

# WIRED IN GREECE

The Greek electricity sector has undergone sweeping changes over the past decade, with liberalisation of EU law opening up the sector to foreign competition. By *Nick Pitsas*

**T**he unbundling of the Public Power Corporation, the formerly publically-owned monopoly, and the opening-up of the market to competition following the transposition of Directives 96/92/EC and 2003/54/EC is one of the major changes in recent years. Greece's energy infrastructure has been updated as a result of the increasing penetration of natural gas as an electricity generation fuel and the promotion of renewable energy sources ("RES").

The electricity market in Greece is split into two different systems: first, the mainland grid, which inter-connects all of continental Greece (including a few islands); and, secondly, the so-called "non-interconnected islands" (in which large islands, such as Crete and Rhodes, are included), each of which has its own autonomous electricity network. This distinction is crucial, not least because there are different rules applicable to each network system.

## THE ELECTRICITY MARKET

The electricity market operates pursuant to a "mandatory pool system" whereby all electricity generated must be sold to the national mainland transmission grid (the "Pool"), which then re-sells all such production to electricity suppliers: namely, each and every electricity producer, who is active within mainland Greece, is compelled to sell its production to the Pool, and, likewise, all suppliers must purchase electricity from the Pool.

As a result, the entities operating in the Greek electricity sector are divided between two key categories: those releasing energy to the Pool and those absorbing energy from the Pool.

### In the former category belong the following entities:

- » electricity producers from thermal power plants
- » electricity importers from neighboring countries (Albania, FYROM, Bulgaria, Italy) through the country's electricity interconnection systems
- » major hydro-electric plants, which are all operated by Public Power Corporation
- » electricity producers from RES

### On the other hand, the following absorb energy from the Pool:

- » electricity suppliers
- » electricity exporters to neighboring countries
- » the major hydro-electric plants of PPC (which "store" electricity with the view to "transforming" it into "dynamic" power by pumping water)

Almost all these entities participate every day in the wholesale market by submitting competitive offers through the Daily Power Scheduling (DPS), which is carried out by the Transmission System Operator, called DESMHE on a daily basis for each hour of the following day. The only ones who are excluded from this process are the producers from RES and small CHPs whose whole electricity production is absorbed by the Pool in priority to all other producers and who do not need to submit any offers.

In consequence of the operation of DPS, which is formed each day for the day ahead, two major repercussions come into being. First, the operation programme of each power plant for the

following day is formulated: that is, which power plant will operate, for how long and in which percentage of its maximum capacity. And secondly, and more significantly, the settlement electricity price (the so-called “Marginal Pool Price”) is determined.

**In order to provide a concise account of the working of this system, a brief description is presented below:**

» The previous day, electricity producers and importers submit

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offers to the DESMHE: namely, they specify on an hourly basis the volume of power they wish to release as well as the price they want to obtain.

- » On the other hand, electricity suppliers and exporters who wish to supply customers/final consumers are under a mandatory obligation to submit load declarations. If any of the suppliers and exporters fails to observe or to comply with its respective declarations, it is subject to sanctions by DESMHE.
- » After taking into consideration the aforementioned offers made and the demand declarations made by suppliers and exporters as well as a number of technical limitations, DESMHE forms the DPS in a way that, on the one hand, full power supply is ensured, and, on the other hand, the minimum aggregate costs for the use of the network’s overall load are incurred. The order of the producing power plants in entering into the Pool depends on the value of their respective offers: those giving the cheaper price enter first, and then the more expensive ones until all projected demand is met. Practically this means that the producers should submit competitive offers; otherwise they will run the risk of not entering the DPS, in which event they will not be asked to produce any energy. The most expensive offer submitted by the power plant that is allowed to enter into the Pool determines the Marginal Pool Price.
- » On the day at which the actual release and absorption of power through the Pool occurs, it is more than probable that such releases and absorptions diverge from the ones initially predicted the previous day. On any such occasion, depending on whether more or less power is needed, more or fewer energy producers will respectively release electricity to the Pool by reference to the offers they submitted the previous day in accordance with the mechanism just described.
- » The settlement of financial transactions is made on the basis of releases and absorptions actually made, which also determine the final (real) ex-post Marginal Pool Price. The Marginal Pool Price is settled from the offer of the most expensive power plant, which is permitted to enter into the DPS the relevant day.

All entities participating in the DPS are paid (or pay) the Marginal Pool Price for the electricity they release to, or absorb from, the Pool, regardless of whether their initial offer was lower. This in effect means that neither the electricity producers have any prior knowledge of the price at which they will sell their production to the Pool, nor the suppliers are aware in advance of the price for which they will purchase electricity from the Pool.

Another aspect of this scheme is that producers from RES and small CHPs participate indirectly in the determination of the Marginal Pool Price, since, for instance during days at which stronger winds blow or the sun is shining, they will increase their production and release it to the Pool in priority to other producers; as such, there will not be any need for expensive thermal power plants to make their production available, thereby reducing the Marginal Pool Price. It should also be noted that all RES producers are not paid the Marginal Pool Price; instead, they are paid in accordance with special RES invoices, which are specified by the law.

### CAPACITY AVAILABILITY CONTRACTS

A specific feature of the Greek wholesale electricity sector is that a capacity payments mechanism has been set up in order to balance any generation/demand imbalances during the operation of the national electricity grid in real time and to secure the availability of sufficient reserve capacity on a long-term basis. This mechanism, which is controlled and operated by DESMHE under the supervision of the Greek Energy Regulator (called “R.A.E.”), has two principal features: the first is that it imposes capacity obligations on electricity suppliers; and the second is that it has developed an ancillary market for tradable capacity availability certificates, contracts or direct capacity payments pursuant to which generators are obliged to provide ancillary/balancing services to DESMHE.

All electricity suppliers are compelled to submit long-term guarantees as a means to secure the availability of adequate power generation for the national grid. These guarantees, the so-called Capacity Availability Certificates, are issued every year by the electricity producers for each of their licensed MWs and are purchased by a holder of a supply licence under a Capacity Availability Contract. The price of these certificates is regulated by statute and amounts to the sum of €35,000 per MW per year; however, this ancillary market will soon be liberalized and electricity producers will be free to sell their Capacity Availability Certificates into the marketplace, either via public auctions or through bilateral contracts.

Hence, on a practical level, the operation of this mechanism has the effect that an electricity producer in Greece has two different streams of income: first, the revenues accruing from the sale of electricity to the Pool; and, secondly, the proceeds generated from the sale of Capacity Availability Certificates, either to DESMHE or to the market through bilateral agreements.

The Greek legal framework on electricity regulation has been aligned with the EU second liberalisation package on electricity and the domestic market has opened up to domestic and foreign competition. This statement sounds particularly true in relation to the wholesale electricity market, the operation of which is based on the mandatory pool system whereby trading in the form of selling and buying electricity is undertaken through the day-ahead market run by DESMHE, the Transmission System Operator. This day-ahead market, which has become obligatory for all electricity producers and suppliers who want to purchase or sell electricity the following day, functions in a transparent and economically efficient fashion and has resulted in boosting competition among the companies that are currently active in the sector. Allied to that, the parallel development of the ancillary market of Capacity Availability Certificates has provided additional incentives to resilient and cost-effective operators electricity operators to enter the market, as evidenced by the various projects for new capacity generation, which are now either in their early stages of development or in the pipeline.

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