

**Retail Competition: The Brazilian challenge to empower
consumers to choose their electricity supplier**

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1. Introduction

The restructuring of the generation and distribution sectors is designed to encourage competition in the wholesale market. To fulfill the commitment of “real choice for retail customers” competition in the retail sector must ensue. This means removing the geographic area or franchise territory to give every customer, regardless of the level of electricity use, a choice of service provider.

For the customer is expected not only the benefits of a lower price for electricity but also value added services. Marketing energy services in a competitive environment means learning how to creatively enhance the values of services for which customers will pay. Sustainable energy procurement is one of a number of service offerings that can be created for targeted niche markets. Environmentally friendly electricity sourcing options can help differentiate companies and their products from other energy retailers. The government requires retailers to develop strategies for energy efficiency, demand management and energy purchasing from sustainable resources.

Retail competition is more than just bringing choice to customers, although that is a vital element driving the introduction of competition into the retail market. Competition in retail trading is necessary to realize the full benefits of introducing competition into the generation sector. Intelligent energy sourcing by retailers has implications both upstream and downstream for the production of energy services. The retailers who are competent in sourcing energy will be those who come up with a winning mix of spot purchases, portfolios of bulk supply contracts, direct retailer involvement in generation and facilitation of customer involvement.

The reform program for the Brazilian electricity industry calls for introducing competition where it is feasible, that is, into generation and retail energy supply (including energy services). Competition in the retail sector will mean that customers will be able to choose from a range of energy service suppliers, and, moreover, will be in a position to make informed choices. This will apply to customers generally, not just those who are intensive users of energy.

In a completely deregulated environment, electricity, which is essentially a homogeneous product, will initially find differentiation only in price. Transportation, both at the transmission and distribution levels, will be regulated and priced identically for all entrants with incumbents having no distinct advantage. Price differentials will come from smart purchasing of electricity, which will rely on complete knowledge of the customer base. Customer-specific market research will offer the single, most effective tool for managing price. The industry must move from institutionalized pricing by service class to "mass customization" that is, selling a standardized commodity to mass markets with a customized approach.

While the initial battle for market share will be price-based, this alone will not be enough. The retailer will have to learn to combine market intelligence with energy to obtain and maintain an advantage, in managing price and gaining/retaining customers. Strategies to build and maintain the customer base require knowledge of customer preference and choice.

Adding intelligence to energy allows the retailer to offer value-added services such as: detailed usage data, information on how to improve efficiency and beyond-the-meter energy services.

Information technology is likely to play a significant role in the energy services arena. It includes services extended to the customer side of the meter via smart appliances and other devices such as multipurpose communications links. Recent studies confirm that there is potential for moving to a "leaner running" transmission and distribution network, with growing use of customized load management and system control including distributed generation and storage. The use of customer-specific knowledge will enable retailers to gain competitive advantage. The customer will also benefit by being supplied with a product (or contract) designed for his/her specific needs.

These market-driven developments in energy retailing are expected to put pressure on generation companies to contract efficiently with retailers, and, for that matter, to contract with some energy users directly if this makes good commercial sense. The move to efficient contracting over the full span of the energy and energy services supply path will affect investment in electricity generation and networks, creating the potential for moving to a dynamically efficient mix of plant. Thus strategies that are developed and tested in the retail market will underpin generation projects and complementary infrastructure initiatives, that is, investments in the physical network for energy exchange and associated control systems and customer equipment.

Based on some countries experiences, it is recognized that privatization alone is not necessarily a sufficient condition to ensure full consumer benefits in terms of, for example, lower prices to both industrial and household customers, greater efficiency and improved quality of service.

This paper will examine the many issues and functions that define a modern, liberalized supply

industry, and the challenges posed by regulatory reform. Thus, it will analyze the development of choice and competition in the electric industry, and based on international experience it will describe the main approaches that are being developed to reach the final goal, i.e., the combination of full market opening, unbundling of transmission activities, regulated access to the network and liberalization of electricity trade, known also as “full retail competition”.

2. BASIC ARCHITECTURE FOR RESTRUCTURING AND COMPETITION

While a number of variations are potentially available (Hunt 2002, Joskow 2000, 2003), the basic architecture for restructuring and the development of competitive markets for power involves several key components:

a) Privatization of state-owned utilities.

b) Vertical separation of competitive segments (e.g. generation, marketing and retail supply) from regulated segments (distribution, transmission, system operations) either structurally (through divestiture) or functionally (with internal “Chinese” walls separating affiliates within the same corporation).

c) Horizontal integration of transmission and network operations to encompass the geographic expanse of “natural” wholesale markets and the designation of a single independent system operator to manage the operation of the network, to schedule generation to meet demand and to maintain the physical parameters of the network (frequency, voltage, stability).

d) The creation of public wholesale spot energy and operating reserve market institutions to support requirements for real time balancing of supply and demand, to respond quickly and effectively to unplanned outages of transmission or generating facilities consistent with the need to maintain network voltage, frequency and stability parameters within narrow limits, and to facilitate economical trading opportunities among suppliers and between buyers and sellers.

e) The application of regulatory rules and supporting network institutions to promote access to the transmission network by wholesale buyers and sellers in order to facilitate efficient competitive production and exchange, including mechanisms efficiently to allocate scarce transmission capacity among competing network users.

f) The unbundling of retail tariffs to separate prices for retail power supplies and associated customer services to be supplied competitively from distribution and transmission services that would continue to be provided by regulated monopolies. This makes it possible for retail consumers eligible to choose their power suppliers competitively to purchase their power supplies from competing retail suppliers. The competitive retail suppliers in turn must buy their power in wholesale markets, or own generating facilities to support their retail supply commitments, and then deliver the power for a fee over the regulated distribution network to meet their retail customers' demand for electricity.

g) Where retail competition is not available (e.g. for domestic and small commercial customers), distribution companies would continue to have the responsibility to supply these customers by purchasing power in competitive wholesale markets or, if they choose, to build their own

generating facilities to provide power supplies. However, in the latter case the associated charges for power would be subject to wholesale market based regulatory benchmarks.

h) Independent regulatory agencies with good information about the costs, service quality and comparative performance of the firms supplying regulated network services, the authority to enforce regulatory requirements, and an expert staff to use this information and authority to regulate effectively the prices charged by distribution and transmission companies and the terms and conditions of access to these networks by wholesale and retail suppliers of power, are also an important but underappreciated component of successful reforms. Regulators should rely on well-designed performance-based regulatory (PBR) mechanisms that meet budget balance, rent extraction and efficiency criteria, given the information available to them (Joskow 1998b) and must create a stable and credible regulatory environment that will support the attraction of the capital needed to improve the performance and expand the regulated network platforms upon which competition depends.

3. Overview of Brazil and its Electricity Sector

Brazil has a population of 175 million¹ and an economically active population of 70 million and covers an area of over 8.5 million km². With a per capita income of nearly US\$ 3,000 a year and a total production of about US\$ 500 billion, in terms of gross domestic product, the country is the largest economy in Latin America and the tenth economy in the world.

The Brazilian industry accounts for 20% of the domestic production, while agriculture accounts for an additional 20% and the service sector for 60%. Most of the Brazilian population is

¹ Source IBGE. All data are referred to 2002 or otherwise specified.

concentrated in urban areas, particularly in large cities. The country's overall urbanization rate is 75%, but it can be as high as 93% in some regions, as in the state of São Paulo. Since 1995, the main goal of the federal administration is to have a large set of reforms passed by the National Congress in order to adapt the Brazilian Constitution to the modern features of the world economy: enhanced capital mobility, worldwide growth of foreign investments; and market deregulation.

The Brazilian electric system is composed of very long transmission lines and a predominantly hydroelectric generating complex as shown in detail below. The electricity consumption (47 million consuming units) is concentrated in the more developed regions – South and Southeast regions. In the North region, isolated system covered by small generating plants, mostly diesel-fueled thermoelectric plants, prevail.

In the last two decades, the electricity consumption grew at rates higher than the GDP, as a result of: population growth in urban zones; efforts to provide broad access to electricity, and modernization of the economy. The participation of the residential, commercial, and rural consumption classes grew remarkably, while the industrial segment played a lesser role in this growth, particularly because of the use of more efficient technologies in the final use of electricity in combination with measures to rationalize the consumption that were implemented with particular intensity in the 1990s.

The Brazilian electric generation installed capacity totals 85 GW approximately. Around 80% of the domestic production comes from hydroelectricity. Non-hydro generation comes from natural

gas, diesel oil, biomass and coal (16 GW), nuclear (2 GW), and wind (22 MW).

Source	Installed Capacity (MW)
Hydroelectric	67,127
Thermal	15,778
Nuclear	2,007
Wind-powered	22
Total	84,934

Source: ANEEL - October 2003.

Eletrobrás, a federal generation holding company, controls 41% of total installed capacity and regional state-owned companies hold most of the remainder. Only 23% of generating capacity has been privatized. There is still an estimated 226 GW of untapped hydroelectric potential in Brazil. However, most of this potential is located far way from consuming centers.

There are currently discussions about 2 major hydroelectric projects. Belo Monte, in the Xingu River in North Brazil, is an 11 GW plant with a price tag of some US\$ 6 billion including 3,300 km of transmission lines. The other project is for the construction of 2 plants in the Madeira River with a combined capacity of 7 GW and should cost around US\$ 4 billion. It is envisaged that only one of the two projects will go ahead. The format being discussed would have Eletrobrás responsible for one third of the investment with the private sector responding for the balance.

The increased availability of domestic natural gas and the construction of the Bolivia-Brazil pipeline, allied to the 2001 crisis, has led the Government to devise an ambitious gas-fired thermoelectric power program including 49 units with a combined output of some 15 GW. It was argued that thermoelectric power plants, because of their shorter lead times, would constitute the

fastest way to diversify the Brazilian energy matrix, decreasing the nearly total dependency on hydroelectricity.

In the next 10 years, Brazil will need to add some 38,000 km of transmission lines to the existing network of 73,000 km. In addition, the grid will require an additional 63,000 MVA in transformer capacity. Only around 4% of Brazil's electricity is supplied outside the national grid.

To achieve this expansion, around US\$ 2 billion per year will have to be invested, of which an estimated 1/3 should come from private investors and the remainder from federal and provincial generation/distribution companies. A total of 2,783 km of lines will be added to the grid in the period 2003-05, improving the stability of the grid.

A total of 64 regional electricity distribution companies operate in Brazil, with around 70% of the market under private control. There are currently 12 foreign groups controlling 26 distribution and generation companies in Brazil. Under the present model, distribution companies can generate up to 30% of their own electricity needs. The balance is purchased part through long-term contracts that were signed in 1998 as a guarantee for the transition period and now are being phased out, and an increasing part in the wholesale market.

