

Turkish Solar Power: Better Late Than Never

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Turkey has finally set the ball rolling on solar development, almost one year after the first license applications were received from developers. A new round of solar tenders is expected.

The Energy Market Regulatory Authority of Turkey received the first solar license applications in June 2013. No licenses have been issued to date. The Law No. 5346 on the Utilization of Renewable Energy Resources for the Purpose of Generating Electrical Energy — the so-called renewable energy law — limits the total installed capacity of licensed solar power plants to 600 megawatts. The Ministry of Energy allocated this capacity to 27 regions. Of these 27 regions, Konya province has the largest allocated capacity with 92 megawatts in total, followed by Van and Ağrı provinces.

There was significant interest from both domestic and international sponsors in the June 2013 round of applications. A total of 9,000 megawatts of solar projects were proposed.

For most, if not all, regions, multiple solar power license applications were submitted for the same substation, and a tender will be required to determine the winning bidder. In the event of multiple applications, the state-owned electricity transmission company, TEİAŞ launches a tender in which bidders bid to pay TEİAŞ an amount per megawatt of capacity for the license, and TEİAŞ will award the license to the bidder offering the highest price. The price offered by the successful bidder will be paid to TEİAŞ within three years (at the latest) after the plant goes operational. Theoretically, if there are no competing bids for the same area or substation, applicants may proceed with the licensing and interconnection formalities.

TEİAŞ has launched three tenders so far. The first was held in May 2014 for Elazığ and Erzincan provinces in eastern Turkey. These two tenders were important, as the prices offered were expected to set a pattern for bids in the subsequent tenders. The winning applicant in Elazığ bid TL 827,000 per megawatt (US\$321,000) and in Erzurum TL 68,000 (US\$27,000). The difference in prices is mostly due to the higher solar irradiance in Elazığ compared to Erzurum. Although a difference was expected, the high price of TL 827,000 was not.

TEİAŞ conducted the second and third rounds of solar power tenders in late January 2015, covering southeastern and western regions of Turkey. Amounts bid by the participants were even higher than in the first round tender.

The January round of tenders was launched for the following regions.

No.	Name of Region/ Province	Allocated Capacity (MW)	Winners
1.	Konya-1	46	4
2.	Konya-2	46	6
3.	Antalya-1	29	2
4.	Antalya-2	29	2
5.	Burdur	26	2
6.	Muğla-Aydın	20	2
7.	Denizli	18	3
8.	Siirt-Batman-Mardin	9	1
9.	Şanlıurfa-Diyarbakır	7	1

Other than the regions numbered 8 and 9, which have a rather small capacity, there are sub-capacities allocated in other regions and, hence, multiple winners. It is no surprise that the highest bids per megawatt were submitted for the Konya region, a top region for investments with its vast flat lands: TL 2,510,000 or USD\$1,013,000 per megawatt. What is surprising is the prices bid per megawatt, which are seen by sector representatives as exorbitant.

Economics

Turkey enacted some much-anticipated amendments to the renewable energy law in 2011 to put in place new feed-in tariffs and other incentives. The amendments provided feed-in tariffs for licensed renewable generators that opt into the “renewable energy support mechanism.” They also introduced incentives for the use of domestically-manufactured components. The support mechanism refers to both parts: the feed-in tariffs and the incentives to use locally-manufactured components.

Power generators that wish to opt into the support mechanism for a particular year must apply to the Energy Market Regulatory Authority by October 31 of the preceding year. EMRA evaluates all complete applications and publishes a preliminary list of qualified applicants on its website by November 10. The application must cover the entire power generated by a facility

from renewable energy sources. In other words, once a generator opts into the support mechanism, power generated based on renewable sources cannot be sold under any other transaction outside the support mechanism such as bilateral power purchase agreements. Therefore, every year, the generator will choose between the feed-in tariff and direct sales in the power market. Settlement of power sales under the support mechanism is coordinated by the Market Financial Settlement Center run by TEİAŞ.

Feed-in rates are valid for 10 years for power generators that commence operations by December 31, 2020. In addition to feed-in rates, renewable energy legislation provides for incremental price incentives for generators that use certain domestically-manufactured mechanical and electromechanical components in their facilities. Incentives for using domestically-manufactured components are available for five years after a project commences operations.

