

ELECTRICITY MARKET AND SECURITY OF SUPPLY STRATEGY PAPER

1. INTRODUCTION

Since the enactment of Law No. 4628 on 03 March 2001, significant steps have been taken for the introduction of a competitive and functioning market in the Turkish electricity sector, the public entities operating in the sector have been restructured, and market rules that would ensure liberalization of the sector were put into implementation.

The Electricity Sector Reform and Privatization Strategy Paper, as a short and medium term road map for sector reform and privatization, was published on 17 March 2004. In this scope, the necessary legal arrangements have been completed; the long-term demand forecast study has been completed and published; transitional Balancing and Settlement practice has started; transitional contracts have been completed; the price equalization mechanism was introduced; DSI power plants have been transferred to EÜAŞ; as part of the preparations for privatization, EÜAŞ portfolio groups have been formed, distribution regions have been re-organized and incorporated, and TEDAŞ has been included in the scope and program of privatization; tariffs have been established for these regions for the transitional period; distribution privatization methodology has been established and auction procedures have been started. Thus, significant steps have been taken for the establishment of the electricity market and in the privatization process.

The basic goal of restructuring in the electricity sector, which takes liberalization as a basis, is to create an investment environment that would ensure implementation of the required investments in the context of security of supply, and to pass the benefits to be achieved by efficiency to be gained through creation of competition in the sector to consumers. The policies and strategies implemented to achieve this goal are closely associated with the circumstances in our country and the developments in the energy sector worldwide. As a matter of fact, within the framework of increased cost and price as well as growing demand for electricity, many countries are taking new measures to ensure the security of supply, the existing market structures and rules are being renewed in the light of both the experiences and the problems encountered, and market mechanisms are being strengthened with measures to ensure the security of supply. In our country, too, it has become imperative to take new measures due to the continuing demand growth above the world averages and associated increase in investment needs.

The formation of a competitive liberal market in the electricity sector requires a transitional period. In order to prevent the transitional period from constituting a risk for the security of supply, the developments in our country with regard to market formation are monitored taking into consideration the tendencies in the world, the experiences and challenges faced by other countries in this transitional process are being taken into consideration; the amendments needed to the legislation are being made and necessary measures are taken.

In this context, taking into consideration of the requirements of the transitional period and the advancements achieved and arrangements made to date, in order to publicize the program of privatization and the methodology to be followed to achieve targeted market structure in the electricity sector in the coming period and to set forth and announce to public the steps that will be taken to ensure security of supply and to determine the targets with regard to sources to be used for electricity supply in middle and long term, this Electricity Market and Security of Supply Strategy Paper has been prepared.

2. OBJECTIVE AND PRINCIPLES

The basic objective is to ensure adequate, uninterrupted, high-quality, low-cost supply of electricity, which has an indisputable place in our economic and social lives, to all consumers while taking into consideration the environmental concerns.

Within this objective, the efforts to create a competitive liberal market will be continued; efficiency will be brought to practices aimed at ensuring the new generation investments to be commissioned to meet the electricity demand are carried out within the market structure, in harmony with the resource priorities of the energy policy and under sustainable; electricity transmission and distribution services will be provided at a quality and adequacy level that assures consumer satisfaction; generation and distribution privatizations which are among the instruments for creation of a competitive market will be completed; and an electricity market that is based on competition and is operated within the framework of liberal market rules will be established.

Compliance with the following principles will be essential in the structuring of electricity sector and functioning of the market:

- Establishing and maintaining the market structure and market activities such that security of supply will be ensured;
- In line with the goal of creating a sustainable electricity market, taking into account the climate change concerns and environmental impacts in all activities of the sector,
- Minimizing losses in the generation, transmission, distribution and consumption of electricity and increasing efficiency; reducing electricity costs through a competitive environment to be created by taking the resources priorities of energy policy as a basis, and thus supplying electricity services to consumers at more reasonable costs through the gains to be acquired as such.
- In order to minimize external dependency in energy supply, encouraging new technologies, ensuring resource diversification, and utilizing indigenous and renewable energy resources at the maximum level;
- Increasing the local contribution share in investments to be made in the sector.