In 2002, the Brazilian Government established a program to create incentives for the development of renewable energy sources. The law establishes responsibilities and funds and requires mandatory connection targets for distribution companies. The program, called PROINFRA (Programa de Incentivo às Fontes Alternativas de Energia Elétrica), will have funds

for the construction of up to 3,300 MW of renewable energy (1,100 MW in a first phase). The target is to ensure that within 20 years, 10% of total electricity will come from those sources.

4. Structural Model: Motivation for Reform

The public sector institutional model that had been in force in Brazil since 1964 remained virtually unchanged for the following 30 years. During this period, the Brazilian electricity sector registered high rates of expansion of supply, based on the availability of internal funding through real tariffs, financing by the federal government and funding from abroad. From the 1980s onwards, a series of factors arose that led to the exhaustion of this model and that encouraged a search for alternatives. In general terms, the sector reforms drew their inspiration from the following diagnosis of the crisis in the institutional model:

- ? A financial crisis at federal government and individual state level that prevented the expansion of electricity supply and the maintenance of reliable transmission lines; although growth in energy consumption is slowing, growth rates remain high and in excess of production growth rates, and is proving insensitive to fluctuations in economic activity, particularly in the residential and business segments;
- ? Poor management of electricity companies, largely as a result of the lack of incentives for efficient production as well as technical criteria for management;
- ? Failure to adapt the regulatory system due to the lack of a regulatory agency, conflicts of interest without mediation, a tariff regime based on cost of service, and guaranteed remuneration. This aspect was further exacerbated by the fact that the government failed to

compensate companies for a series of costs incurred due to its use of tariffs to control inflation.

In 1987, an attempt to restructure the sector occurred through its own companies, through the REVISE project; however, it did not succeed due to the lack of consensus among the state and local companies and Eletrobrás (Centrais Elétricas Brasileiras S.A.), the federal government's energy holding company. In 1995, the federal government begins the Reform Project of the Brazilian Electric Sector, denominated RESEB, accomplished through the consulting company Coopers & Lybrand.

4.1 Current Model

Since 1995, the Brazilian electricity industry is going through a comprehensive process marked by the introduction of free competition in the generation and retailing segments, the inclusion of new agents, and the assurance of free access to the transmission and distribution systems. As a governmental decision, implemented by the Ministry of Mines and Energy (MME), this adjustment was mainly aimed at reducing the entrepreneurial role of the public administration, privatizing existing companies, promoting bidding processes for expanding the system with the participation of private capitals, and the introduction empowerment of regulatory agencies.

These goals were reached through the following measures:

- the establishment of the National Electricity Regulatory Agency (Agência Nacional de Energia Elétrica - ANEEL), with the duties of regulating and inspecting electricity services, and granting concession contracts and authorizations;

- unbundling of the industry, separating the production, transportation and sales activities in different segments;
- the establishment of a competitive business model through the creation of Independent Power Producers, eligible consumers, and the Wholesale Energy Market (Mercado Atacadista de Energia - MAE);
- assurance of free access to transportation and distribution networks through the definition of a Main Transmission Network and of a National Electricity System Operator (Operador Nacional do Sistema Elétrico - ONS).
- A transition from a regulated to a competitive environment with the establishment of initial Contracts.

In the production segment, where the competition principle is emphasized, the new model comprises three exploitation modalities: public service, independent production, and self-production. The independent production modality allows new investors to enter into bilateral purchase and sale contracts in a competitive environment, with the required flexibility to consolidate their strategies. Electricity transportation segments, which are natural monopolies, have been more strongly regulated. The Main Transmission Network is managed by the ONS, under transmission service contracts that include operation and quality requirements.

Private agents can take part in these activities through the privatization of assets and bidding processes for the implementation of new generation plants and transmission installations. In the distribution area, private capitals already play a predominant role as a result of the privatization of assets of federal and state owned public utilities

The trading activity, which was established for the purpose of allowing intermediate or direct sales of electricity to consumers and distributors, is intended to make the electricity more flexible and effective. This activity can be carried out by production agents and by other specific agents authorized to do so by ANEEL, thereby enhancing selection and negotiation options for consumers, including the possibility of importing and exporting electricity from and to neighboring countries.

All these activities are subject to ANEEL's regulations and inspection, which are intended to ensure the continuity and quality of the services provided. The operation of electricity systems is coordinated and supervised by the ONS, while the spot price and short-term commercial transactions in the competitive market is within MAE's jurisdiction.

4.2 Regulatory Milestones

A set of laws that have been passed since 1995 have laid the legal groundwork for the Brazilian electricity industry to be restructured by providing support and stability for the required changes. Among the main developments derived from these laws, the following ones stand out:

- Law n. 8987 (February 13, 1995), the Public Service Concession Law, of a general character, and Law n. 9074 (July 7, 1995), specifically intended to regulate the electricity sector, provided a minimum legal framework and the main guidelines for the industry's restructuring. Based on them, compulsory bidding procedures were established for the concession of public services; the Independent Power Producer was created; the free consumers were established; and the free access guarantee was provided to transmission systems;

- The National Electricity Regulatory Agency – ANEEL was created through Law n. 9427 (December 26, 1996), to regulate and inspect electricity services. Under the law, the agency also became the granting Authority responsible for granting concessions, authorizations, and permits for the exploitation of such services;

- Law n. 9648 (May 27, 1998), completed the framework of the implemented model by separating generation, transmission/distribution, and sales activities in distinct segments; creating the National Electricity System Operator – ONS; and establishing the Wholesale Energy Market – MAE. It also set out rules for the transition to a competitive market and established mechanism for protecting captive consumers and a timeline for the evolution of the market competition in the supply of electricity.

4.2.1 Independent Power Producers

Independent Power Producers are corporations or companies combined in a consortium that are granted a concession or authorization by ANEEL to produce, at their own risk, electricity to be fully or partially sold are considered independent electricity producers.

The entrance into the market of companies capable of expanding and improving the supply conditions is guaranteed by free access to electricity systems and autonomy to enter into bilateral purchase and sale contracts and constitutes an essential condition to ensure the sectors' sustainable development.

4.2.2 Electricity Trading Agents

Brokerage companies are intended to encourage competition in electricity supply to end customers. These companies have no ownership of electric power assets or systems, and operate only in the purchase and sales market. According to October 2003 statistics, forty-six companies have been authorized by ANEEL to engage in this activity in Brazil. The competition in the retailing segment is expected to improve supply and reduce electricity costs to end customers.

4.2.3 Free Consumers

Free consumers are users of electricity to whom is given the option of contracting with any trading agent to supply the electricity they need, even if they are located outside the geographic area in which the consuming unit is located. Until 1995, all electricity consumers in Brazil were captive consumers of the concessionaire that operated in their geographic area.

Since 1998, the law allows existing customers with power demand of 10,000 kW or higher and served at voltages of 69 kV or higher to contract their electricity supply directly with any supplier of their choice.

Since July 2000, all consumers with a load in excess of 3,000 kW and served at voltages of 69 kV or higher can contract with any concessionaire, permit-holder or authorized IPP to supply them with the electricity they need.

After July 2003, all consumers served at primary distribution voltages and with a contracted demand of 50 kW or more are under the category of free consumers. After January 1, 2005, all consumers in any voltage and/or load/demand category would be considered free consumers, according to that proposal.

4.2.4 Free Access to Transmission and Distribution Systems

Free Access is the right to use electricity networks providing public services, regardless of their ownership features, to transport electricity from production sites (generating plants) to consumers. The Free Access makes possible the implementation of competition in the generation and retailing segments. The transmission and distribution networks operate as a mean and impartial basis that can be used by any interested party, provided that there's enough capacity to serve such interested party.

The transmission and distribution system are made up of the existing lines and substations owned by many public service concessionaires. Producing agents (generators, independent producers, self-producers, co-generators) and consumers in general (free consumers and distribution concessionaires) are users of the electricity transportation service.

The general conditions (responsibilities, obligations, rights, quality indexes, tariffs, etc) for contracting and operating the access to transmission and distribution systems have been set out in a specific regulation issued by ANEEL. The tariffs for using these systems are calculated according to a methodology, under which the costs of electricity transportation services is shared between the users. The tariffs provide an economic signal that induces the rational use of electricity networks (so as to avoid the construction of new unnecessary lines and substations) and indicate regions lacking a sufficient supply.

4.2.5 Initial Contracts

In the restructuring of the Brazilian electricity industry, a transition period was defined to provide migration to a competitive environment without major impacts. During this period the so-called Initial Contracts, which are long-term bilateral contracts – effective until 2005 – will exist besides freely negotiated contracts. Initial contracts have regulated prices and the quantities will be gradually reduced at a rate of 25% a year after 2003 and release for purchase and sale in a free-market environment.

4.2.6 Prices

As captive consumers have not the right to choose their suppliers, ANEEL regulates their tariffs.

The index to readjust annually energy tariffs is obtained with the formula below:

$$IRT = \frac{VPA_t + VPB_0 \times IGP-M}{RA_0}$$

Where, IRT is the readjust index; RA is the total revenue earned by utility in the past twelve months; VPA is the total distribution exogenous (not manageable) cost, like the total energy purchase, subsidy for expensive energy suppliers and payments to access transmission system; VPB refers to the distribution endogenous (manageable) costs, fixed when the company was privatized; IGP-M is inflation index.

Also, in Brazil, concession contracts preview the revision of tariffs levels in order to verify if the economic and financial balances of the companies are being maintained as agreed in the concession contracts. After an initial period of 4 or 5 years, the regulator have to revise the tariffs and define an X factor, which will be added or subtracted from IGP-M for the next period, with the purpose of sharing efficiency gains with the consumers.

With the end of the initial contracts, bilateral contracts must be signed between producers and retailers or consumers, or between retailers and consumers. The Brazilian regulation rule determines that distributors must contract 85% of the energy in the long run, and 95%, considering long and short run. These contracts contain terms, price, duration, point of delivery, guarantees and other conditions. The duration, from two to six years, serves as a hedge against

fluctuations of spot prices. A general rule defined by the regulator is that every retailer, including distribution companies and producers, must have at least 85% of its energy sales covered by bilateral contracts. The companies are free to negotiated bilateral contracts, but the prices could not be higher than the reference prices (VN) established by ANEEL.

