



Comments on the *Proposta de Regulamentação*  
for the Portuguese Electricity Sector,  
Submitted by Enron Europe Ltd.

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## Introduction

As the Portuguese electricity sector is moving towards competition, the Regulatory Authority of the Electricity Sector (ERSE) has submitted to the public a draft of the Regulatory Proposals (*Proposta de Regulamentação*, PRs) for comments.

These PRs present a general design of the electricity market, and some specific regulations concerning tariffs, trading arrangements, open access conditions, despatch procedures and interconnections.

A key feature of the PRs is its reliance on the construction of new generating plant to promote effective competition, and a gradual market opening. However, current economic conditions in Portugal may not be conducive to the construction of new plant. Moreover, the PRs could hinder the construction of new plant in several respects: the dominant role of *Electricidade de Portugal* (EdP) will put independent generators at risk, and the regulations do not yet contain appropriate safeguards to prevent the abuse of transmission access.

Despite the numerous references in the Portuguese law and regulations regarding the principles of non-disciplinary transmission access, open access could be difficult to enforce by third parties, unless the control of transmission is divorced from ownership of generating and distributing assets. We envisage that effective enforcement of non-discriminatory access will also require detailed rules outlining permissible behaviour and requiring the disclosure of important information. Providing greater specificity to the transmission access as soon as possible will be important for motivating new investment.

ERSE has also requested opinions on the merits of alternative commercial models. However, the alternative models proposed do not involve the fundamental restructuring of the industry, and they will not attain, *per se*, the desired objectives of the PRs. However, we also provide our views on these proposed models.

This paper is structured under different sections which cover the key issues dealt with in the PRs:

1. Transitional period and the speed of liberalisation
2. A dual electricity system
3. Opportunities for new generation capacity
4. Opening of the market
5. Commercial models
6. Despatch considerations
7. Transmission issues and open access arrangements

## 1. Transitional Period and the Speed of Liberalisation

The PRs propose that the liberalisation of the Portuguese electricity system takes place in two phases:

- Between 1998 - 2001, simple regulations will be implemented, which should allow the sector to meet the requirements of the EU Electricity Liberalisation Directive, and to open the market for competition.
- From 2001, these regulations will be revised and more definitive rules will be issued for ensuring a sustainable long-run development of the sector.

Ideally, this transitional period should give sufficient time for the sector to prepare for competition and open access, but should also create an adequate environment for new investments, and encourage eligible consumers to switch supplier.

ERSE should be aware that the pursued objectives may not be achieved exclusively through the proposed regulations, and some structural reform of the industry may also be required. If this initial design does not adequately set up the basis for a further development of the sector as desired, some valuable time will then have been lost.

In fact, one of the specific questions open for consultation involved the appropriate pace of reform. The PRs suggest that fast reforms might raise the prospect of stranded costs, but we believe that accelerating reform will not create stranded costs, but merely identify them more quickly. Current investments in the Portuguese industry are efficient or inefficient independent on the pace of reform. A faster pace can only stand to benefit consumers. At the same time, experience in other countries shows that incumbents can be protected from stranded costs without slowing down

the pace of reform. Experience elsewhere has also shown that if stranded costs are not dealt with promptly, their recovery becomes more difficult in the later stages of the liberalisation process.

## 2. The Dual System

A major feature in the PRs is the co-existence of two systems:

- a Public Service Electricity System or tied system (*Sistema Eléctrico de Serviço Público, SEP, or Sistema Vinculado*) because of its public service and uniform price obligations; and
- an Independent or non-tied system (*Sistema Não Vinculado, SENV*), which also includes autogenerators, mini-hydro plants (with capacity less than 10MW); renewable energy generators; and cogenerators.

The proposed solution can be considered typical of electricity sectors that have been dominated by a vertically integrated utilities, as EdP, and now face increasing pressures from governments, consumers or institutions (ie, the European Union) to open for more competition.

Therefore, rather than a definitive or long-term solution, the proposed dual system must be seen as a temporary arrangement as the structure of the electricity industry in Portugal becomes less concentrated.

Although the current PRs are supposed to regulate the market until 2001, they may be insufficient to encourage market opening, such that more pro-competitive (and possibly more severe) measures would need to be taken at that time.

Similar dual systems have been tried in other countries, and ERSE should learn from these past experiences. In particular, a close example can be found in Spain after the LOSEN (1995), where a similar dual system underperformed.

The present dual system has been in place in Portugal for some years, but the results are still modest: there are none or few non-tied clients (*Cientes Não Vinculados, CNVs*), and the few existing generators in the SENV belong to EdP.