3. MARKET STRUCTURE AND PRACTICES

3.1. WHOLESALE MARKET

3.1.1. IMPROVEMENT OF EXISTING STRUCTURE

The process of establishing the market structure which is complemented with the balancing and settlement mechanism and is based on bilateral contracts between buyers and sellers will be continued with commitment.

It is essential that the electricity needs of distribution companies holding retail sale license and of the suppliers supplying electricity to eligible consumers be met under bilateral contracts to be concluded with generation companies. It is necessary to strengthen the bilateral contracts market in order to ensure the security of supply, create a safe investment environment for generators and ensure security of supply for consumers. Medium and long-term bilateral agreements will create appropriate conditions for the undertaking of the new investments needed in the sector by the private sector. To this end, secondary legislation will be prepared in parallel to the legal arrangements prepared to enable distribution companies with retail sale license which are obliged to meet the energy demands of consumers to enter into medium and long-term energy purchase

contracts with generation companies and wholesale companies, and the eligible consumers with the suppliers they choose.

As complementary to bilateral contracts market, the existing balancing and settlement system being operated by the Market Financial Settlement Center (MFSC) will primarily be improved in the form of a day-ahead market and real-time balancing power market. In the medium term, a futures market is planned to be established. The demand side will also be enabled to participate actively in this practice. A gradual transition strategy will be followed for this purpose:

- At the first stage, the preparations of final Balancing and Settlement Regulation (BSR), which will replace the existing transitional balancing and settlement mechanism taking as a basis the existing three settlement periods, will be completed and published. In this scope, the existing balancing market will be divided into two parts –i.e. “Day-Ahead Planning” which is basically responsible for ensuring a balanced system for the System Operator (TEIAS) for the day ahead, and “Balancing Power Market” which will ensure real-time balancing of supply and demand- and imbalances will be settled on an hourly basis. This process will start on 01 October 2009 pursuant to the subject Regulation. In this framework, necessary amendments will be made to the existing transitional contracts.
- At the second stage, which will start no later than 01 January 2011, “Day-Ahead Planning” is planned to be replaced by “Day-Ahead Market”, as a spot market in which market participants will operate to balance their portfolios and provide a balanced system to the System Operator for the day ahead. In this case, the practice of settling the imbalances in the real time Balancing Power Market on an hourly basis will continue.

For enabling the MFSC to make its payments to market participants in a timely manner and in full, it is important to prevent defaults in payments to MFSC. For this reason, the practice of notifying the amounts determined as a result of balancing and settlement to the bank to be designated and effecting the payments to or from the bank accounts and/or the practice whereby all public and private parties hold guarantees in proportion to their payment risk shall be started in 2009.

3.1.2. DAY-AHEAD MARKET

In the day-ahead market, it will be possible to trade electricity apart from the medium and long term bilateral contracts. Thus, balancing and settlement transactions to be carried out on the basis of individual settlement periods will be exclusive to the balancing and settlement of amount differences under existing contracts, and market participants will be able to effect short and medium-term spot purchase – sales transactions, including for the day ahead, in the day-ahead market, thus enabling them to eliminate in advance the differences that may occur between the projected demands and supply possibilities. This market will also reduce the amount of real-time balancing within the day.

3.1.3. FUTURES MARKET

The futures market will have significant functions in terms of forecasting the future supply and demand balance and energy prices in a more realistic way and thus minimizing the risks which the market participants may encounter.

3.1.4. CAPACITY MECHANISM

In order to support the market structure based on energy trading aimed at undertaking the new generation investments, capacity creation and capacity trading mechanisms will be established. The capacity mechanism will introduce the following obligations:

- For generation companies: obligation to make capacity notifications relating to their reliable capacities in proportion to their MW powers, and to publish capacity certificates and supply this capacity in line with such notification,
- For suppliers: obligation to obtain and notify necessary capacity certificates to meet the loads (MW) they are obliged to supply

Capacity certificates will be prepared such that they will reflect the reliable available capacity.

The regulation setting out the principles and procedures applicable to determining the reliable capacity quantities of generation companies and the capacity needs of suppliers; the obligations of parties; preparation and enforcement of capacity certificates will be prepared by the Ministry of Energy and Natural Resources upon receiving the comments of Energy Market Regulatory Authority. The practice is targeted to be launched by the end of 2009.