The table below shows the feed-in tariffs, as well as the maximum amount of domestic component incentive that can be obtained if all domestic components listed in the legislation are used in a solar power plant:

Feed-in Tariff	(US\$/MWh)	Maximum Domestic Component Incentive (US\$/MWh)	Maximum Total Price (US\$/MWh)
Solar photovoltaic	133	67	200
Solar concentrated	133	92	225

For generators that use certain domestically-manufactured mechanical and electromechanical components in their projects, additional incentives are granted. In a photovoltaic power plant, the following components are granted the additional incentive:

Type of Domestic Component	Incentive (US\$/MWh)
PV panel integration and manufacturing of solar structural mechanics	8
PV modules	13
Cells constituting PV modules	35
Inverter	6
Material that focuses solar ray on PV module	5
Total	67

The implementing regulation on domestic components requires that at least 55% of the components used in a solar facility must be locally manufactured. In order to reach this percentage, the regulation provides for different percentages for different parts, and if the total of these sum to 55% or more, then the generator is granted the incentive. For instance, in a PV module, glass is assigned 20%, frame 15%, back sheet 20%, junction box 20%, and ribbon 5%. If a generator uses locally-manufactured glass, frame and junction box, then it will be granted the additional US\$13 incentive for use of locally-manufactured PV modules.

The legislation requires that components be actually manufactured in Turkey; mere assembly of parts is not sufficient.

In order to benefit from the domestic component price incentives, generators must submit two items to the Ministry of Energy. One is a “domestic manufacturing certificate” attesting to the domestic origin of the relevant component, to be prepared by a certified public accountant using a form provided in the regulations and approved by the Chamber of Industry or Chamber of Industry and Commerce with which the component supplier is affiliated. The other is a “product certificate” to be prepared by a national accreditation agency recognized by the International Accreditation Forum and attesting to the conformity of the component to national or international standards.

Currently, the local manufacturing sector is underdeveloped and generators are heavily dependent on imported products.

In addition, all renewable energy generators enjoy three other incentives, including reduced licensing fees and priority in grid connection.

The first is payment of only 10% of the license application fee otherwise applicable, and exemption, for a period of eight years, from the annual license fee.

The second is priority in grid connection.

The third is an 85% reduction in permitting costs, rent and other costs of gaining rights of access and usage of state-owned land (available only to projects that are in operation before December 31, 2015). The break on rent or easement fees runs for 10 years after a project commences operation.

In the wake of the significant amounts bid in the recent tenders, the solar power sector has been discussing how feasible the projects will be.

Most winners are subsidiaries of leading Turkish energy companies, but there are also international players. One might interpret this as a good sign that big players are ready to invest large sums to proceed with solar projects. / continued page 40

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However, the sector's skepticism is understandable, especially in view of the bitter experience with wind power tenders a few years ago, where applicants ended up paying TEİAŞ large amounts of money that made their projects infeasible.

There are still 16 provinces or regions awaiting solar tenders.

Pre-Licensing Process

All generators are issued a preliminary license during the pre-construction stage that will be replaced by a permanent license at the beginning of construction. The winning bidders in the tenders that have already taken place will be granted pre-licenses.

Solar bidders had first to get an authorization from the Directorate of Meteorology to set up a measurement station on the site and then submit to EMRA measuring data of at least one year, including an on-site measurement conducted for at least six months, as part of their applications. The application package also includes a letter of guarantee in an amount calculated based on the contemplated installed capacity and the applicant's organizational documentation with the required statutory provisions. Applicants must be a joint stock company or a limited company.

During the pre-licensing period, the applicant must obtain the

majeure event (unavoidable and unforeseeable events beyond the reasonable control of the generator, including acts of God and war) or the period is extended by EMRA, which has authority to extend for up to another 12 months. If the generator fails to secure the required permits, approvals or licenses within the pre-licensing term, then no permanent license will be issued.

No direct or indirect change in the shareholding structure of the generator is usually allowed during the pre-licensing period. Any such change will lead to revocation of the pre-license. However, a change is allowed in the shareholding structure of a foreign shareholder of the pre-license holder. For instance, shares in the foreign parent of a pre-license holder may change hands.

Once all obligations of the pre-license period are fulfilled, then the pre-license holder may apply for a permanent license. Such licenses are granted for a minimum of 10 years and maximum of 49 years.