The table below shows the Reference Prices defined in ANEEL’s Resolution n. 488 (August 29, 2002). In order to give a better idea, the table presents VN in US\$/MWh as well, considering the exchange rate of November 12, 2003 (R\$ 2.91 = US\$ 1.00)

Type of Energy Source	VN (R\$/MWh)	VN (US\$/MWh)
Competitive	72.35	24.86
National Coal Thermoelectric Plant	74.86	25.73
Small Hydroelectric Plant – PCH	79.29	27.25
Biomass-Fueled Thermoelectric Plant	89.86	30.88
Wind-powered Plant	112.21	38.56
Photovoltaic Solar Plant	264.12	90.76

Bilateral contracts are made directly between agents or through bids. Some private distributors buy through bids operated by the Bank of Brazil. A large bid occurred on September 19, 2002 when 25% of the energy initial contracts was negotiated. Exceptionally in this case, the Government determined that the Wholesale Energy Market – MAE (where short-term transactions of energy charged by spot prices occur) would be responsible for the supervision of the bid process. It was the biggest bid already done, corresponding to 3,900 MW of energy offered by the federal companies. The bid was mandatory for the federal generation companies (the “old energy”), but voluntary for some other companies (state owned and private joined the bid).

Since the amount of energy that would be offered was very big (3900 MW, in packs of 0,5 MW, in contracts for terms of 2, 4 or 6 years, for the interconnected system), it was possible for some buyers to acquire huge amounts of energy and after the bid use market power to resale the energy for very high prices.

In order to avoid this problem and other anti competitive practices, a set of rules was established by ANEEL. The main rules established were: (i) distribution companies and retailers could participate only as buyers; (ii) generation companies could participate only as sellers; (iii) those who participate as buyer could not participate as seller and vice-versa; (iv) to participate in the bid, companies had to respect the restrictions about market share, self dealing, cross participations in other companies and other societary vinculations; (v) the total bidding of a potencial buyer (or group of buyer under the same holding company) could not be bigger than 70% of the total energy offered for each term (2, 4 or 6 years); (vi) it was not applied for products with less than 100 packs of energy (50 MW) and (vii) sellers had to offer at least 10% of their total offers for each term of supply. It was not applied for products with less than 100 packs of energy (50 MW).

Before the bid, the agents (buyers and sellers) were invited by ANEEL to discuss the rules and their application. The bid took place in an internet site and about a third part of the offered energy was sold, and most of dealt prices were inferior to current prices contracted bilaterally

When the level of energy contracted is different from the level of energy produced or needed, producers, retailers and free consumers can buy or sell energy in the spot market at the Wholesale Energy Market - MAE. Currently, prices are set weekly, but with three different

prices during the day (hours with high demand, with low demand and with normal demand) based on statistics provided by the ONS. Prices established by the MAE are based on: (i) information received by the ONS related to the quantity of energy dispatched; (ii) bilateral contracts registered at the MAE and (iii) mathematical model used by the ONS.

Since the electrical energy produced in Brazil is basically from hydroelectric plants, and in order to reduce risks, the Brazilian systems consider the stock of energy as the stock of water in the reservoirs in the entire interconnected systems. That is, each generator company has a stock of energy (water) which is made available to its interconnected system. The ONS decides on how much and when these agents have to deliver energy through the interconnected grid, based on the water regimes; on how much water is accumulated in water power mills; on the expected level of rains for the next 2-3 years and on the hour of the day, optimizing the use of the water. It is important to underline that water belongs to the system, and each plant has its own “ensured energy”. Revenues are based on the “ensured energy”, not on the amount of water that effectively passed in the turbines.

Although this system reduces risks, because it acts as a hedge for all the participants in the interconnected system, it also creates a complex accountings procedures. Regulators, particularly ANEEL and MAE are elaborating the accountings methodology of the 105 agents involved in short-term operations. After this methodology is set, the MAE will proceed with the payments among the participating members through the Brazilian Company of Clearing and Custody (Companhia Brasileira de Liquidação e Custódia - CBLC).

In Brazil, the operational costs of thermal energy are higher, because it uses gas, coal or similar inputs, but the cost to implement a thermal plant is much lower than a hydroelectric plant. Under normal circumstances, the price of water is equal to the marginal operational cost. If the price of water is higher than the marginal cost of thermal energy, then these plants are requested to operate.

Also thermoelectric plants are requested to produce when a hydroelectric plant is being repaired or in hours with high demand. The same is valid when nuclear plants are being repaired. The obligation of the ONS is to ensure the correct level of supply in the country, in spite of the short-term costs.

The transmission tariffs are established by a different methodology, called revenue cap. The revenue of each agent is defined in a competition process promoted by ANEEL. Winners of these tender offers are selected by their ability to conduct energy at the lowest transmission revenue. Their revenues are modified annually, by using the index IGP-M. Transmission costs (sum of the revenues of the transmission agents) are divided and paid by all consumers. According to the agents in private sector, there are not major problems with transmission of energy in the country. The transmission services fees can be compared to the fees charged for general Internet services, when only one fee is charged to obtain services in a certain period of time, regarding of the geographical area covered by these services. In the future, ANEEL intends to change the model by providing economic signals for generators and consumers to use the transmission system efficiently. It includes different tariffs for each node of the system to be

applied to generators and, for the demand side, an average tariff to be applied to all consumers in each state of the country.

4.3 Main Obstacles in Implementing the Reforms

The Brazilian system is by large a hydroelectric system, whereby thermal plants are dispatched whenever water reservoirs are in critical conditions. Although the system was constructed by independent companies, and traditionally owned by different agents (Federal and/or State governments and also some private owners), it had a tradition of co-sharing all the energy deficits and excesses resulting from the operation of the interconnected system. This was also the case with costs with fuels of thermal plants, which were also shared by all companies. Some advocate that this system cannot survive in the current model and a new set of rules still need to be implemented.

Several mechanisms and institutions conceived by the reforms were not fully implemented, such as the National Council of Energy Policy, the Wholesale Energy Market. After 6 years of the first privatized utility, Brazil underwent a severe electricity shortage and had to implement a rationing plan during June/2001-February/2002. This crisis was largely due to the absence of national energy planning and energy policy guidelines that should shape clear regulation which are needed for private investors to assess their risks and returns on investments. The country has not been able to make a smooth transition from a publicly owned sector to a private one, especially with regards to the generating utilities. The end result was the lack of investments in generation and transmission lines that have not come in the expected speed and amount. An emergency thermoelectric plan is being put into practice anchored by the Brazilian oil company

PETROBRAS (Petróleo Brasileiro S/A) that will share investment costs of several plants, and favorable conditions are offered to investors that now start to respond.

In a nutshell, the problems faced by the country illustrate the difficulties and risks of making the transition of a publicly owned and managed to a new model that was not able to be fully implemented.

5. Recent Proposal for the Electric Industry (Lula's Government)

On July 21, 2003 Brazil's Ministry of Mines and Energy released the draft guidelines of a new regulatory framework for the electricity sector. The draft proposes substantial changes to the current set of rules implemented by ex-president Fernando Henrique Cardoso's government during recent privatizations.

The new model is scheduled to take effect on January 1, 2004, although political analysts do not expect the draft to be converted into law before that date due to the large number of bills currently pending in the Brazilian Congress. Therefore, the model may be enforced initially through the issuance of a Provisional Measure ("Medida Provisória"), a temporary executive act on urgent matters which generally is later converted into law.

The reasons underlying this proposal were of no surprise to the electricity sector: distribution companies have been facing serious economic crises for the past three years, with pre-bankruptcy situations being increasingly common. Moreover, with almost complete investor uncertainty as to expected revenues and returns, investments in the electric energy sector have

stagnated. Finally, power shortages and tariff increases have adversely impacted the country's economy, affecting mainly low-income population.

The new model introduces stricter regulations on the aspect of government supervision and control, and is aimed to keep short-term capital at bay and to attract to the sector only leading long-term players. Minister Dilma Rousseff recently justified the new measure on the grounds that the following goals should be urgently achieved: (i) assurance of continuous supply, (ii) lower tariffs, (iii) increased quality of services, (iv) just return to investors as an incentive to service expansion, and (v) universalization of access.

The draft is only the first step of a broader reform. The Ministry has already stated its intention to gradually release guidelines on the transition procedures and, most importantly, the legal and institutional aspects associated with the new model.

5.1 The Structure of the Proposed Model

The draft does not modify the current system's organization, encompassing generation, transmission, distribution and energy trading (or commercialization). Instead, it reforms the government's functions and regulated market practices that are currently in place, especially within the generation and distribution segments.

Among many other innovations, the model's key structural changes include:

- ? The Ministry's re-acquisition of powers to grant licenses and implement electricity policies, which are currently responsibilities conferred to the Brazilian Electricity Regulatory Agency (ANEEL). ANEEL would then be limited to regulating and supervising the electricity system.

- ? The establishment of two different electric energy commercial environments: (i) the so-called "Pool", a strictly regulated environment in which all generation and distribution concession holders participate and in which all electric energy contracts are supervised and liquidated by a new Ministry-affiliated entity (as defined below), and (ii) the Free Trade Environment (Ambiente Livre de Contratação - ALC), where Free Consumers (consumers with a demand of 3 MW or greater), energy traders, Independent Power Producers (IPPs) and thermoelectric companies will freely agree on contractual terms for purchases and sales of electric energy.

- ? The creation of the Electric Energy Agreements Manager (Administrador dos Contratos de Energia Elétrica – ACEE), the Ministry-affiliated entity that will supervise, register and liquidate the contracts mentioned above which are transacted in the Pool. ACEE will only register and liquidate contracts in the ALC and will supersede in all organizational and operational functions the soon-to-be extinct MAE (Wholesale Energy Market).

- ? The creation of the Energy Studies and Planning Foundation (Fundação de Estudos e Planejamento Energético – FEPE), a Ministry-affiliated research and planning entity whose main goal will be preparing and submitting for public hearings a 20-year plan for the sector,

which will be subject to review every 4 years, and a 10-year plan, which will be subject to review annually.

- ? The creation of the Ministry-affiliated Electric System Monitoring Committee (Comitê de Monitoramento do Setor Elétrico – CMSE), which will monitor service conditions for purposes of ensuring continuous energy supply.

5.2 The Pool

The Pool is proposed to be the electric energy trading environment in which all energy produced by generation companies will be commercialized with distribution companies – the only exception being the electric energy produced by the Itaipú Power Plant, which was excluded from the Pool and that will continue to be commercialized by Eletrobrás. In the Pool, each generation company will be required to contract with all distributors for the supply of energy and each distributor will contract with every generation company for its projected 5-year energy demand, which must be accurately estimated and reported to FEPE. This system relies on the assumption that because the energy supplied to a small distributor will derive from the same source as the energy supplied to a large distributor, benefits created by cheap generation will eventually reach consumers. The distributors' obligation to forecast their demand was criticized by industry representatives but justified by the Ministry on the grounds that it will provide a reliable source of information to assess the country's need for new power projects.

