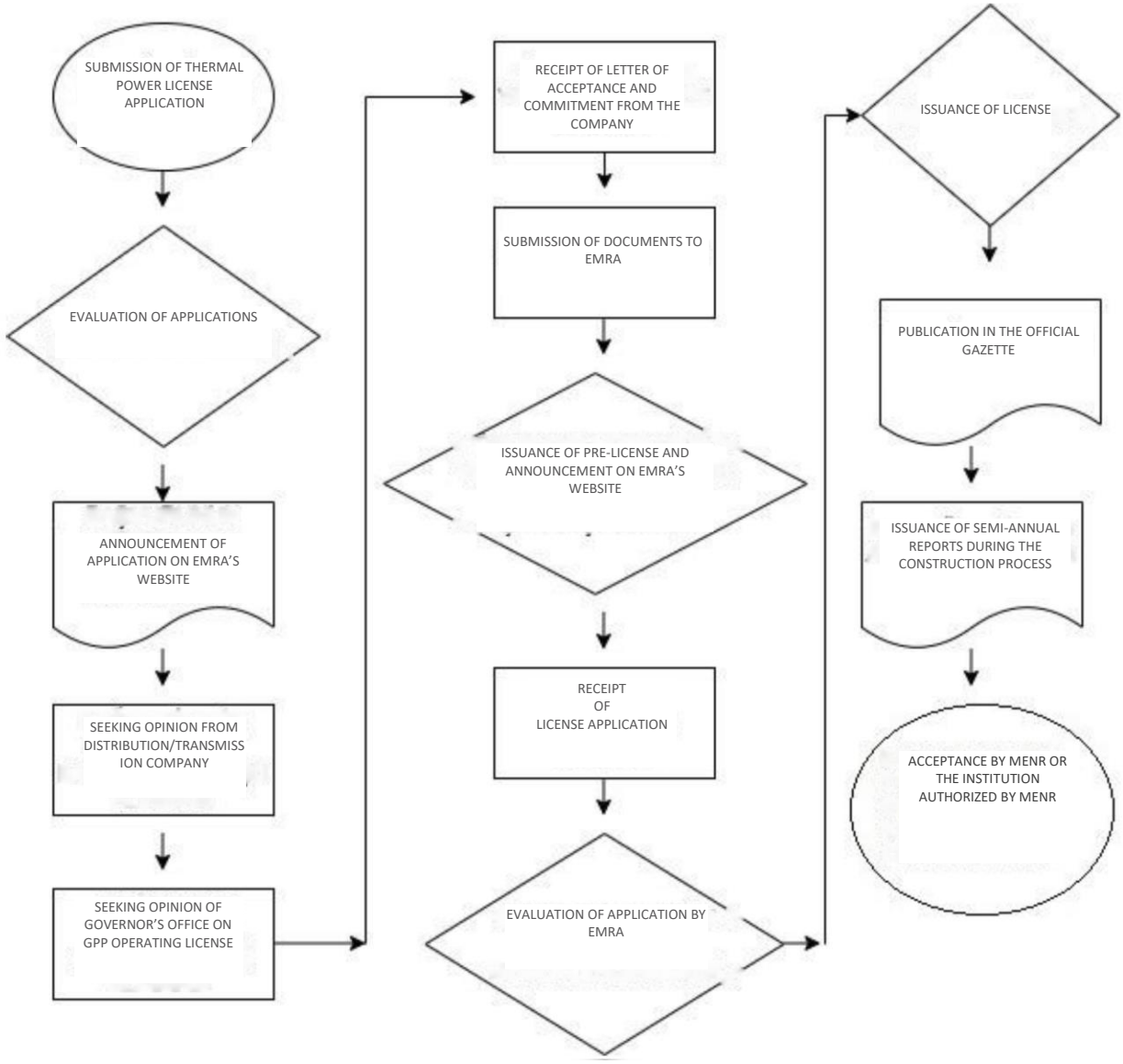


Figure 5: Steps in the thermal power generation license application process

For an overview of the licensing process and a detailed work flow, please visit the website of the Energy Market Regulatory Authority[10].