3.1.5. CAPACITY/ENERGY PROCUREMENT THROUGH COMPETITION:

Central auctions will be held based on a Council of Ministers decree to procure energy and capacity to meet the demand of suppliers if deemed necessary. In these auctions, the state will not procure energy or provide guarantee. It is targeted that the distribution companies required to meet their demands make a collective notification to meet their future demand if they so request, that new generation facilities be built to meet this collective demand and that contracts be signed between the owners of these new power plants and distribution companies. The principles and procedures relating to the procurement of energy and capacity through central competition will be set out in a regulation to be prepared by the MENR upon consulting the Energy Market Regulatory Authority.

3.1.6. TRANSITIONAL CONTRACTS

The following principles will be applied to the allocation of generation capacity of the public sector to the market through Transitional Contracts.

- The duration of existing Transitional Contracts concluded on the basis of regulated prices will be extended pursuant to Law No. 5784. This provision shall apply also to the facilities to be privatized during the term of contracts.
- Existing contracts will be revised within the framework of the hourly settlement practice to be introduced.
- The reliable minimum generation capacities of EÜAŞ hydropower plants, as determined by the MENR, EÜAŞ and TEİAŞ every year, will be allocated to TETAŞ through Transitional Contracts. In order to keep the dam reservoirs of EÜAŞ hydropower plants at safe levels according to their water intake, the day-ahead generation offers to be made by EÜAŞ to MFSC relating to these power plants will be prepared such that the specified monthly dam operation levels will be preserved.

3.1.7. MARKET OPERATOR

It is targeted that the financial settlement procedures which are currently being carried out by TEİAŞ, as well as the day ahead market transactions and the operation of futures market to be established in the medium term will be carried out by the “Market Operator” with financial and administrative autonomy. The work for the structuring of Market operator will be completed by the end of 2009.

3.1.8. INCREASING THE MARKET OPENNESS RATE

In order to increase the market openness rate on the consumption side, the eligible consumer limit will be regularly lowered such that all consumers excluding the residential consumers will be eligible consumers by the end of 2011, and all consumers will become eligible consumers by the year 2015.

3.2. TARIFFS AND PRICING:

The price equalization mechanism started to tariffs applied to consumers across distribution regions on the basis of national tariff will continue to be implemented until the end of transitional period.

Energy pricing will be cost-based and the Cost-Based Pricing Mechanism introduced on 01 July 2008 will continue to be implemented.

After the introduction of final market design, whereby day-ahead trading and intra-day balancing are separated, distribution companies with retail sale license will be able to reflect day-ahead purchase costs to their tariffs. However, because the objective is a market structure where imbalances are settled in the day before and because it is intended to meet the needs through bilateral contracts and energy purchased from the day-ahead market, it will be possible to reduce the amount of intra-day real time power balancing. After the Day Ahead Market becomes operational, the costs originating from the hourly settlement of imbalances in the real time balancing power market will not be reflected to tariffs.

Through making necessary amendments to the Law No. 4628, retail sale tariffs will continue to be regulated for all consumers who do not change their suppliers.

Practices that will incentivize savings and efficient consumption will be introduced in the pricing of electricity.

3.3. UNBUNDLING OF ACTIVITIES:

Distribution companies performing distribution, generation and retail sale activities together will unbundle these activities until 01 January 2013, and these activities will be performed under separate legal entities as from that date. The amendments and arrangements needed to be made in the electricity market secondary legislation will be completed by EMRA within 2012.

4. PRIVATIZATION

The basic goals will be to establish a competitive structure for the sector, increase efficiency in generation and distribution sectors and reflect the acquisitions gained as such to end users. A revenue-focused privatization strategy will not be pursued.

Required operation and maintenance activities and required investments will continue to be carried out without any interruption as independent from the privatization process.

4.1. DISTRIBUTION PRIVATIZATION

The structural changes in the goals set out in the “Electricity Sector Reform and Privatization Strategy Paper” issued through the High Planning Council Resolution no. 2004/3 dated 17 March 2004 have been completed, and within the framework of the principles set for the privatization of distribution sector, the privatization transactions are targeted to be completed largely by the end of 2010.

