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The Free Consumers in the Brazilian Electrical Energy Sector

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SECTION ONE

1. INTRODUCTION

From the early 90's, the Brazilian State, then considered a great entrepreneur altered its point of view and action, and started to promote the socioeconomic development of the country, directing its actions toward the social area for a progressive enlargement of spaces in search of bigger private participation in the infrastructure sector. The State decided to not perform activities that the Private Sector was fully capable of undertaking. Instead, it started focusing its efforts on areas such as education, health care, law enforcement, and regulation.

In the Brazilian Electric Power Sector, the need of changes was felt since the 80's. The model of the Electric Sector, then in force, revealed growing fragility. However, the Utopia of the State-Owned development still had some defenders. Years later, suffocated by debt and fiscal crises, combined with extraordinarily weak performance, the Brazilian State began to feel the weight of its limited capacity to accomplish investments in the infrastructure sector.

It became necessary to reform the Electric Sector in order to create conditions to attract private investments and to guarantee the expansion of the offer of energy and the modernization of the Sector.

The institutional reform of the Electric Sector started in 1993, when Federal Law n 8,631 was approved creating conditions for the financial sanitation of the Sector. This law eliminated the geographic equalization of tariffs and the 10 per cent minimum return on assets. The new formula for establishing tariffs was based on the cost structure of the utilities, and was designed to reflect the companies' cash flow needs rather than an arbitrary target for return on assets.

In 1995, following the global wave of infrastructure privatization and liberalization, the Brazilian Electric Sector went through a trial of structural reform, implementing typical measures of stimulus to promote competition, as unbundled the vertically integrated state owned electric utility's, separating transmission, distribution, and system control from competitive generation and wholesale and retail marketing, adopting privatization programs, implementing a credible regulation that fosters efficient behavior by market participants, creating a well-designed wholesale markets with enough independent suppliers to facilitate competition, and allowed retail competition for industrial consumers.

The figure of the free consumer just appears in the Brazilian market as being able to buy energy from the supplier offering the best prices and conditions. However, only in 1999, the big industries exercised the right to buy electric energy, basic input of its activities, from sector agents capable of offering them the best prices.

For instance, the big moment was predicted to occur in 2005, when Federal Law n. 9,074, enacted in July 1995, allowed all Brazilians consumers to choose their power supplier. This means that even the small consumers, such as households and small businesses, would be able to buy electricity directly from generators on a competitive, customised basis.

In practice, in those days, the Brazilian model for the Electric Sector could be characterized as being a mixed model, with competition in the wholesale area, where multiple distributors buy electricity from competing generators, using the transmission network to deliver it to their service areas under open access arrangements, and competition in the retail area where large consumers have access to competing generators, directly or through a retailer of their choice.

That broad reform was subsidized by studies by an American Accounting and Consulting firm: Coopers & Lybrand that was hired on a competitive bid to devise a new model for the Electric Power Sector in Brazil. That company had as slogan: "competition where possible, regulation where

necessary."

Coopers & Lybrand presented its report in mid-1997. Its main recommendations, were:

- (i) the creation of the wholesale electricity market;
- (ii) the establishment of "initial contracts" to provide a transition phase into the competitive Power Market;
- (iii) the unbundling of the transmission assets and the creation of an Independent System Operator (ONS) to manage the interconnected system; and
- (iv) the organization of planning and financial activities in this new setting.

In 2002, with the victory in the presidential election of the opposition party (i.e. left party), in which the main critics of the in force Electrical Model were found, gained the political support to reformulate the basic directives of the Brazilian Electric Sector. This recently-elected Government released in 2003 the draft guidelines of a new regulatory framework for the Electric Energy Sector. The draft proposed substantial changes to the set of rules implemented by ex-President Fernando Henrique Cardoso's Government. In March 11, 2004, Federal Laws n. 10,847 and n. 10,848 were approved establishing a new framework for the Brazilian Electricity Sector. These Laws created a new stateowned company for research and planning and redefine the roles of the Government and the Regulatory Agencies in the Energy Industry.

Federal Law n. 10,848 established a new electricity trading system. The new Câmara de Comercialização de Energia Elétrica (CCEE - Electric Energy Commercialization Chamber) was created to substitute the Mercado Atacadista de Energia (MAE), enhancing its feasibility.