There are also some share transfer restrictions applicable to license holders. Any direct or indirect acquisition of at least 10% of the shares of a licensed company (5% in public companies), or share transfers resulting in a change of control, require prior approval by EMRA.

The legislation grants a step-in right to lenders in limited or non-recourse project financings. Lenders may ask EMRA to approve the transfer of the license to another legal entity, provided that this entity assumes all the obligations of the related license holder.

Distributed Generation

Another area of interest is distributed generation or so-called "unlicensed generation." As the name suggests, facilities with a generating capacity of up to a certain limit are exempted from pre-licensing requirements. The upper limit has been recently taken to one megawatt from 500 kilowatts, and the Council of Ministers, without any legislative amendment, is authorized to

increase the limit up to 5 megawatts.

Solar power has been used for water heating for a long time in Turkey (without the need for any license or permit). In view of increasing electricity prices and falling cost of photovoltaic

Solar development is picking up speed in Turkey.

required permits, approvals and licenses to start construction such as zoning permits and environmental clearances, and also secure title to or a right to use the relevant land. No solar power plant is allowed on agricultural lands.

The pre-licensing period is 24 months, unless there is a force

technology, Turkey has seen an increasing interest from commercial players and “prosumers” in roof-top installations.

In addition to exemption from licensing requirements, unlicensed generators are exempted from corporate formalities imposed on licensed generators. These generators do not have to establish a legal entity in order to operate. However, they must still obtain approval from the distribution company in the relevant region for grid connection and system usage and secure land use rights and environmental clearance. As far as these formalities are concerned, the renewable energy law does not distinguish between very small-scale unlicensed projects and larger projects, for example, one-megawatt projects.

Although the increase to one megawatt has been a positive development, Turkey has a long way to go to reach the level of distributed solar generation in other countries like the United States and Japan. Each unlicensed facility is required by law to be connected to a consumption unit, and any excess power not consumed in this unit can be sold to the grid. It is not clear whether the same generator may set up multiple facilities (for instance 10 facilities each having an installed capacity of one megawatt) within the same region, and sell the excess power to the grid. Normally a generator planning an installed capacity bigger than one megawatt would have to secure a license from EMRA. The legislation neither allows nor prohibits such structure. However, the legislation itself provides that, as a general rule, license-exempted generation must be used by consumers to meet their own power needs and not primarily for trading. Therefore, the structure involving multiple facilities with a maximum of one megawatt of installed capacity may be viewed by the authorities as circumventing the rules for licensed generation, and the structure has yet to be tested.

Power generated by an unlicensed facility and not consumed in the consumption unit can be sold to the grid, and this excess power will benefit from the feed-in rate and domestic component incentives, if applicable.

Unlicensed facilities may be transferred after provisional acceptance. A step-in right, as described earlier for licensed generation, is also possible for banks and other financial institutions that have provided limited or non-recourse project financing to the unlicensed generator.

What Lies Ahead?

Those who keep abreast of Turkish solar power are no strangers to government targets announced in multiple gigawatts to be reached by 2023, the centenary of the Turkish Republic.

The latest of these targets was announced in Turkey’s first National Renewable Energy Action Plan prepared in line with the European Union’s Renewable Energy Directive on the Promotion of the Use of Energy from Renewable Sources (Directive 2009/28/EC (1)), with support from the European Bank for Reconstruction and Development. According to the Turkish action plan, Turkey pledges to install 60 gigawatts in renewable energy capacity by 2023, five gigawatts of which will be solar.

It seems that Turkey’s solar potential will finally be tapped. Turkey has an average annual total sunshine duration of 2,640 hours; a total of 7.2 hours per day, which gives Turkey the biggest potential among European countries after Spain.

Once the first pre-licenses are granted, the authorities are expected to launch a new round of license applications, and this time without the countrywide limit and with a faster process.

The real hurdle ahead for solar power is not the investment costs (which have been decreasing due to advancement of photovoltaic technology), but the 600-megawatt countrywide limit. The local manufacturing sector is also expected to grow after the pre-licenses are granted and investors have a clearer view of the solar power market in Turkey.

Growth in rooftop solar installations is expected to continue. It is still not clear whether the regulators will require aggregation of multiple small generating facilities with a single owner in the same general location for purposes of limiting access to net metering where excess generation is sold to the grid. However, more investment (both domestic and international) is expected. ☺