While all current concession holders are required to take part in the Pool, independent power producers (IPPs, which in Brazil are mostly small hydroelectric plants) and thermoelectric

companies may do so, at their own option. That is, IPPs and thermoelectric companies may be integrated with both the Pool and the Free Trade Environment, on a non-exclusive basis, the only difference being that they will observe the Pool's rules with respect to any transactions executed in the Pool and will perform at their own risk while in the Free Trade Environment. Sector analysts believe that the inclusion of thermoelectric companies in the Pool will guarantee the thermoelectric sector some market share, and that it will also benefit Petrobrás, which is the main investor in the Brazilian thermoelectric industry.

Contracts for the purchase and sale of energy executed in the Pool will follow mandatory public bid procedures carried out by the Ministry. These contracts will cover long-term supplies, which, according to the Ministry, will assure a stable flow of returns to investors and contribute to the financing of expansion works.

The purchase and sale of energy in the Pool will proceed as follows: each generation company, including IPPs and thermoelectric companies that choose to take part in the Pool, will execute a Generation Services Agreement (Contrato de Prestação de Serviços de Geração - CPSG) with ACEE. Similarly, each distributor will execute an Agreement for the Use of the Generation System (Contrato de Utilização do Sistema de Geração - CUSG) with both ACEE and the generation companies (including IPPs, thermoelectric companies and industrial plants that generate energy for their own consumption). Distributors will be required to present guarantees for their payment obligations, which will be backed by their receivables.

Tariffs will be strictly regulated in the Pool. They will be calculated by ACEE and approved by ANEEL. As a general rule, the goal will be to have the same tariffs across the country and, to achieve that goal, mechanisms to ensure economic equivalency of tariff adjustments on all distribution companies will be implemented in a timely manner.

5.3 Free Trade Environment

The Free Trade Environment's participants will be the Free Consumers, energy traders and IPPs and thermoelectric companies that choose to remain outside the Pool. As previously noted, ACEE will be in charge of registering and liquidating the agreements executed in this environment only for settlement and accounting purposes. IPPs will sell energy in the Free Trade Environment to (i) Free Consumers, (ii) energy traders that service Free Consumers, and (iii) industrial or commercial facilities to which they also provide steam on a co-generation basis. As highlighted before, IPPs will have also the option of selling energy in the Pool to distribution companies, in which case they will be subject to the Pool's rules.

5.4 Public Bid Procedures and Agreements

Bid procedures will be carried out for (i) the development of new projects, and (ii) the purchase by distributors of their projected energy demand. For new project developments, the winning bid will be the one offering the smallest budget and for the purchase of projected energy demand the winning bid will be the one offering the lowest distribution cost – what will ultimately represent lower consumer tariffs. The current system is mostly based on the highest price offered for the project concession.

The agreements resulting from these bid procedures will be (i) concession agreements, in case of hydroelectric plants (except for the small hydroelectric plants classified as “Pequenas Centrais Hidrelétricas” – PCH), and (ii) authorizations, for all other cases. As a general rule, concession agreements in the sector observe the so-called “public law regime,” meaning that principles of Brazilian Public Law (such as transparency, universalization, quality and expansion, among others) apply and are enforced by ANEEL and the Ministry. Authorizations are also generally regulated by these government entities, but are performed under “private law regime” and are not subject to most public law principles applicable to concessions.

For purposes of preserving their economic-financial ratios, all agreements will be revised every 5 years (economic indices used for adjustments are still to be indicated). The term of a power plant concession agreement will be consistent with its corresponding cost amortization and will not exceed 35 years. Upon expiration of an agreement covering a hydroelectric development, the project will be put up for public bid, for a 15-year term agreement. The price to be paid for such project will be limited as to compensate the investor solely for its operational and maintenance costs.

5.5 Transmission

The model will not introduce major changes to the transmission segment, except for two modifications: (i) assets belonging to low tension transmission lines will be transferred to distribution companies, and (ii) isolated systems, the transmission systems outside the integrated system (the transmission lines network connecting generation and distribution companies across

Brazil) will be gradually interconnected with the integrated system. FEPE will be in charge of preparing feasibility studies and mechanisms to implement these changes.

5.6 Distribution Companies

Distribution companies will be able to supply energy only to captive consumers and prevented from dealing with Free Consumers (except for network access services). Their commercial transactions will be restricted to the Pool, where they will purchase energy from generation companies for their projected 5-year demand, upon placement of a payment guarantee backed by their receivables. They will present their 5-year demand forecast to FEPE and, except for inaccuracies due to systemic fluctuations, will be imposed penalties for any inaccurate forecasts.

Distributors will purchase from generators on a regular basis the following categories of energy:

- (a) “regular energy,” an amount equal to their mandatory 5-year forecast provided to FEPE, and
- (b) “reserve energy,” an amount determined by the Ministry. Also, distributors will occasionally be obliged to purchase the following categories of energy: (i) “additional energy,” an amount determined by FEPE, which cost will be reflected in consumer tariffs, and (ii) “extraordinary energy,” an amount determined by the Ministry, which costs will be reflected in consumer tariffs only in case of system fluctuations.

Distributors will be separated from any generation and transmission activities that they may hold and will be required to provide their services exclusively to captive consumers. On the other hand, it will be possible to maintain generation and transmission activities vertically integrated.

In order to concentrate in the Pool all the energy traded between generation companies and distributors, distributors will no longer be allowed to generate part of their distribution energy demand. Upon termination of concession agreements held by distributors engaged in generation, the power plants they have been granted under such regime will be put up for public bid. Current concession agreements allowing generation by distributors will be changed immediately upon the new model's effective date to split the distribution and generation activities into separate companies.

5.7 Free and Captive Consumers

Free Consumers will be able to buy energy from (i) IPPs, (ii) energy traders or (iii) industrial plants that generate energy for their own consumption with excess energy. If Free Consumers buy energy from local distribution companies, they will be regarded as captive consumers for all regulatory purposes.

Free Consumers will be required to give 5-year notices in order to become captive consumers, the same rule generally applying to captive consumers willing to become Free Consumers (in this case, 2-year notices may apply when involving renewable energy sources). Both Free Consumers and captive consumers will bear the costs of the so-called energy reserve, which is an amount of energy required to be contracted in order to cover possible errors in the distributors' demand forecasts.

The draft model envisions a very significant revision of the regulatory framework for the electricity sector. Market practices associated with generation and distribution activities will

soon be tied to schedules and forecasts designed by both the Ministry and the private investors themselves. The model intends to make revenues and tariffs more stable and less exposed to market fluctuations.

The transition to this proposed model, however, will not be an easy task. Current contracts contemplate higher risks and market oscillations, elements that are expected to be mitigated under the new model. Thus, new guidelines on the transition period are anxiously expected by the sector, and should soon be released by the Ministry.

Although the generation segment is regarded as the one to benefit most from the new model, given that distributors will be tied to long-term energy purchase agreements and will be required to provide payment guarantees, the whole sector may experience a positive turn towards less risk and more stable returns.

5.8 A Critical Analysis

David Souccar, a Morgan Stanley's² economist, completed a large study on the Mexican power industry and one of his conclusions is that the Mexican model operates in a similar way to the one proposed by the Worker's party (PT) in Brazil, i.e., pool model or "single buyer". Looking into the Mexican experience he tried to answer two important questions for investors in Brazilian utilities: (i) How effective is the pool model? and (ii) What will be its impact on equities?

² Morgan Stanley & Co. Incorporated is a leader in providing financial advice and execution for institutional investors, corporations and governments around the world.

He believes that the application of the pool model in Brazil could prove even more difficult than in Mexico. Firstly, because financing for new plants could be an obstacle. Brazil has a higher credit risk than Mexico and, in general, distributors are not in very good financial shape. Secondly, the negative experience of the wholesale market (MAE) in Brazil is not a good sign that the pool market will be more successful.

According to his analysis the pool model is not sustainable in the long run because it concentrates all the business risks in one entity, limiting its capability to finance the industry. Below are the positives and negatives points highlighted by the Morgan Stanley's economist:

Positive Points

- ? Centralized power planning: The pool model replaces the “invisible hands” of the market for a centralized, long term planning. In this model, it is the government that decides when, where and how much capacity should be added to the system. There is still a big debate among the experts, if deregulation is the best policy for the utility sector. There have been some successful cases of deregulation, like the U.K and Australia, but others not so successful, like California. The difference of electricity to other commodities is that it cannot be stored. This means that new investments need to happen 2-4 years ahead of incremental demand to avoid a power crunch. The positive of centralized planning is that in volatile economies, like Brazil, there are not always clear market signals to promote new investments.
- ? Simplified regulation: The pool model eliminates all the regulations required to coordinate the transactions of a competitive market. Issues like minimum contractual levels,

determination of spot prices, spot market, and unbundling among others, become irrelevant in a market dominated by a single buyer. In this model, all the energy is bought and sold by the pool through long-term contracts. The pool is also responsible to define the contractual levels of each player, which reduces their flexibility on the commercial strategy (profits and losses) but also their market risks.

- ? Minimizes project specific risk: Most of the business risks of generators and distributors are transferred to the pool. By defining the contractual levels, the pool basically shields both generators and distributors from demand volatility (ex: Copel³ excess capacity). This also allows investors to finance the projects mostly with debt, which improves their return on equity. The pool, however, does not mitigate currency risk (if contracts continue to be signed in reais) and its own credit risk.

Negative Points

- ? Limited financial capability: One of the lessons from the Mexican experience is that the pool does not have the unlimited capacity to finance the sector. The credit quality of the pool tends to deteriorate with the increase in the contractual levels. And because the pool usually does not generate profits, it needs to provide increasing amounts of guarantees to support the need for more generation capacity. While in theory, all the supply contracts are matched with sales contracts, in reality, the pool is exposed to variations in demand (if demand is lower than expected, the pool has to pay for the excess capacity) and to credit risk of all the buyers.
- ? Industry is hostage from small pool of investors: Another lesson from Mexico is that the current program is vulnerable because it relies on a dwindling number of participants. There

³ Copel – Companhia Paranaense de Energia is an electric utility in the state of Paraná (South of Brazil).

is a small group of strategic players willing to assume the credit and political risk of the single buyer. In Mexico, in fact, 60% of all the private investments are concentrated among four players only. If one or two of the major participants were to drop out, Mexico could find its bidding process halted because of the lack of interest.