The distribution regions relating to the contracts concluded under Law No. 3096 and considered as “vesting contracts” under Law No. 4628 will be transferred to the contractual parties on the condition that they are modified within the framework of Law No. 4628. In these regions, the companies covered by Law No. 4046 which have been established under TEDAŞ and have signed Transfer of Operating Rights Contracts with TEDAŞ will continue operating the subject regions until transfer date, and will preserve their existing structure until they are liquidated.

The shares of public entities operating in the electricity market in private generation and distribution companies will be privatized.

4.2. PRIVATIZATION OF GENERATION FACILITIES

The objectives of generation privatization are to improve electricity generation capacity, increase the availability of existing generation facilities and raise their capacity utilization factors, and activate private sector resources to enhance competition in the sector. When determining the privatization methodology, particular attention will be paid to the realization of rehabilitations needed for existing power plants and increasing the installed power capacities of power plants through additional investments at the power plants where fuel resources are adequate.

In identifying the power plants to be privatized and grouping them in portfolios, the basic criteria will be the avoidance of formation of dominant power in the market and ensuring competition.

The existing generation portfolio groups will be re-evaluated and finalized.

The lignite-fired power plants which need rehabilitation and whose lignite reserves are sufficient for adding new unit(s) can be privatized individually, without being included in any portfolio, on the condition that additional units are installed.

The methodology to be followed for the privatization of generation facilities (asset sale, TOR, share sale, rate of shares to be sold, etc.) and the status of portfolio groups will be determined by the Privatization Administration in consultation with the MENR.

The information and documents to be needed by the Privatization Administration will be provided by the related public agencies and administrations and the actions required by the Privatization Administration shall be taken by the related public agencies and administrations as soon as possible.

The procedures for the privatization of generation facilities are targeted to be launched in 2009.

5. SECURITY OF SUPPLY

5.1. MONITORING AND EVALUATING SECURITY OF SUPPLY

Under Additional Article 3 “Security of Supply” which has been inserted to Law No. 4628 through Law No. 5784, the short, medium and long-term security of supply will be continuously monitored, evaluated and necessary measures will be taken. In this evaluation, the basic approach will involve ensuring supply-demand balance with adequate reserve, development of sector in line with the specified goals with regard to resource diversification, external dependency, environmental impacts and market prices, and taking measures to direct the market in case of deviation from the targets.

In order to help establish energy policies and assist the market participants in making long-term assessments, long-term demand projections will be prepared and the MENR will publish projection regarding the generation composition and capacity needs to meet this demand.

5.2. TRANSITIONAL MEASURES

5.2.1. ENERGY PURCHASE BY TETAŞ UNDER BILATERAL CONTRACTS

The electricity to be purchased by TETAŞ from the market through bilateral contracts as deemed necessary, pursuant to the provisions of Provisional Article 14 added to Law No. 4628 through Law No. 5784, shall be sold by making additions to the quantities in Transitional Contracts between TETAŞ and Distribution Companies, in proportion to the total consumptions of companies.

5.2.2. ACCELERATION OF PUBLIC INVESTMENTS UNDER CONSTRUCTION

In order to complete the DSI hydropower plant investments listed in the Annex at the dates specified, necessary budgets will be allocated, necessary measures will be taken by DSI to ensure that the budgets allocated for these projects are used to complete these projects and the budgets allocated for these projects will under no condition be reallocated to other projects. The extent to which DSI Directorate General has spent the funds allocated for these projects will be monitored and controlled on the basis of end-year realizations. DSI will take the measures required for the completion of these investments in the specified periods such that the originally established investment costs will not increase in the course of project. Furthermore, adequate funds will be allocated for the timely completion of the rehabilitation programs of some EÜAŞ power plants.

5.3. IMPROVEMENT OF TRANSMISSION SYSTEM

5.3.1. INCREASING INSTITUTIONAL CAPACITY OF TEİAŞ

It is targeted to re-organize the Market Operator as a separate legal entity and until this organization is completed, the administrative and financial structure of TEİAŞ, which is the System Operator, Market Operator and at the same time the owner and operator of transmission system, will be strengthened so that it can fulfill its very critical functions in the context of market development and ensuring security of supply. To this effect, TEİAŞ will be supported for the recruitment of adequate level of technical staff and for the substitution of retired staff. Necessary legal arrangements shall be made for this purpose.