### 3. Competition Opportunities on Generation

#### 3.1 Rules for Building New Capacity

The PRs rely on the development of competition in generation on both the SEP and the SENV:

- Generators wishing to enter or to build additional capacity in the SEP will have to win public tenders. Therefore, ERSE must ensure that rules for tendering in the Portuguese electricity sector satisfy EU standards. In addition, these tied generators (*Produtores Vinculados*, PVs) will sign *contratos de vinculação* with the concessionaire of the *Rede Nacional de Electricidade* (RNT) for all their capacity.
- The central planning in the SEP contrasts with the freedom in the SENV to build new capacity. Here, non-tied generators (*Produtores Não Vinculados*, PNVs) will only need to request an authorisation as established in the law.

Both the SEP and the SENV offer different incentives to investors:

- On one hand, conditions for new generation in the SENV are less restrictive than in the SEP, and we understand that this is a clear signal for investors. However, ERSE must take into account that this apparent freedom in the SENV needs to be complemented by adequate regulations for connections, such that new generation in the SENV receives a non-discriminatory treatment when planning expansions of the network.
- On the other hand, new plants in the SEP will secure their production through *contratos de vinculação*, and this is a strong incentive too.

However, these opportunities may be dampened by the existing structure of the generation business in Portugal, and the dominance of EdP, as shown below.

#### 3.2 Current Market Structure and Excess Capacity

ERSE should consider seriously if the current market structure will limit the effectiveness and scope of their proposed regulations

On the SEP, competition cannot be realistically anticipated as almost 92 percent (in 1996) of existing capacity is controlled by EdP (see Table 1). In addition, the *contratos de vinculação* do not encourage much competition on price among generators, since despatch is based on declared variable costs contained in the contracts.

On the SENV, EdP currently controls 100% of installed capacity.

Table 1: Installed Capacity, Peak Demand and Utilisation

		Source
SEP Installed Capacity (MW)		
Pego	[A]	615 APR, p. 32
EDP	[B]	7,238 [C]-[A]
Total	[C]	7,853 APR, p. 32
Percent EDP	[D]	92% [B]/[D]
SENV Installed Capacity (MW)		
HDN (EDP)	[E]	98 APR, p. 32
Hydrocelel (EDP)	[F]	88 APR, p. 32
Hidrotejo (EDP)	[G]	85 APR, p. 32
Total	[H]	271 [E]+[F]+[G]
Percent SENV	[I]	3% [H]/[I]
Total Installed Capacity (MW)	[I]	8,124 [C]+[H]
Peak Demand (MW)		
1996 Peak Demand	[K]	5,543 APR, p. 37
Capacity Margin	[L]	47% [I]/[K]-1
Utilisation		
1995 Production: SEP+SENV	[M]	28,520 APR, p. 44 (GWh)
Hours in Year	[N]	8,760
Utilisation	[O]	40% ([M]x1,000)/([N]x[I])

Note: APR = "Anúncio de Proposta de Regulamentação", 21 Jul 1997.

In addition to EdP's dominance, current economic conditions in Portugal may not favour the construction of new plant, either in the SEP or in the SENV. Total installed capacity exceeded 8,000 MW in 1996, which does not include the capability of imports across international interconnections (only 1,000 MW of the 4,000 MW total interconnection capacity is available for commercial use). In addition, about 1,600 MW (roughly 20 percent) of the installed capacity correspond to run-of-river hydro stations.

By contrast, peak demand in 1996 was only 5,543 MW. Installed capacity was therefore 45% greater than peak demand (see Table 1). Although some debate exists as to the level of reserves required for safety, figures of 20% to 25% are generally accepted as more than sufficient. Thus, there currently exists significant margin of excess capacity in Portugal.

Excess capacity is also evident in the low utilisation of existing plant. We understand that the total generation by SEP and SENV was 28,520 GWh in 1995. Given a total installed capacity in these sectors of 8,024 MW, the implied average utilisation of existing plant was only 40% (see Table 1). In other electricity markets,

the same figure can exceed 60% without approaching a perceived shortage of capacity.

Excess capacity could be eliminated over time by a combination of demand growth and the retirement of existing generating units. Absent plant retirements, it appears that an aggregate growth in demand on the order of 25% would be required to eliminate excess capacity. Even if Portugal were to witness a continuation of the high average economic growth levels of recent years, it would take several years to eliminate the excess. To facilitate planning, most liberalised electricity markets publish forecasts of demand growth and planned retirements. However, we have not seen such forecasts for the Portuguese market, and are therefore unable to assess exactly when new capacity would be needed.