[10] https://www.epdk.gov.tr/Detay/Icerik/3-0-86/elektriklisans-islemleri

1.2.1 Renewable Energy Resource Area (YEKA) Model

In this model, plants are put into operation according to the "Renewable Energy Zones Regulation" published in Official Gazette no. 29852 of 09.10.2016. The purpose of this Regulation is to ensure the effective and efficient use of renewable energy sources by creating large-scale renewable energy zones on public and treasury lands, as well as on private lands, to accelerate investments in such zones, to ensure domestic production of the advanced technological components used in power generation plants using renewable energy sources or their procurement from domestic producers, and to contribute to technology transfer. To date, REZ competitions have been held only for the establishment and operation of Wind (WPP) and Solar (SPP) power plants. They include REZ SPP-1 (March 14, 2017), REZ SPP-3 (March 10–12, 2021), REZ WPP-1 (August 3, 2017) and REZ WPP-2 (May 30, 2019).

Efforts are underway to apply REZs, which have achieved success in the fields of solar and wind, to other renewable energy sources in the upcoming period.

There have been two methods employed for the allocation of lands in the REZ processes that have been carried out to date, or that are currently being carried out. They are the allocation of the sites (Candidate REZ) determined by the Ministry of Energy and Natural Resources (MENR) or the allocation of connection to the sites (Candidate REZ) to be shown by the investors who submitted the lowest electricity sales offer against the capacities determined by the MENR on a regional basis. A Candidate REZ refers to an area for which MENR efforts are underway to declare it an REZ.

The areas designated and prepared as Candidate REZ by MENR have been allocated by way of a Dutch auction within the scope of Allocation in Return for Domestic Production to date. In this model, for example, the REZ located in the Karapınar region, which was declared an Industrial Zone by Council of Ministers Decision no. 28405 of September 8, 2012 was put out to tender on March 14, 2017 on the condition that a 1,000 MW Solar Power Plant would be installed and an integrated solar panel production plant that is 75 percent indigenous with a 500 MW capacity (where cells and solar panels are produced together) would be established. The factory entered into operation in June 2020. As of March 2021, the 267 MWp panel carrier system and 140 MWp panel assembly of the plant in Karapınar have been completed.

In addition, a competition has been held within the scope of Allocation in Return for Domestic Production at REZ WPP-2 on August 3, 2017, and an REZ Use Rights Agreement was entered into with the winning consortium.

The consortium gained the right to enter into operation a wind power investment of 1,000 MW in total in areas to be provided in five different regions of Turkey, as well as the right to sell the electricity generated by these power plants for 15 years at the offered price. The consortium will also establish an at least 65% domestically produced wind turbine production plant and an R&D center.

In the Connection Allocation method, Dutch auctions are held for regional connection allocations in the provinces determined by the MENR. The company that offers the lowest electricity sales price for the allocated capacities wins the tender, and the connection is allocated. The group of companies or investors that wins the tender submits the appropriate SPP (or WPP) site to the General Directorate of Energy Affairs, and if it meets the technical and administrative requirements, it is designated an REZ and the group is entitled to obtain a pre-license. The indigeneity rate requirement of the production plants to be established is specified in the tender specifications of the MENR. The company that wins the tender is entitled to the Allocation in Return for Domestic Production right. The term Allocation in Return for

Domestic Production refers to the right to use the REZ, which is granted to the legal entity that undertakes to use domestic equipment in a power generation plant based on renewable energy sources.

The tender announcement of the Ministry of Energy and Natural Resources regarding the allocation of solar power-based REZ and connection capacities was published in the Official Gazette on 03.07.2020. During the application process to the General Directorate of Energy Affairs of the Ministry of Energy and Natural Resources, between March 8 and 12, 2021, bids were submitted for 709 projects with a total installed power of 9,440 MW by 131 different companies for the capacity right of 74 projects with installed powers of 10, 15 or 20 MW. In the auctions, the initial ceiling price was set at 35 kurus per kilowatt-hour, and the purchase period was announced to be 15 years. In accordance with the REZ SPP-3 tender specifications, the bids submitted in sealed envelopes are opened and a Dutch auction is held among the five lowest bidders.