5.3.2. IMPROVEMENT OF NATIONAL GRID

Adequacy of transmission infrastructure is one of the most important factors ensuring security of electricity supply and establishing a well-functioning electricity market. In this context, in order to connect to the system the new generation investments being made and to be made, the necessary budgetary allocations in line with the transmission planning to be prepared by TEİAŞ will be provided on a priority basis. In order to reduce system losses and increase system reliability, transmission tariffs will be prepared by taking into consideration regional supply-demand balances, with the exception of generation facilities based on natural resources; and in order to ensure that generation increases in regions with high consumption, transmission tariffs will be incentivizing for the power plants to be installed in regions where there is a need for generation.

6. LICENSING AND CONNECTION TO THE SYSTEM OF WIND POWER PLANTS

EMRA shall announce the licensing road map and the criteria of evaluation to be performed by EMRA following the comments to be conveyed by the Directorate General of Electrical Power Resources Survey and Development Administration (EIE) on the applications for wind power plants, Pursuant to the Energy Efficiency Law No. 5627 and the regulation on the principles applicable to comments to be conveyed about wind power plant applications.

The regulation regarding principles and procedures applicable to the competition to be held by TEİAŞ in case the applications for power plants that may be connected to the same Substation exceeds the Substation capacity according to the EIE comments and EMRA assessments, or in case multiple applications are filed for the same area, will be prepared by TEİAŞ by 30 June 2009.

In order to prevent the increasing wind power plant capacity from causing problems in system operation and to eliminate the constraints in connecting these power plants to the electricity grid, the software and hardware required to be added to existing load dispatch centers by TEİAŞ will be procured and installed by the end of 2010.

7. INTERCONNECTIONS WITH NEIGHBORING COUNTRIES, CONNECTION TO EUROPEAN TRANSMISSION NETWORK (UCTE) AND IMPORTS / EXPORTS

In order to increase the electricity import and export potential, international transmission connections will be developed with neighboring countries and the capacities will be increased.

The following principles will be observed in the activities to be carried out in this context:

- The priority and basic goal is to ensure that our electricity transmission grid works synchronous-parallel with the European Transmission Network (UCTE). For this reason, the changes and improvements needed in our transmission and generation system to rapidly complete the initiatives started with UCTE and to make connections will be completed, and ensuring parallel operation with UCTE system by the end of 2009 will be aimed. Necessary budgets will be allocated for the investments to be made by TEİAŞ and EÜAŞ in this direction.
- When this goal is achieved, the cross-border trade to be carried out via the common transmission grid with Europe will be performed within the framework of the EU Cross-Border Trade Directive and our internal legislation. In this scope, it will be possible to participate in regional markets which are likely to be established or it will be possible to work for the establishment of regional market.

- Connections with other countries will comply with the conditions required for connection to European electricity grid and our membership with UCTE.
- In this context:
 - Basically, direct current (DC) connection method will be used in transmission connections with non-UCTE member countries. For this reason, the agreements to be concluded between and TEİAŞ and neighbor country transmission system operators for existing and new connections will include the condition of installing the necessary AC-DC/ DC-AC converter facilities.
 - The transmission facilities and DC-AC converter facilities to be built within national boundaries will be constructed by TEİAŞ, and will be made available for use by importing/exporting legal entities in line with the legislation.
- Until the installation of DC connection:
 - Import/export will be possible through unit direction.
 - Export will be possible to isolated regions to be established abroad,
 - In line with the provisions of Provisional Article 13 added to Law No. 4628 with Law No. 5784, electricity may also be imported through the method of isolated region supply to be established within the country. The period specified in the referred article may be extended through an Energy Market Regulatory Board decision as deemed necessary to ensure the security of supply.
 - However, it is imperative that the import to be carried out through the methods of unit direction or isolated region do not adversely affect the quality and security of electricity system and that the quality of imported electricity conforms to the applicable legislation.