- ? Low flexibility to change in demand: The economics of the pool are based on the assumption of a perfect match between the supply and the demand. However, the forecast of supply is a difficult exercise and the market does not always get it right. If the pool over invests in capacity, it will have to pay for the full amount of the contracts without the equivalent increase in revenues. On the other had, if the pool under invests, it will have to buy emergency capacity at a higher cost. At the end of the day, it is the consumer or the tax payers that will have to bear most of the business risks.

Brazilian proposal vs. Mexican model

In the case of Brazil, Morgan Stanley's conclusion is that the implementation of the pool model will be even more challenging than in Mexico for the following reasons:

- ? Higher sovereign risk: The pool needs to provide investors with solid guarantees to obtain long-term power contracts. For investors, the pool's guarantee is also an important instrument to raise project financing. In the case of Mexico, CFE⁴ provided the government as the guarantor for the projects, because of its investment grade status. This is not the case

⁴ CFE – Comisión Federal de Eletricidad – an integrated utility company that controls 95% of the generation capacity and 80% of distribution. After the Mexican Congress approved the new Electricity Law (1992) opening the market for private investors, the Independent Power Producers contract all their capacity through long term contracts with CFE. The concessions are granted through a bidding process, in which the lowest tariff wins. CFE bears most of the risks associated with the projects.

of Brazil, where the government is rated four notches below investment grade. In Brazil, the ability of the pool to provide guarantees could hinder its operation.

- ? Not vertically integrated: In Mexico, CFE is not exposed to the credit risk of the distributors, simply because it is a vertically integrated company. In Brazil, however, most of the distributors are privately owned and their incentives, in a pool model, to collect the receivables, are low, given that their revenues are guaranteed by the pool. A situation of generalized default by distributors would push the pool into financial insolvency.
- ? Low credibility among players: The pool is simply an intermediary between buyers and sellers. Key to its success is the existence of mutual trust between generators and distributors. In reality, the pool is not a very different concept from the MAE (Mercado Atacadista de Energia), a settlement agency, which has not been able to operate accordingly because of disagreements between generators and distributors about the actual amount of the sales in the spot market. The liquidation of the MAE has been interrupted several times and for this reason Morgan Stanley disbelieves that the pool market will be more successful than the recent experience in the MAE.

More recently, Souccar spoke with several players in Brazilian electricity sector, including the secretary of Energy Mauricio Tolmasquim. According to his report, he returned home with the sense that the support for the proposed electricity model is losing momentum, creating room for its replacement with something that is more market oriented.

The challenges of the proposed model are to reconcile a number of conflicting goals: a) Reducing tariffs, b) Respecting old contracts, c) Attracting private capital and d) Reducing the public deficit.

As Souccar pointed out, these challenges are becoming more evident as the government begins negotiations to implement the transition from the current to the new model:

- Reducing tariffs: One of the key goals behind the new model is to avoid an increase in tariffs to the final consumer. The idea is to regulate the so called “old energy” (electricity produced by depreciated plants) at current levels (around R\$60/MWh), and return to the final customer, in form of lower tariffs, the difference between market prices (R\$90/MWh) and regulated prices. The problem with this methodology is that the government does not have much flexibility to reduce the tariffs of the privatized (break of contracts) and state owned generators (political pressure). In order to maintain an average generation price of around R\$65/MWh, it is estimated that the government would need to reduce Eletrobrás tariffs from the current R\$65/MWh to something between R\$40-R\$50/MWh. A reduction of tariffs, combined with excess capacity, would hamper the ability of Eletrobrás to invest in new projects.

- Attracting private investment: The model, according to Morgan Stanley, increases the uncertainty for private investors by creating excessive regulation to determine prices and contract size. The recent experience in the telecom sector showed that even under a solid regulatory framework, there is still room for interpretation of the rules, especially in periods of rising inflation. Investors would feel more compelled to invest under a framework that is more market oriented.

- Reducing the public deficit: The electricity sector requires large sums of investment that cannot be financed exclusively by the government. Morgan Stanley estimates that in a scenario of 3%-4% GDP growth, the sector requires investment of approximately \$3 billion per year – much larger than the R\$2 billion of savings per year estimated by the proposed social security reform.

6. Retail Competition Overseas: The US Experience

6.1 Overview

As Paul L. Joskow pointed out, serious considerations of comprehensive electricity sector restructuring and deregulation initiatives in the U.S. only began in the mid-1990s, following the first comprehensive privatization, restructuring, wholesale and retail competition program undertaken in England and Wales in 1990. The first comprehensive U.S. programs did not go into operation until early 1998. However, wholesale power markets, in which proximate vertically integrated utilities traded power on a daily and hourly basis subject to very limited regulation, have existed in the U.S. for many years. In addition, during the 1980s the Public Utility Regulatory Policy Act (PURPA) of 1978 stimulated the development of a non-utility power sector selling electricity produced primarily from cogeneration facilities and renewable energy facilities to local utilities under long-term contracts.

The Energy Policy Act of 1992 also removed important barriers to the broader development of unregulated non-utility generating facilities and expanded the Federal Energy Regulatory Commission's (FERC) authority to order utilities to provide transmission service to support wholesale power transactions. However, these developments largely reflected modest expansions of competition at the wholesale level built upon a basic model of regulated vertically integrated

franchised monopolies. The primary impetus for more fundamental restructuring and competition initiatives can be traced to electricity policy debates that began in California and a few states in the Northeast (Massachusetts, Rhode Island, New York, Pennsylvania, Maine, and New Jersey) in the mid-1990s, combined with supporting transmission and wholesale market rules and regulations issued by FERC (e.g. Orders 888 and 889) at about the same time (Joskow, 2000). These debates eventually led to regulatory decision and state legislation in a number of states to embrace competitive electricity market models. The first retail competition programs began operating in Massachusetts, Rhode Island and California in early 1998 and spread to about a dozen states by the end of 2000. By that time about a dozen additional states had announced plans to introduce similar programs in the near future.

The early state restructuring and competition programs included the unbundling of the retail supply of generation services from the supply of distribution and transmission service and giving retail customers with the opportunity to choose their power supplier from among competing retail suppliers. These programs also included various utility restructuring requirements designed to separate (functionally or structurally) competitive services (e.g. generation, retail supply) from monopoly services (e.g. distribution and transmission) that would continue to be subject to (better) regulation, as well as various transition arrangements involving stranded cost recovery, generation assets sales, and regulated retail supply services. These transition arrangements typically involved a mandatory reduction of regulated retail prices charged to all consumers (or at least residential consumers) and some type of “default” service arrangement to supply retail customers with a regulated backstop retail power supply option until they migrated to competitive retail suppliers during what was expected to be a short transition period. As the year

2000 began it appeared that these types of competitive electricity sector reforms would sweep the country within a few years as a growing number of states jumped on the bandwagon. There was also a serious prospect that supporting federal legislation would be enacted by Congress to remove remaining legal and policy barriers to effective wholesale and retail competition and to harmonize diverse state policies.

Since the year 2000, however, no additional states have announced plans to introduce competitive reforms of this type and about nine states that had planned to implement reforms have delayed, cancelled or significantly scaled back their electricity competition programs. Federal pro-competition electricity legislation has also been stalled. The California electricity crisis of 2000-2001 (Joskow 2001), Enron's bankruptcy, the financial collapse of many merchant generating and trading companies, volatile wholesale market prices, rising real retail prices in some states, phantom trading and fraudulent price reporting revelations, accounting abuses, a declining number of competitive retail supply options for residential and small commercial customers in many states, and continuing allegations of market power and market abuses in wholesale markets have all helped to take the glow off of electricity "deregulation" in many parts of the U.S. The average real retail price of electricity in the U.S. increased for the first time in 15 years in 2000 for industrial customers and in 2001 for residential customers, though preliminary data indicate that real prices fell in 2002. FERC has found itself at war with many states in the Southeast and the West as they resist its efforts to expand institutions it believes are necessary to support efficient competitive wholesale markets in all regions of the country. In response to the resulting political pressure, in a White Paper issued on April 28, 2003, FERC indicated that it would provide states and regions with more time and flexibility to implement the wholesale

market reforms - the Standard Market Design (SMD) - that it proposed in a Notice of Proposed Rulemaking (NOPR) issued in August 2002.

At the very least, the pace of wholesale and retail competition and the supporting restructuring and regulatory reforms has slowed considerably since 2000. Many states have concluded that these types of electricity sector reforms are not in the interest of consumers in their states, or that it is prudent to wait to see if policymakers can figure out how to make competition work well and can demonstrate that these reforms will bring long term benefits for consumers. At the same time, most of the states in the Northeast, a few in the Midwest, Texas, and FERC are committed to moving forward with the development of competitive wholesale and retail markets and to making them work well.

6.2 The Results So Far

From a political perspective, the primary selling point for competition in electricity among consumers and American government officials has been the prospect for retail competition or retail “customer choice” to lead to lower retail electricity prices. Yet, there has been very little work assessing the performance of retail competition programs in the U.S. and there is a growing perception that, at the very least, retail competition programs have had disappointing results, especially from the perspective of residential and small commercial customers. It is too early to provide a comprehensive assessment of retail competition programs, many of which have not been in operation for very long.

Moreover, inadequate information, especially on prices and value added services, makes it difficult to perform a good assessment. Nevertheless, there are things to learn from the American experience to date and the data that are available.

With a retail competition program, an electricity customer's bill is "unbundled" into regulated components PR (transmission, distribution, stranded cost recovery, retail service costs to support default services) and a competitive component PC (generation service, some retail service costs, and perhaps an additional "margin" to induce customers to shop). The customer continues to buy the regulated component from the local distribution company and is free to purchase the competitive component from competing retailers or retail Electricity Service Providers (ESP).

In most jurisdictions that have introduced retail competition programs, the incumbent distribution company is required to continue to provide "default service" of some kind to retail consumers who do not choose an ESP. The terms and conditions of default service vary across the states, but typically have been calculated in the following way. The regulators start with the incumbent's prevailing regulated cost of generation service. A fraction of this regulated generation cost component is determined to be "stranded generation costs" that can be recovered from retail consumers over some time period and is included in PR. The residual, reflecting an estimate of the competitive market value of generation services, plus some fraction of retail service costs (metering, billing, customer call centers) is then used to define the initial "default service" price PC or the "price to beat" by ESPs (Electricity Service Providers) seeking to attract customers from the regulated default service tariffs available from the incumbent utility. The value of PC is then typically fixed for several years (sometimes with adjustments for fuel prices)

but is expected eventually to reflect the competitive market value of providing competitive retail services to consumers.