For instance, the sealed envelope bids of the companies participating in the 15 MW power plant tender in Adıyaman 2 region and the companies that submitted the lowest bids in the auction held after the envelopes were opened (the winning companies) are given below.

Table 2: Companies participating in the 15 MW power plant tender to be held in the Adıyaman 2 region and their bids

	BIDDER COMPANY	**SEALED ENVELOPE BID**	**DUTCH AUCTION BID**
1	MUREL ENERJİ ÜRETİM A.Ş.	28.7 kr/kWh	WITHDRAWN
2	EKSİM YATIRIM HOLDİNG A.Ş.	29.8 kr/kWh	WITHDRAWN
3	İBİK GÜNEŞ ENERJİ ÜRETİM A.Ş.	27.0 kr/kWh	22.1 kr/kWh
4	KON-TEK KONTROL TEKN. VE OTOM. SAN. TİC. A.Ş.	23.9 kr/kWh	22 kr/kWh
5	MİRAÇ-YOL ALTYAPI ÜSTYAPI İNŞAAT SAN. TİC. A.Ş.	29.2 kr/kWh	WITHDRAWN

When we compare the REZ projects with licensed projects, we can summarize the main differences between them as follows.

- In REZ projects, the license period depends on the specifications, and different periods may be specified in each tender. This period is 15 years for the Karapınar REZ Solar Power Plant (SPP).
- In REZ tenders, the purchase price of energy is determined by Dutch auction. In licensed projects, the guaranteed purchase price is fixed and determined by the President.
- In REZ projects, a certain rate of indigeneity of products is required, and only companies that meet this requirement can submit a bid. In licensed projects, indigenous product support is provided on a gradual basis. The amount of support granted to a project rises as more domestic products are used. The amount of support given is determined for each item and indigeneity rate. The amount of support can be seen in the table below.

Presidential Decision no. 3453 of January 29, 2021, which sets forth details of the current support mechanism (YEKDEM) for power generation plants based on renewable energy sources, was published in the Official Gazette no. 31380 of January 30, 2021. Within the framework of the new YEKDEM, the purchase guarantee is converted into Turkish lira, taking into account both inflation and exchange rates, and is subject to an upper limit in US dollars. The domestic contribution price will also be applied in Turkish lira.

Details of the Presidential Decision can be summarized as follows:

- The new YEKDEM and domestic contribution prices are in Turkish lira, and these prices will be updated every year in January, April, July and October according to the method specified in Annex 2 to the Presidential Decision. Prices will be updated according to the escalation formula in line with the changes in the USD/TRY (24%), EUR/TRY (24%), consumer price index (26%) and producer price index (26%) rates.
- As can be seen in the table below, an upper limit in US dollars is imposed on the price of the RES support mechanism price determined for each renewable energy source.
- The new prices vary for each energy source, as shown in Table 3.

Table 3: New prices set for different energy sources

Type of Plant Based on Renewable Energy Source		**RES Support Mechanism Price (TRY kurus/kWh)**	**Upper Limit for Updating (US dollar cents/kWh)**	**Domestic Contribution Price (TRY kurus/kWh)**
Hydroelectric		40.00	6.40	8.00
Wind		32.00	5.10	8.00
Geothermal		54.00	8.60	8.00
Biomass	Landfill Gas/Waste Tires	32.00	5.10	8.00
	Biomethanization	54.00	8.60	8.00
	Thermal Disposal	50.00	8.00	8.00
Solar		32.00	5.10	8.00

- The new pricing mechanism will be applied for 10 years for power generation plants based on renewable energy sources with an RES Certificate, which will be in operation from July 1, 2021 until December 31, 2025.
- A domestic contribution price of 8 TRY kurus/kWh will be charged for 5 years in addition to the prices determined for each type of source.
- The rules and procedures regarding the domestic contribution prices will be set forth in a regulation to be issued by the Ministry of Energy and Natural Resources.