If we consider a future in which excess capacity is eliminated, all customers are eligible, and the need for new capacity is met entirely by independent generation in the SENV, the Portuguese market would still be far from developing a competitive structure. As of 1996, installed capacity in the SENV was only 271 MW, about 3% of total installed capacity in the country (see Table 1). The SENV must expand enormously to produce a competitive market structure. Economists often use the Herfindahl-Hirschman Index (HHI) as a measure of market concentration, and figures ranging from 1,750 to 2,500 have been associated with excessive concentration in electricity generation. If EdP continues at its current size of 7,509 MW (see Table 1), it will take at least another 7,000 MW of new generation in the SENV to reduce the industry's HHI to barely acceptable levels of market concentration. That is, the SENV would have to grow to more than twenty-five times its current size. If only a few companies controlled these new units, then even more construction would be necessary to reduce market concentration to acceptable levels.

Therefore, given EdP's size and the existence of considerable excess capacity, potential investors in new plant must consider EdP's dominance. Market dominance raises the prospect of price discrimination and predatory pricing, and it can thwart the development of liquidity and undermine informative value of the resulting market prices. EdP's dominance would lead entrants to question whether any given set of actual market prices were sustainable in the long run.

We can conclude that the current regulatory regime should not rely on the construction of new plant to develop effective competition. Absent plant retirements, conditions are not now ripe for the construction of new plant, and a great deal of new capacity would be needed to produce a competitive market structure.

#### 4. Opening of the Market

The analysis of the generation opportunities in both the SEP and SENV has its counterpart on the level and speed of market opening achieved during the transitional period, and in the future.

At present, both level and speed of opening have not been yet decided, so we have to base our analysis on the existing size of the eligible market:

- Distribution companies can purchase up to 8 percent of their needs from non-tied generators (which could be increased up to 15 percent in the future); and
- Consumers with more than 100GWh/year.

Therefore, PNVs will first target the 8 percent market from the distribution companies. This market is also dominated by EdP, which owns the major distribution companies. Although these companies may be free to buy a specific percentage of their output from the SENV, they may exert a natural bias toward purchases from companies that are also controlled by EdP in both the SEP or in the SENV.

More importantly, the lack of competition among distribution companies will naturally reduce their motivation to shop for the cheapest possible electricity supplies. Experiences from other countries (eg, England and Wales) also suggest that switching of supplier normally takes time. Realistically, the opportunities for potential new entrants will be focused upon eligible end-users, but this opening is yet under study.

However, without a clear idea of the size of the eligible market in terms of consumption and peak demand, ERSE must be aware that the current PRs may not achieve the desired results of increasing competition in generation.

Expanding the number of eligible customers slowly is likely to deter effective competition. As we explained above, the prospects for competition currently rely on the construction of independent new plant given the dominance of EdP. A quick opening of the market is essential given its size. For instance, 20% of the 1996 peak represents only about 1,000 MW, allowing for only two or three new plants of efficient scale. We would therefore encourage the quickest pace of reform possible. In particular, rules that require eligible consumers to wait 8 months before they can leave the tariff, otherwise they will pay a penalty, should be removed.

By hindering the development of competition, the pace of reform is likely to extend the inefficiencies of the current system

## 5. Commercial Models

The alternative commercial models in the PRs do not involve the fundamental restructuring of the industry that we have suggested in the previous sections. We believe it is somewhat premature to focus excessively upon the merits of any of the models when there is yet no plan of how to address vertical integration, excess capacity and the level and speed of market opening. In general, some features of the models are not exclusive of each of them, and they should be able to adapt to the present circumstances.

### Model 1

Under this model, it is not clear if the PNVs will be allowed to nominate their trades, or they will need to submit (daily) offers, independently of their contractual obligations with CNVs (see footnote 44, p.29 of the PRs). Although this fact does not change the financial settlement between PNVs and CNVs, it surely matters for the eventual development of a pool, the calculation of system marginal prices, and the settlement of short-term imbalances.

### Model 2

In our view, this model adds more transparency since it proposes the calculation of market prices, although there is no clear indication how the market price is obtained. This model presents the best features for adapting to new market situations in the long-run, but this clearly depends on the resulting structure: these sort of pooling arrangements make more sense where competition in generation and market opening are put in place.

### Model 3

Although physical bilateral contracts may impose an additional rigidity in achieving a least-cost despatch of the system, they may provide a level-playing field for PNVs and CNVs to finalise agreements, compared to the existing *contratos de vinculação* between PVs and the RNT. The merit of this model is to distinguish clearly the system operator function of RNT from other functions. The system operator will be responsible for managing and despatching the system in the most efficient way, and will charge tolls and other system costs for transmission services.

We would like to underline that any of these proposed models should take into account the real existing opportunities on supply and demand side, as explained above. For example, if new generation capacity is not expected to be added into the SENV for quite long time, it will be spurious to talk about market prices, and more realistic arrangements should be put in place.



## 6. Despatch Considerations

We expect that most of the commercial transactions between the SEP and the SENV will physically take place through the RNT's network, and the PRs stress that the RNT will have freedom to centrally despatch PVs and PVNs in the most economic way.