Where incumbents have significant stranded costs, which is the case in most of the states that have introduced retail competition to date, regulators have been able to capture a small fraction of this sum for customers by mandating an initial retail price reduction that is reflected in PR, though in many cases this is simply a deferral of recovery of these costs to future years. Regulators in a number of states have consciously left some of the stranded costs in the default service price PC so that it exceeds the wholesale market value of the associated generation services in order to encourage customers to switch to competitive retailers, though in a number of cases the utility may ultimately be able to recover any associated losses in stranded costs in the future through surcharges included in PR.

Things become more complicated when the incumbent utility has a prevailing regulated price whose regulated generation cost component is below the competitive wholesale market value of the associated electricity. And there are many utilities around the country that have regulated generation cost components of their retail rates that are below the competitive wholesale market value price of electricity (mostly in states that have decided against implementing retail competition programs and this is not a coincidence). In this case, the bundled price is also below the price that would prevail if a customer purchased regulated services at the regulated price and competitive services at their market values; the incumbent utility effectively has negative stranded costs. Regulators could handle negative stranded costs symmetrically with positive stranded costs by setting the price for competitive service PC at its competitive market value and

then providing a “stranded benefit” credit in the distribution charge PR to settle up on the historical “regulatory bargain.”

However, this is not how regulators have handled prices for the few companies with negative stranded costs in states that have implemented retail competition programs. Instead they have just unbundled (more or less) the low prevailing regulated generation cost component of the regulated bundled rate and established that as the default service price. In these cases, ESPs that purchase power in competitive wholesale markets cannot compete with the default service price PC since it reflects prevailing embedded costs of generation that are below the competitive market value of generation services. Moreover, as wholesale market prices have risen over time, the initial values of PC in states where utilities did have stranded costs and that were typically frozen for several years, wholesale market prices for electricity subsequently rose (unexpectedly) to levels above PC. In many states, customers are free to return to the default service tariff if the prices offered by competitive retailers are higher than the distribution company’s default service prices and this is exactly what has happened in some states.

Consumers can benefit in at least four ways from the introduction of retail competition. First, even if they do not switch to an ESP they may benefit from reductions in regulated prices that have typically accompanied the restructuring process as an outcome of the bargaining over stranded cost recovery and the terms and conditions under which the incumbents can move their regulated generating plants into unregulated affiliates. Second, consumers can benefit by receiving lower prices than the default service price PC from an ESP that has competed successfully for their business. Third, ESPs may offer consumers a variety of value added

services, including price risk management, demand management, and energy efficiency services. Finally, competing ESPs may be able to provide “retailing” services more efficiently than the incumbent. However, retail service costs are a small fraction of a typical customer’s bill, amounting to 0.3 to 0.4 cents/kWh or about \$3 - \$7 per month for a typical residential customer (depending on assumptions about fixed vs. variable components of retail service costs) (Joskow 2000). Since the incumbent monopolies did not have to incur marketing and advertising costs to attract customers, these are additional costs that are not now reflected in regulated retail prices but would have to be incurred by ESPs.

6.3 The Massachusetts Case

6.3.1 Background

As highlighted by Barbara Alexander, the Massachusetts restructuring statute⁵, which mandated retail competition as of March 1, 1998, was one of the first state electric restructuring statutes. The model used by Massachusetts is typical in most respects, in that the utilities are obligated to continue serving customers who do not choose a competitive provider, customers who seek to return to regulated service, and customers whose provider defaults. Under the state Department of Telecommunications and Energy (DTE) restructuring decisions, most utilities voluntarily agreed to divest generation resources, and they were allowed to recoup stranded costs in rates for a period of time. The Massachusetts restructuring law required utilities to offer service with a 10 percent rate reduction followed by an additional 5 percent reduction over several years.

⁵ An Act Relative to Restructuring the Electric Utility Industry in the Commonwealth, Regulating the Provision of Electricity and Other Services, and Promoting Enhanced Consumer Protections Therein, House No. 5117, November 19, 1997.

The law also increased funding for low-income energy efficiency, an endorsement of the low-income discount rates that had been adopted at some utilities in the past, and increased spending for renewable energy projects and initiatives. All of these programs were funded by utility ratepayers through targeted funds or included in distribution service rates.

Massachusetts did adopt one unique provision for its restructuring program. While most states adopted a Default Service or Provider of Last Resort rate that utilities must provide to non-shopping customers, Massachusetts adopted a two-tier system: "Standard Offer Service" (SOS) and "Default Service". Standard Offer service is provided by existing utilities to all customers who choose not to choose. The statutory mandate for rate reductions (10 percent in 1998 and 15 percent beginning on September 1, 1999) was implemented through Standard Offer Service.

Standard Offer service is available only for the transition period of seven years (until March 1, 2005). The restructuring law provides a limited set of circumstances under which a customer may enter the competitive market and then return to this service, but basically new customers who move into a distribution utility's service territory after competition begins cannot receive SOS. Customers who were being served by utilities in March 1998 may enter the competitive market and return once within 120 days, but any other customers who enter the competitive market and seek to return to utility service are not eligible for Standard Offer Service. However, the law allows low-income customers (defined as those receiving the low-income rate discounts available at each utility) to return to Standard Offer service at any time.

Default Service is available for customers who move into the service territory after the onset of competition and those who wish to return to regulated service after entering the competitive market. Unlike SOS, however, Default Service must reflect "market-based rates" and is not subject to the rate caps or rate reductions associated with SOS. Because it was not clear how this statutory pricing directive should be implemented, the Massachusetts DTE decided early on that utilities should provide those eligible for Default Service with the Standard Offer price until the mechanisms for procuring and pricing Default Service could be fully implemented. The DTE initiated a proceeding to implement the market price requirement for Default Service in June 1999. The Department noted that “. . . Default Service pricing and procurement will affect the types and number of bids to supply Default Service and could have implications for the competitiveness of the retail market”. As of June 2002, more than 590,000 residential customers were “qualified” for Default Service pricing, primarily because they had moved to a new location after March 1, 1998.

A citizen referendum attempting to repeal retail electric restructuring made the ballot in the fall of 1998, but Massachusetts voters rejected it by a relatively wide margin. At that point, the issue from the general public’s perspective was whether to adopt the 10-15 percent rate reduction and allow competition or reject it in favor of what was perceived as very high electricity rates. Although not as high as Maine’s (12 cents per kWh at Central Maine Power Co. due to rate increases associated with non-utility generation contracts) or New Hampshire (15 cents per kWh for Public Service of NH due to the bankruptcy settlement of cost overruns associated with Seabrook Nuclear Plant), the typical Massachusetts residential electricity rate was about 9.5 cents per kWh (total bill) in 1998.

6.3.2 Supplier Activity

The Massachusetts DTE unbundled the customers' utility bills so that they could compare the price for generation (determined in restructuring proceedings) with those available from competing marketers. The gap between the negotiations and enactment of the legislation and the actual onset of formal competition proved to be significant. By early 1998, providers claimed they were unable to beat the SOS rates. When rates were unbundled, wholesale market prices were about 2.5 cents per kWh, and the SOS rates were initially fixed at 2.8-3.2 cents per kWh.

Full retail competition was initiated in March 1998, but very few customers switched then or since, and few alternative suppliers have entered the retail market in a significant way. Marketers allege that this is because the SOS generation charge that appears on unbundled customer bills has always been below wholesale market prices and does not reflect the costs of acquiring and retaining mass market customers. This situation was exacerbated with rising prices in the wholesale market through 2000. As of November 2000, only 2,848 residential customers had switched.

Even so, several dot com electricity suppliers (Utility.com and Essential.com) sought customers in Massachusetts in 2000, but went out of business in 2001. There is currently only one provider licensed in the state to provide electricity to residential customers that is actually marketing to residential customers. This supplier, Dominion Retail (an affiliate of Dominion Power, based in Virginia), has only recently initiated marketing efforts after rates for Default Service increased and is offering fixed rate service for a minimum two- to three-year term.

There are many suppliers licensed to market to commercial and industrial customers, and there was a significant amount of marketing activity to such customers in 1998 and 1999. Since then, however, even nonresidential customers have not seen significant competitive activity. During 2000, the number of competitive supply customers falls from 9,471 to 5,682.

There was slightly more activity in all customer classes during 2001, due to the higher rates charged for utility generation service. As of December 2001, 5,451 residential customers, 5,112 small commercial, 3,202 medium commercial, and 1,215 large industrial customers were taking generation service from competitive providers. Of course, the vast majority of kWh of competitive generation sales was to industrial customers.

6.3.3 Standard Offer Service and Default Service

In mid-2000, the DTE decoupled Default Service rates from SOS rates. The Department ordered utilities to offer both a variable price and a fixed-price, six-month Default Service rate. Residential customers who had to obtain Default Service were automatically placed on the six-month fixed price rate, but offered a month-to-month variable price as well. Commercial and industrial customers were put on the variable price option. Utilities were ordered to obtain bid prices by customer class, but some stated that they were not able to implement multiple Default Service prices with the current billing systems. The DTE rejected a suggestion that the Default Service prices include any administrative costs associated with the procurement of Default Service or other costs, such as bad debt expense. In a later Order, the Department clarified that the utility should reconcile the cost for this service annually and that the over- or under-recovery

would be passed to all customers. The declared objective in decisions about Default Service was to “send an efficient price signal”.

The new Default Service rates went into effect on January 1, 2001. These rates were substantially higher than SOS rates, namely 7.032 cents per kWh at Boston Edison (residential) and more than 8 cents at Fitchburg Gas and Electric and Western Massachusetts Electric Co. While affected customers were issued bill notices to explain the forthcoming rates, bills containing the higher rates were not issued until February 2001.

At the same time that the Department moved to market-based rates for Default Service in late 2000, electric utilities asked for significant increases in Standard Offer Service as well. The basis for these requests was the rising fuel prices in the wholesale market. In effect, the utilities sought a fuel clause adjustment to their rates and alleged that the Restructuring Act did not intend to prevent such fuel clause adjustments in mandating the 10-15 percent rate reductions. In a Letter Order issued on December 4, 2000 the DTE agreed with the utilities and confirmed that the utilities had been accruing deferred fuel costs and should not continue to do so. As of August 2000, the utilities had accrued Standard Offer service deferrals of \$10 million for Fitchburg, \$60 million for Massachusetts Electric, and \$144.8 million for NSTAR companies (Boston Edison and two other electric utilities). These accruals were projected to increase substantially throughout 2001. The DTE ordered an annual change in SOS to reflect actual fuel costs incurred by utilities, subject to reconciliation of actual costs incurred to provide this service. Utilities were also ordered to inform customers of these price changes.