2.2. Unlicensed Power Generation

The Unlicensed Power Generation Regulation is a regulation that has been developed based on Article 14 of Electricity Market Law No. 6446 and article 6/A of the Law No. 5346 on the Utilization of Renewable Energy Resources for the Purpose of Power Generation. The purpose of this regulation is to determine the rules and procedures for meeting the electricity needs of individuals and entities from a generation plant located in the same location as their consumption. This practice, which prioritizes supply security, reduces losses from the electricity grid and requires only electricity subscription, and can help establish a power generation plant with the capacity of a subscription contract.

Thanks to this regulation, cogeneration (both heating and electricity) and trigeneration (heating, electricity and cooling) plants that can operate with other fuels (diesel, gasoline, etc.) in addition to natural gas, micro-cogeneration plants below 100 kWe, solar, hydroelectric, wind, geothermal, biomass, solar thermal and biomass gas (including landfill gas) systems as well as systems that are not based on fossil fuels, such as waves, current and tidal power systems, can be established as needed.

Pursuant to the Presidential Decree of May 10, 2019, for such facilities to be established, the generation and consumption must be at the same measurement points, and the installed power of the renewable energy plant to be established must be equal to or below the power value of the consumption contract. The production and consumption being in the same place means that if the connection of the power plant is to the consumption plant before the two-way meter, then the generation and consumption plants are considered to be in the same place. Hence, the installation of roof, façade and indoor (micro-cogeneration) generation systems in particular is encouraged.

Features:

- It is not necessary to establish a company for unlicensed power generation projects with an installed capacity of up to 5 MW.
- It is sufficient to have entered into a consumption contract. The power value of the consumption contract is the value that needs to be specified in the application.
- Investors do not need to participate in any tender for capacity.
- There is no measurement obligation for wind and solar investments.
- There is no specific date range for applications. An application can be made on any working day during the year.
- Through monthly nettings, the net generation or net consumption value in a month is found in kWh. If the net generation value is higher, the excess energy can be sold at the **Retail Single-Time Active Energy Price** of the customer class of the customer, in accordance with the tariff table revised by EMRA every 3 months.

This regulation, consisting of a total of 41 articles, has been published as a single legislative instrument that includes the subjects and concepts previously addressed by various instruments.

- In the Unlicensed Power Generation Regulation, one of the most important concepts concerning all power generation industries, including those producing solar power, is NET METERING. Net metering is the process of finding the net generation or net consumption value in kWh within a given time period. In monthly nettings, this time period is one month.
- No upper limit of installed capacity applies to generation plants covered by paragraphs 1(a), (b), (ç), (d), (f), (g), (ğ) and (h) of Article 5 (see Table 4). They can establish plants of any size, provided that they are limited by the power value in their consumption contract.

Table 4: Comparison of plant types according to Unlicensed Power Generation Regulation

Type of Plant	**Monthly/Hourly Net Metering**	**Surplus Energy Sales**	**Installed Power Upper Limit**	**100% Discount on Supply Direction Distribution Fee**	**Special Discount on Draw Direction Distribution Fee**
a) Emergency groups,	No	No	No	Cannot supply power to the grid	No
b) Generation plants operating in isolation without establishing a connection to the transmission or distribution system,	No	No	No	Cannot supply power to the grid	No