In the PRs, the RNT will organise power trading arrangements with a view to balancing supply and demand on a day-to-day basis as efficiently as possible. There are some relevant provisions in the EU Directive concerning how these functions should be carried out, but the nature and complexity of the necessary arrangements in Portugal will vary widely depending on the extent of competition. The principal requirement in the Directive is Article 8, which provides that despatch should be on the basis of criteria which are objective, published, and applied in a non-discriminatory manner, and which ensure the proper functioning of the internal market in electricity. Within this, merit order despatch is an important consideration, and Article 8.2 says that the despatching criteria shall take into account economic precedence and the technical constraints of the system.

However, this economic dispatch may be unnecessarily constrained in Portugal by several factors:

- The *contratos de vinculação* may impose a heavy burden and control on the development of a more efficient sector in Portugal. These contracts cannot be "blanket" permission to subsidise inefficient plants. The terms of these contractual arrangements should reflect the true cost structures of the plants concerned. This will safeguard the financial positions of plants and will permit verifying system costs and imbalance charges.

It is not clear to us if the purpose of setting up these contracts was to lock in any special treatment required for generation plant which were uneconomic on capital and/or running costs, or PVs were retained on fuel security or other grounds:

- PVs with high capital costs should be easier to deal with since the fixed (capacity) elements of their contract may be set at the levels necessary to cover their costs without affecting despatch.
- PVs with high running costs present more of a problem, and adequate arrangements will be needed to put in place that the system operator does not give any preference treatment to these plants.
- Despite the merits of physical bilateral contracts for IPPs already mentioned, these nominations may reduce the scope for achieving a least-cost despatch of the whole system.

The calculation of a reliable system marginal price in Portugal is also constrained by the way plants' costs and availability are declared. For example, as in Model 2, it will be difficult to accommodate PVs' annual declaration of variable costs - as established in the *contratos de vinculação* - with PNVs' daily offers for their total capacity.

- In addition, we understand that PNV's price would need to be "substantially smaller" than the PV's variable cost in order to displace the PV in the merit order.

### 6.1 Market for Imbalances

Beyond the commercial models proposed, the PRs devote some attention to the market for imbalances. The PRs simply require PNVs quoting a price for their residual capacity to be offered to RNT in its function of single buyer, but in reality, the issue is more complex. To begin with, the PRs should distinguish that single prices do not cover all possible imbalance scenarios. In particular, there exist

- Scheduled imbalances, which have been agreed in advance between the PNVs and the RNT, and arise either from known system technical constraints, or because economic factors indicate that imbalances are desirable; and
- Unscheduled imbalances, that is imbalances which are unplanned, or not agreed, or both; these may arise either from forecasting errors, breakdowns, or where an agreed imbalance could not be agreed.

On the basis of the above, in some cases a PNV's imbalance in a particular period may consist of the sum of scheduled and unscheduled imbalances. For example, if a PNV nominates in excess of its CNV's off-takes, the RNT will have to value this energy more or less at SEP's avoided costs of generation, with discounts whether any notice was given or the size of the deviation. On the contrary, for off-takes larger than PNV's nominations, PNVs will have to pay a premia on SEP's variable cost of generation because deficits potentially pose a greater threat to the system stability than surpluses.

Therefore, the PRs will need to be more specific on these mechanisms.

## 7. Transmission Issues and Open Access Arrangements

The PRs stress the need for setting terms of transmission access on a non-discriminatory basis, avoiding any favour of EdP plants at the expense of potential entrants. We are pleased to see that the Portuguese laws and regulations espouse

the principal on non-discrimination. However, several different types of discrimination are difficult to prevent or detect:

1. RNT may have the incentive to misstate the capabilities of its network in ways that favour EdP. Transactions by entrants may be blocked by the declaration of a transmission constraint at specific network points, while RNT may be inclined to greater generosity when declaring transmission capabilities at points of interest to EdP;
2. Transmission maintenance may be scheduled at times that offer greater interruption to entrants than to EdP;
3. RNT may prefer to invest more in network expansions that would favour EdP; and
4. RNT will naturally have input in the process for determining regulated prices, and will have a natural financial motivation to support pricing methodologies that favour EdP.

Although the Portuguese regulations clearly grasp the importance of non-discrimination, entry could be further facilitated by declaring an intent to proceed with the separation of transmission from generation.

### 7.1 Imports

The current PRs reserve to the concessionaire of the RNT the role of single buyer for all tied customers (*Consumidores Vinculados, CVs*) and capacity aggregator of PVs. As a capacity aggregator, RNT can either offer energy into the Portuguese market (in reality, to cover PNVs - or CNVs - short-term imbalances) or into the Spanish market.

Given its size as a PV's capacity aggregator, RNT may exercise its market power in the allocation of international interconnector capacity when a single PNV (or CNV) and the RNT want to use this capacity.