In June 2001, the DTE approved a new round of rate increases for the generation supply portion of SOS, applicable to the July-December 2001 time period. Residential customers of Boston Edison eligible for SOS pay 7.445 cents per kwh, compared to 6.215 cents during January-June, 2001 or 4.5 cents in 2000. Massachusetts Electric Co. customers (a subsidiary of National Grid) pay 6.631 cents per kWh, compared to 5.401 in January-June, 2001 or 3.8 cents in 2000. The monthly variable rate for the generation or supply portion of the bill for a Default Service residential customer for the period July-December, 2001 varied among utilities, but was typically 10-11 cents per kwh in the summer and 7-9 cents in the winter. The fixed rate option was generally in the 8-9 cents per kWh range. The average total bill for a residential Default Service customer has increased over 30% since 1998, the onset of retail electric competition in Massachusetts.

In 2002, prices for SOS have remained in the 5-6 cents per kWh range for the winter months (Jan.-March) and have dropped to 4-5 cents per kWh for the April-December period. In short, SOS prices have generally doubled since 1998. Default Service prices vary by utility, ranging from 7.57 cents per kWh for the fixed price option (Western Mass Electric) to 4.996 cents per kWh (Fitchburg Electric) for the July-December 2002 period.

Even in the face of such significant increases in the generation portion of the customer's bill, only one marketer has entered Massachusetts to seek residential customers. As of June 2002, 49,721 residential customers were served by competitive suppliers.

6.3.4 Consumer Protection Programs and Policies

The Massachusetts restructuring statute contained specific directives to continue strong consumer protection policies and programs. Competitive providers must comply with the same billing and collection rules that are applicable to utilities and which remain in place for the distribution utilities. The DTE adopted consumer protection regulations applicable to competitive providers, including mandatory price and environmental disclosures, terms of service statements, customer switching and authorization provisions with mandatory penalties for slamming violation, and customer complaint procedures. Competitive suppliers cannot disconnect service for nonpayment. The Department has jurisdiction over competitive providers for licensing and enforcement of regulations, including resolution of customer complaints, assessment of penalties, and the issuance of cease and desist orders. All competitive providers must be licensed by the DTE.

The Legislature did not authorize the DTE to allow competitive metering and billing, so all competitive providers must either offer stand-alone billing for generation services or arrange to bill through the utility's regulated bill.

Under the original rules, competitive suppliers did not have access to lists of residential customers or usage information about customers unless each customer specifically authorized the release of such information. In the face of higher prices and lack of both supplier and customer participation in retail electric choice, the DTE opened an investigation into the status of the competitive market, with the avowed intent of "taking all appropriate steps to bring the benefits of industry restructuring to electricity consumers". The focus of the early steps explored by the

Department was to stimulate supplier interest in Default Service customers and, based on comments from suppliers gathered at technical meetings in early 2001, increase supplier access to information about Default Service customers. The DTE ordered that utilities to make lists of customer names, addresses, and rate classes available to all licensed suppliers that were prepared to serve customers immediately. It then sought comment on whether or how suppliers should obtain access to further customer-specific information, such as credit history and load/usage data, and whether consumers should be able to electronically enroll with suppliers.

Comments from suppliers indicated that the customer list information would be valuable, along with customer-specific usage and load shape information. The suppliers showed little interest in credit history information, but did indicate that the customer lists provided by utilities should exclude customers who were 30 days or more in arrears. Suppliers also strongly urged the DTE to reflect the provisions of the Electronic Signatures in Global and National Commerce Act (E-Sign) so that customers could electronically "sign" enrollment agreements with suppliers over the Internet.

Consumer groups and the Attorney General raised concerns about the manner and method of the release of customer-specific information and pointed to the DTE's obligation to consider customer "privacy" concerns in its efforts to jump-start a competitive market for electricity. Specifically, these comments pointed out that the DTE had not come up with a way to notify customers that information was being released or a way for customers to "opt out" of such lists before their release. Consumer groups raised concerns about the potential for "redlining" by suppliers if the rate code information reflected customers' participation in the electric rate

discount programs (reflected in most utility tariffs with a specific rate code). They pointed to the suppliers' proposal that customer lists not contain customers with an arrears balance as evidence of the potential for redlining. The consumer groups pointed to the statutory and regulatory requirement in Massachusetts for a written confirmation of a customer's enrollment with a supplier, and they proposed methods to reconcile access to the Internet and the need to prevent slamming.

It appears that customer lists with name, address, and some sort of rate designation have, in fact, been released to suppliers in Massachusetts, pursuant to the Department's June 29th Order, without a formal program of customer notification and opportunity to "opt out". This is contrary to the process adopted in other states that have released customer lists, namely, Ohio, Pennsylvania, and Texas, in which customers were provided prior notice and offered the option to opt out of a supplier list by postcard, phone, or Internet (e-mail). Furthermore, no state has allowed suppliers access to customer payment information without specific prior authorization, including the payment status of the customer (such as the request by the suppliers in Massachusetts that customers in arrears not appear on the list).

On October 15, 2001, the DTE issued its final order in its competitive market investigation, stating that, "Access to a customer's historic usage is critical for suppliers to project what their wholesale costs would be as that customer's retail supplier" and that the current system requiring specific customer authorization by the supplier is "cumbersome and inefficient". The DTE also stated that it was "convinced that, with proper education efforts, the vast majority of customers will appreciate the value of having their historic usage information included on the Customer

Information Lists” and adopted an “opt-out” system that allows customers to prevent the release of their usage information by contacting the local utility. This opt-out process requires utilities to provide two consecutive bill messages and bill inserts to customers, informing them of the release of this information and how to prevent its release (by telephone or letter). The first generic release of the Customer List information was done in February 2002.

Responding to the general tenor of most comments, the DTE ruled that utilities should not provide suppliers with customers' credit or payment history and that the customer list should not be filtered by removing customers with late payment histories. With respect to concern that the use of tariffed rate classifications would identify customers on low-income discount rates, the Department required utilities to use rate classifications that do not reveal this information to suppliers.

When considering application of the "E-sign" law, the DTE interpreted various Massachusetts laws to mean that customers could "sign" a customer authorization form (and select a supplier) electronically, thus avoiding any determination of preemption. The Department deferred the development of procedures and protections to allow Internet enrollment for electricity sales to Phase II of the proceeding.

In Phase II, the Department announced that it would explore several important issues designed to further restructuring. First would be how and whether distribution utilities should act as "brokers" for Default Service customers, that is, in assisting or acting as a middle man to stimulate customer enrollment with competitive suppliers. Second, the DTE will explore how

municipal aggregators can aggregate Default Service customers within their municipal boundaries. The pending proposal by the Cape Light Compact proposal to provide such a service as a pilot project will be used to issue generic guidance on this matter. Finally, the DTE will explore the details concerning Internet-based enrollment.

6.3.5 Consumer Education

The restructuring statute authorized and directed consumer education activities to help consumers realize savings. The consumer education program was to provide “a consistent and reliable basis for comparing products and services offered in the electric market” and “assist in the detection and avoidance of unfair or deceptive marketing practices”.

Unlike most other states, Massachusetts assigned responsibility and funding for consumer education to agencies other than the utility regulatory agency. The Regulated Industries Division of the Attorney General’s Office (official public advocate) and the Division of Energy Resources (DOER) jointly implemented the consumer education program.

An in-house consumer education task force (including other state agencies, distribution companies, low-income consumer and environmental advocates, marketers, suppliers, and other interested groups) developed the Massachusetts consumer education plan. In addition to the projects listed above, the major components of the education program included baseline research, print advertising, television, radio, call center, web site, campaign logo, speakers’ bureau, personal contacts, newspaper stories, media relations, and bill inserts. An advertising agency created the actual message concepts and was responsible for the outreach efforts. The Consumer

Education task force retained editorial and direct control over how the messages were conveyed. The educational efforts on electric restructuring occurred primarily after the opening of the competitive market (in 1998) but were exhausted by the end of 1999.

Also, unlike other states, Massachusetts did not conduct an extensive television or public service announcement program. Rather, the consumer education plan relied on a toll-free hotline, consumer guides and brochures provided in various languages, an educational video used at small group presentations, and various DOER reports.

6.3.6 Universal Service Programs

The Massachusetts Department of Telecommunications and Energy has long required electric and gas utilities to fund low-income discounts or rate reduction programs for low-income customers as part of their regular revenue requirement reviews. The electric restructuring legislation required distribution companies to continue these programs “comparable to the low-income discount rate in effect prior to March 1, 1998”. Program costs must be included in the rates charged to all other customers of a distribution company. Further, “each distribution company shall guarantee payment to the generation supplier for all power sold to low-income customers at said discounted rate”. The discount is available to customers with household income at or below 175 percent of the federal poverty guidelines.

The distribution companies are required to conduct substantial outreach to obtain a high penetration rate for these programs, including establishment of an automated program to match customer accounts with lists of recipients of means-tested public benefit programs. Before the

end of the seven-year transition period, the Department must analyze and make recommendations concerning the affordability of electricity, consider modifications for expanding the program, and consider whether to adopt a sliding scale discount program (thus providing a better match between usage and income). Low-income customers who receive the rate discount must be provided service at Standard Offer rates and are exempt from Default Service, at least through the transition period. After March 2005, however, the Standard Offer Service will no longer be available, and all customers will receive the Default Service prices.

The legislation also required a five-year energy conservation program funded by distribution company rates at levels that are the highest in the nation. Funding started at 3.3 mills per kWh in 1998 and phased down to 2.5 mills in 2002, totaling about \$500 million over this period. Included in this program is a permanent set-aside for low-income demand side management of .25 mills per kWh or 20% of each utility's residential conservation program. The program must be coordinated with the local Weatherization Assistance Program agencies and conform to statewide standards that will be set by the Division of Energy Resources.

While theoretically appealing, the universal service programs have a very poor penetration rate at most Massachusetts's utilities. In 1999, only 27 percent of eligible households (130,000 out of 360,000 eligible households) received the electric discount rates, yet the DOER reported at the same time that the distribution companies were in compliance with DOER Outreach and Eligibility Guidelines. The DTE currently has a proceeding pending to examine policies and programs to increase the penetration rate for these programs. Consumer advocates have proposed more reliance on automatic enrollment and coordination between the utilities and the state

financial assistance agencies, similar to the electronic communication of eligibility status in the New York Telephone Lifeline Program.

6.3.7 Observations on the Massachusetts Experience

There is a consensus among regulators in Massachusetts that market-based pricing in the form of Default Service can deliver the benefits of competition to the state's residential customers. The leadership of DTE and DOER are intent on creating a methodology that results in routine price changes (i.e., every six months) for residential customers to reflect short-term wholesale market developments. There is some concern that these price changes should not be volatile and that the DTE would supervise how utilities acquire this service by bids and purchases. However, there is no stated interest in exploring approaches that would provide a fixed rate over a multi-year period. Rather, Default Service is viewed as a means of soliciting marketer interest in serving Massachusetts customers and, under this approach, Default Service must not undercut short-term prices available on the wholesale market. Furthermore, unless the Legislature changes the current policy, Default Service will be the only form of electric service after the transition period is complete in early 2005.