c) Generation plants based on renewable energy sources with an installed capacity up to one megawatt or the upper limit of installed power determined by the President within the framework of Article 14 of the Law,	Yes - Monthly	**Yes- RETAIL SINGLE TIME ACTIVE POWER PRICE** For 10 years, from the date of entry into operation	5 MW, provided that it is limited to the power value specified in the Connection Agreement	**YES, if set up in accordance with paragraphs 1, 2 or 3 of Article 11 of the Regulation NO otherwise**	**YES, if set up in accordance with paragraphs 1, 2 or 3 of Article 11 of the Unlicensed Power Generation Regulation NO otherwise**
d) Generation plants based on renewable energy sources that use all of the energy they generate without feeding the transmission or distribution system, and whose generation and consumption occur at the same metering point,	Yes - Monthly	No - Free Registration to YEKDEM.	No	Cannot supply power to the grid; if it does, it pays a distribution fee	No
e) Cogeneration plants in the category corresponding to the efficiency value to be determined by the Ministry,	Yes - Hourly	No - Free Registration to YEKDEM.	No	Pays a distribution fee if it supplies power to the distribution system	No
f) Micro-cogeneration plants,	Yes - Hourly	Yes - At the lowest price on Sheet no. I attached to the RES Law [Article 24(2)]	100 kWe and below, provided that it is limited to the power value specified in the Connection Agreement	Pays a distribution fee if it supplies power to the distribution system	No
g) Municipal solid waste facilities and generation plants established for the disposal of treatment plant sludge,	Yes - Monthly netting for renewable energy Hourly netting for fossil fuels	Yes - At the lowest price in Sheet no. I attached to RES Law [Article 24(2)] if the plant is not based on RES RETAIL SINGLE-TIME ACTIVE POWER PRICE if the plant is based on RES	No	YES, if set up in accordance with paragraphs 2 or 3 of Article 11 of the Regulation NO otherwise	YES, if set up in accordance with paragraphs 2 or 3 of Article 11 of the Regulation NO otherwise
h) Generation plants based on hydroelectric resources set up by legal entities of which more than half of the capital belongs directly or indirectly to a municipality on water transmission lines and wastewater transmission lines operated by municipalities, if the technical means allow, and if approved by DSI,	Yes - Monthly	Yes - RETAIL SINGLE TIME ACTIVE POWER PRICE	No	YES, if set up in accordance with paragraphs 2 or 3 of Article 11 of the Regulation NO otherwise	YES, if set up in accordance with paragraphs 2 or 3 of Article 11 of the Regulation NO otherwise
i) Generation plants based on renewable energy sources, set up and operated by the General Directorate of State Hydraulic Works to meet the power needs of agricultural irrigation facilities whose electricity bills are paid by the General Directorate of State Hydraulic Works, provided that their installed power is limited to the power value specified in the connection agreement of the agricultural irrigation facility, and in the case of more than one facility, the sum of the power values specified in their connection agreements.	Yes - Monthly	Yes - RETAIL SINGLE TIME ACTIVE POWER PRICE	No	YES, if set up in accordance with paragraphs 2 or 3 of Article 11 of the Regulation NO otherwise	YES, if set up in accordance with paragraphs 2 or 3 of Article 11 of the Regulation NO otherwise

j) Generation plants based on renewable energy sources, provided that it is limited to the power value specified in the connection agreement	Yes - Monthly	Yes - RETAIL SINGLE TIME ACTIVE POWER PRICE	No	No	No

- For technical evaluation, a requirement that the Turkish Electricity Transmission Corporation (TEIAŞ) must state a positive opinion on the fault current limit for the substation has been introduced.
- Entities and individuals can sell the remaining part of the energy they generate at the **Retail Single-Time Active Power Price** after netting.
- Solar power-based generation plants to be established by real and legal persons under subparagraph (c) of the first paragraph of Article 5 are not required to be set up as roof or façade applications. It is possible to set up the system on land, provided that it is in the same distribution region. This installation must be equal to or less than the power specified in the connection agreement of the consumption facilities.
- Under subparagraph (c) of the first paragraph of Article 5, public institutions (e.g. municipalities) can establish SPPs on land.
- The meters for such generation plants must be supplied and installed by the relevant network operator, and the equipment and infrastructure required for remote monitoring and control must be supplied and installed by the owner of the generation plant.
- A generation plant cannot be operated at a power greater than the power value specified in the connection agreement. If the generation plant is operated at a power greater than the value specified in the connection agreement, the penal provisions in the Agreement for Connection to the Distribution System for Unlicensed Power Producers will apply.
- Generation plants with a capacity of 10 kW or less can be transferred without provisional acceptance.
- Combining Consumption: The consumption values of facilities belonging to one or more real and/or legal persons within the same tariff group and in the same distribution region may be combined to establish a generation plant or plants under this Regulation.
- According to Zoning Law No. 3194 of 03.05.1985, consumption values can be combined in buildings constructed under a single construction permit in accordance with the consumption combination provisions using the approved zoning project.