8. RESOURCE UTILIZATION TARGETS

8.1. GENERAL PRINCIPLES

The priority goal is to increase the share of indigenous resources in electricity generation. In this direction, market-orienting measures will be taken to incentivize the use of indigenous resources. In the report to be submitted by the MENR to the Council of Ministers regarding the security of supply, pursuant to the provisions of Provisional Article 3 added to Law No. 4628 through Law No. 5784, the measures needed for reaching and over-performing the targets undertaken on an individual resource basis as mentioned below, to achieve the general goal specified above, will be recommended. The targets may be revised taking into consideration the developments in technology, market, resource potential and demand projections.

8.2. INDIGENOUS LIGNITE AND HARD COAL

The proven lignite reserves will have been utilized for electricity generation purpose by the year 2023. To this effect, the practices for utilizing the indigenous lignite and hard coal sites suitable for electricity generation for projects aimed at electricity generation will be continued.

8.3. NUCLEAR ENERGY

The efforts launched for using nuclear power plants for electricity generation will be maintained. The share of nuclear power plants in electricity generation is targeted to reach minimum 5 percent until 2020, and further increase in the long term.

8.4 SHARE OF RENEWABLE ENERGY RESOURCES IN ELECTRICITY GENERATION:

The basic goal will be to ensure that renewable energy resources have a share of minimum 30 percent in electricity generation by the year 2023. This target may be revised taking into consideration the developments in technology, market and resource potential

In this context, the following goals will be taken into consideration in the long-term studies to be carried out.

- **Hydropower**

It will be ensured that whole hydropower potential which can be technically and economically utilized will be used for electricity generation by the year 2023.

- **Wind**

The installed capacity of wind energy is targeted to be increased to 20,000 MW by the year 2023.

- **Geothermal**

Our 600 MW geothermal power potential, which has been found to be appropriate for electricity generation for the time being, is targeted to be commissioned entirely by the year 2023.

- **Solar**

The goal is to expand the use of solar power for also generation of electricity and to ensure utmost utilization of our country's potential of solar power. Technological advancements regarding the use of solar energy for the generation of electricity will be closely followed up and adopted. Necessary amendments will be made to Law No. 5346 in 2009.

- **OTHER RENEWABLE RESOURCES**

Generation plans will be prepared by taking into consideration the technologic advancements and the developments in the utilization potential of other renewable resources depending on legal arrangements, and if the use of other renewable resources increases, the share of fossil fuels, primarily including the imported resources, will be reduced.

8.5. NATURAL GAS

As a result of the measures to be taken for the use of indigenous and renewable energy resources, the share of natural gas in our electricity generation will be targeted to be reduced to less than 30 percent.

8.6. IMPORT COAL

Indigenous and renewable resources shall have priority in meeting the need for electricity, yet high-quality import coal-fired power plants will also be used, taking into consideration the developments regarding the use of indigenous and renewable resources and security of supply.

9. EFFICIENCY AND SAVING

It is important to increase efficiency, avoid extravagance and reduce energy density both at sectoral and macro levels in the process from the generation through consumption of energy, in terms of the goals of ensuring security of energy supply, mitigating the risks arising from external dependency, fighting climate change and protecting the environment.

In this context, measures to ensure efficiency in electricity consumption will be implemented without compromising the social and economic development targets.

Technical losses will be minimized in electricity generation, transmission and distribution, and commercial losses will be avoided in distribution.

Within the framework of Energy Efficiency Law No. 5627, efficient use of electricity will be ensured, the extravagance of electricity will be avoided, the burden of energy costs on the economy will be alleviated and environmental impacts will be reduced.

The principles and procedures applicable to the classification of electrical motors, air-conditioners, electrical home appliances and bulbs as well as the determination of their minimum efficiency levels will be determined by the Ministry of Industry and Trade and regulations will be enacted for not allowing the sales of those that do not meet the minimum limits.

The regulations concerning increasing energy efficiency at electricity generation facilities and transmission and distribution grids, demand side management, open area enlightening and the spread of high-efficiency cogeneration practices will be realized by the MENR.

ANNEX

DSI POWER PLANTS UNDER CONSTRUCTION

- AKKÖPRÜ
- ALPASLAN
- ATASU
- BOĞAZKÖY
- ÇİNE
- DERİNER
- ERMENEK
- ILISU
- KIĞI
- KILAVUZLU
- KİRAZLIKÖPRÜ
- MANYAS
- SÜREYYABEY
- TOPÇAM