Another issue that merits careful attention by consumer representatives is whether Massachusetts will attempt to move additional costs into the price for Default Service so that customers' generation portion of the bill will increase to reflect bad debt costs or other billing and collection costs. This would remove some portion of these costs currently reflected in distribution rates. Marketers have stated that this approach would allow them to compete on the true retail costs of providing generation service. However, it also raises concerns about redlining, or the possibility

that marketers will be able to discriminate when soliciting customers to avoid those with poor credit history or payment problems. If this type of "cherry picking" occurs, payment-troubled and low-income customers are likely to remain with the higher cost utility service.

7. Conclusions and Recommendations

Undoubtedly, the introduction of competition, the reduction of external, especially political, interference, the opening up of markets to new players is a world-wide phenomenon. The reasons for liberalization are various and stem from many sources but the pressure to liberalize will remain one of the most significant forces in global electricity markets for years and years to come.

Economic liberalization is a significant challenge. It not only involves "hard" reform and restructuring but also demands "softer" changes in attitudes and ways of thinking (Ward, Allen and Davies). Amongst all significant economic sectors, liberalization of the electricity industry is, perhaps, uniquely challenging. The industry cannot divorce itself from government influence due to a variety of social and environmental issues, which have an important bearing on a nation's overall energy policy. These factors contribute to make more difficult the process of liberalization.

Despite all the challenges, significant performance improvements have been observed in many countries as a result of structural, regulatory and market reforms, especially in countries where the performance of state-owned monopolies was especially poor. Privatization and performance-based regulatory mechanism applied to regulated distribution companies has generally yielded

significant performance improvements. Wholesale markets have also stimulated improved performance from existing generators and helped to mobilize significant investments in new generating capacity in several countries. However, efforts to create well functioning competitive wholesale and retail markets have revealed many significant challenges and the restructuring and competition reforms remain a work in progress in most countries, especially in Brazil.

Given the complexity to implement competition in the electric industry it is unlikely that the Brazilian residential consumers will shop for electricity in a short period of time. There is still a long path to follow. The structural model introduced in the late 90's was not fully implemented up to date and a new one has just been submitted for public hearing. Avoiding making any precipitated judgment if the new proposal for the Brazilian power sector will succeed or not, it is worth highlighting my findings on some necessary requirements in order to move to a fully electric competition environment.

Based on the American experience so far which was presented previously, we can extract some good lessons. To begin with, an educational program is one of the most important challenges to face. Preparing customers to shop for electricity and then respond to marketing messages they receive will require a comprehensive and professional outreach and educational effort. Customers will need frequent messages from a variety of sources to understand their new rights, responsibilities, and opportunities. The dramatic change in relationship between customers and their electric utility cannot be accomplished by relying solely on the tools that have prevailed in a monopoly utility structure.

The purpose of a comprehensive public education program should be to maximize public participation in the implementation of retail competition, minimize customer confusion about the changes being undertaken, and equip all customers with the means to participate effectively in the competitive electric market.

While any state-funded educational effort must be neutral and objective, it should not be confused with the promotional and brand name marketing efforts of competitive suppliers. Customer education and outreach programs shall be designed to motivate customers to learn about electric competition with modern marketing techniques, such as:

a) information dissemination by means of interactive activities, as well as brochures or other written materials, and use of a variety of mass media outlets, with the intent to motivate the public to become interested in, and learn more about, electric competition;

b) explanations in clear language of the basic concepts of electric restructuring, which include (i) information on how prices, consumer protections and low-income programs may be affected; (ii) explanations of customer risks and responsibilities; (iii) information about how to assess and make use of a household energy profile to shop for electricity; (iv) how to compare offers from electric suppliers; (v) information about aggregation; and (vi) information about dispute resolution mechanisms, including the role of the regulatory agency in resolving disputes with retail electric suppliers;

c) well-publicized public forums conducted in several geographical areas to obtain public input and provide opportunities for information exchange;

d) active involvement of community organizations in developing messages and devising and implementing education strategies, particularly for low-income, rural and other customers who may miss more traditional media-based efforts;

e) use of focus groups and surveys to gather public input on both broad restructuring issues and concerns, as well as on public education needs and reaction to initial outreach initiatives;

f) a toll-free hotline to provide guidance to consumers seeking advice about personal energy needs, the selection of a retail supplier, aggregation, or dispute resolution; and

g) use of pre-established outcome measures of customer awareness, understanding and ability to act, which periodically evaluate education and outreach efforts.

Regarding to what data should be disclosure; customers should be able to compare prices on an “apples-to-apples” basis. The most commonly recommended approach is to disclose the supplier’s price structure in a cents per kWh. If suppliers are required to provide average price information at several typical usage levels, most customers can identify a level most closely matching their own. Prices for “time of use” (TOU) rates should be based on consistent load profiles for customers, with usage levels shown.

There are at least three distinct events or points of contact in a customer's relationship with an electricity supplier that suggests a need for different disclosures. Suppliers should disclose information to their customers (or potential customers) in (i) promotional materials; (ii) Terms of Service documents or contract summaries; and (3) monthly bills.

The first point of contact is at the time a supplier advertises its electricity products. Some experts recommend development of an Electricity Facts Label with disclosures concerning price, fuel mix and emissions (or other required items), which should appear in a supplier's printed advertisements and written promotional materials.

A second point of contact is at the point when a customer enters into a contractual relationship with the supplier. In contractual terms, the supplier has made an offer which the customer has accepted. After the agreement is made, the supplier must inform the customer about the material terms of the agreement in order to have a legally enforceable contract. This can be done in a Terms of Service document, which should contain all the material terms of the contract, including the supplier's pricing method, fees, and complaint procedure. The Terms of Service disclosure must also offer customers a "right of rescission" to cancel the contract without penalty within a reasonable period of time (3-5 days for example). If this right is prominently disclosed in the Terms of Service document, customers may examine the price and other contract terms in detail before deciding to continue the contractual relationship.

The third point of contact during which information should be disclosed is in the supplier's bills. Customers will receive a bill either directly from the supplier (which may or may not include the

distribution/transmission portion of the bill) or as part of the customers' distribution company bill. At this point, customers would want to know the actual cost per kWh for electricity used during that billing period. Doing so would require suppliers to divide their customers' charges for electricity by total kWh usage.

With respect to distribution companies, the most important policies and issues that should be addressed include (i) obligation to serve; (ii) default service; (iii) reliability of service and service quality; (iv) Universal Service programs; (v) credit and collection policies; and (vi) privacy of customer information.

The duty of the distribution utility will change from an obligation to serve to access to the electric grid on a nondiscriminatory basis. Under this approach, the distribution utility will continue to provide line extensions and assure connection to the local distribution system. Indeed, the distribution utility will probably retain its right to use eminent domain power to assure the proper design and operation of the delivery system.

A Default Service option (also referred to as a "Standard Offer" or "Basic Service") must be provided to customers who do not choose a competitive supplier for generation services. In other words, customers will be assured a continuous source of electricity even if they do not choose a new supplier. In addition to those customers who "choose not to choose" there are other customers who must be assured access to electricity, such as (i) those refused service by a retail supplier; (ii) customers whose supplier's electric service contract is canceled for any reason; (iii) customers who need supply during a transition to a new dwelling or who become new customers

and have not yet chosen a supplier; and finally, (iv) those customers whose supplier stops doing business or whose license is revoked by the regulatory agency.

It is important to recognize that the Default Service option exists to serve two different groups of customers: (i) customers who choose not to select a competitive supplier; and (ii) customers who are unable to select or retain service from a competing supplier. The purpose of Default Service for customers who have options, but do not exercise them, is different from the purpose of safety net service for those who are unable to obtain competitive electricity services with reasonable terms. The purpose of ensuring a safety net for customers who cannot obtain generation service at a reasonable price is related to universal service policy goals and the need to assure access to the electricity system for all customers.

Distribution utilities will remain responsible for most aspects of power quality because of their retained ownership of the distribution system, that is, the poles and wires that deliver electricity to each customer's home and place of business. Therefore, distribution utilities will remain responsible for service reliability (outages, their frequency and duration), installation of service (service drops, as well as line extensions in previously unserved areas), service disconnection, complaint resolution, change-orders, and billing and collection.

A thorny issue is how to address the impacts of a competitive electricity market on vulnerable customers. Some customers are vulnerable because of their inability to afford utility services or because they are unable to read and comprehend their rights and responsibilities in a competitive market.

On the other hand, with respect to protection requirements, residential consumers, besides to be entitled to have access to safe, reliable electric service at affordable rates, must also be entitled to:

- (i) Be protected from "scams" and other unfair business practices;
- (ii) Choose from among different providers of electrical generation service;
- (iii) Have their privacy rights and confidential information respected and protected;
- (iv) A continuation of System Benefits to protect special communities / public interests;
- (v) A continuation of "Provider of Last Resort" protection to assure connection and access to electrical service;
- (vi) Have easy access to fair and expeditious complaint resolution mechanisms to redress grievances against energy service providers; and
- (vii) Be able to easily compare terms and conditions for electric services and billing using standardized, easy-to-understand language and disclosure formats

In order to put these entitlements into force the regulatory agency shall publish a specific resolution regarding Electricity Generation Customer Choice and Competition creating uniform procedures and standards for providing clear and adequate disclosure of customer information in the retail electricity industry.

Another issue that imposes an unprecedented challenge is that introducing consumer choice for small end users is costly. This raises the question of whether the benefits of retail competition, including the indirect benefits, outweigh the costs for all consumer groups. This is true because the cost of metering may be a barrier to the development of competition for small consumers. Currently, meters used for smaller consumers in most countries that adopted full retail competition do not generally have time-of-use metering capabilities and this particular feature is

needed, at least in principle, for the unbundled billing of energy and grid services since energy prices as well as grid access prices may vary over time.

Retail competition in the electricity sector is a target that all countries must pursue, no doubt about it. Brazil is struggling to put the train back on track, i.e., to find a good structural model and regulatory framework. The cards are on the table. Let's wait and see what will come out of the new government's proposal. One thing is certain, as Adam Smith wisely said many years ago: *The monopolists, by keeping the market constantly understocked, by never fully supplying the effectual demand, sell their commodities much above the natural price.* (The Wealth of Nations, Book I, Chapter VII).

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