2.2.1. Persons and Entities that Can Apply for Unlicensed Generation

1. Residential customers with a maximum installed power of 10 kWm/10 kWe (including 10 kW) can apply for up to the power value specified in their contract, provided that generation and consumption take place at the same metering point.
2. Public institutions and organizations may establish generation plants based on renewable energy resources at the same metering point with consumption facilities within the scope of section (c) of the first paragraph of Article 5, provided that it does not exceed the contractual power set out in the connection agreement of wastewater and drinking water treatment facilities and agricultural irrigation facilities.

3. All persons (real and legal): Such people can apply for a power generation plant based on renewable energy sources without establishing a distribution facility (root or distribution center), provided that it does not exceed the power value specified in the Connection Agreement, and that generation and consumption take place in the same distribution region. They can benefit from surplus energy sales, netting and distribution fee discounts. In accordance with this article, they can apply for SPPs installed on a roof, facade or land.

4. On some agricultural lands, a generation plant can be set up for agricultural irrigation purposes, taking into account other legislation. The installed power of the plant should not exceed the power value specified in the connection agreement. A certificate of approval must be obtained from DSI under the relevant legislation. Applications made under this provision are evaluated under article 5.1.ç. In this model, known also as the self-consumption model, the Supply Direction Distribution Fee is paid, however, consumption (draw) distribution fee discounts cannot be enjoyed. Only netting can be used. If the source is renewable energy, netting is done on a monthly basis. If not, it is done on an hourly basis.

5. To meet the power needs of their consumption facilities, public institutions and bodies may establish generation plants based on renewable energy sources under subparagraph (c) of the first paragraph of Article 5, provided that the power value specified in their connection agreement is not exceeded. The generation and consumption of these facilities does not have to take place at the same metering point. The consumption facilities associated with a generation plant must be in the same tariff group. They must be in the same distribution region.

6. Consumption facilities belonging to the same legal entity, located in the same distribution region and included in the same tariff group can combine their consumption to establish generation plants with an installed power equal to the sum of the power values specified in their contracts.

2.3. Renewable Energy Source Guarantee Certificate (RES-G)

The “Renewable Energy Guarantee of Origin Certificate“ (RES-G) Regulation, which was developed for consumers who want to supply their electricity consumption completely from renewable energy sources, was published in Official Gazette no. 31304 of November 14, 2020. This regulation, which will enter into force on June 1, 2021, covers the provisions concerning participation in the renewable energy guarantee of the origin system, which will certify that the electricity to be supplied to consumers by the supply companies has been generated using only renewable energy sources, and the functioning of the system to be created.

The European Union (EU) has announced that it will start various applications under the European Green Deal as of 2021. Here, the most important issue affecting our country's exporters is the additional costs incurred under the “Carbon Border Adjustment Mechanism“. It is understood that the option to document that the electricity consumed in production processes and other service stages has been generated from renewable sources will become more important.

RES-G documents, which will be produced in accordance with European standards, will offer a solution to our exporters in exempting them from the taxes that the EU impose on imported products based on their carbon emissions, or minimizing the effect of these taxes. These documents will be of particular interest to companies and industrialists that export to the EU and that are high electricity consumers. These documents will provide our exporters with transparency in their use of renewable energy in their production processes.

EPİAŞ will establish and operate this market. Every megawatt hour of power generated will be documented.