The Law also established two markets for electricity trading: a regulated (Regulated Contracting Environment – ACR) and a free one (Free Contracting Environment – ACL). In the regulated market, the distribution companies must have under assured capacity contracts 100 percent of capacity needs, with a maximum error of 5 percent. The distribution companies have to

purchase energy in a Pool. The price at which electricity will be traded through the Pool is an average of all long-term contracted prices and will be the same for all distribution companies. All current electricity procurement contracts remain in place; therefore, each distribution company will have different portfolios of contracts. In the previous system, the distribution companies had to buy no-contracted energy in the free market. In a shortage situation, the price of energy would increase, causing higher distribution costs.

The main goals of the recent implanted model focus on:

- (i) Introduce efficient contracting mechanisms for captive consumers;
- (ii) Ensure reliable supply for all consumers (Government planning & environmental license);
- (iii) Universal access, with special tariffs for low-income consumers; and
- (iv) End of dealing between generators and distributors, including self-dealing; generators now bid to meet the aggregated demand of a pool of distributors.

All these goals do not differ significantly from those of the previous model. However, the mechanisms proposed to reach such objectives are quite different. The main changes occurred in the mechanisms of contracting energy to the Captive Consumers, whereby the Government sought to promote affordable tariffs for them and reduce the investment risks of the private companies in order to permit the expansion of the generator park guaranteeing the supply of electricity and in the strengthening of the function of planning of the State.

In the Retail Sector the conditions of contracting remained practically unaffected. The initial expectation to gradually increase the size of the Free Market through reduction of the limits of demand level by introducing the category of small consumers such as households and small businesses, expected to happen in 2005 by the enactment of Federal Law n. 9,074 suffered stoppage, since the reduction of the demand level did not occur in

order to make it possible for the small consumers to become free. As noted, only those consumers of medium demand level still can act in the free market.

1.1. Paper Structure

After decades of structural immobility in the Electricity Industry, Governments are allowing market forces to play a role in generation and supply. Structural change accelerated over the past decade and is now a global phenomenon. Although only a handful of countries have achieved substantive market liberalization, almost all have felt considerable domestic and international pressure to reform their electricity systems (Kessides 1997).

Thinking to promote a competitive environment, in order to allow Consumers to obtain energy with low prices and investors to receive a just return on their assets, the Brazilian Government introduced in 1995 competition in the retail segments of the industry. This study therefore has three main objectives:

- ? Demonstrate how was the introduction of competition in the Retail Segment of the Energy Industry.
- ? Discusses advantages and inherent risks of the customers in retail competition.
- ? Offer a summary of the agents participation in the retail competition market.

With the purpose of presenting the political-institutional context in which the present study is inserted, the Section One, as already was exposed, approaches the evolution of the Brazilian Power Industry, emphasizing the characteristics of the last two models implanted in the Brazilian Electric Energy Industry, with focus for the structure of Retail Energy Market.

Section Two relate the main technical characteristics of the Brazilian Electric Energy Industry, with comments about some economical characteristics. Section Three presents the regulatory landmark emphasizing the characteristics of the Free Consumer.

After that introductory part, Section Four introduces the features of a General Model for retail competition with the objective of demonstrating some conceptual aspects. Finally, Section Five gives some considerations of the introduced competition in the retail segments of the Energy Industry in Brazil.

SECTION TWO

2. BRAZILIAN ELECTRIC ENERGY INDUSTRY OVERVIEW

Brazil occupies approximately an area of 8,5 million square kilometers (the size of continental U.S. plus half of Alaska) and has a population of 181 million inhabitants. In the year 2004 the country had an economically active population of 93 million inhabitants, with a yearly per capita income of nearly US\$ 3,326 and GDP of US\$ 604 billion approximately¹.

Brazil has a modern Electricity Industry. The Country built one of the largest transmission networks in the world, with long distances between power stations and consumers, and the need for back-up circuits to ensure alternative supply routes and optimal supply in regional balances. It has a generator park with strong predominance of hydroelectric power plants, with big reservoirs characterised by multi-annual regularization, and distributed over several hydro basins, and also at peak times has a thermal generation playing a complementary role within the system.

To minimize operational costs, the Electricity System is centrally dispatched. All Hydro Plants are dispatched as a "portfolio", with "wetter" basins generating additional energy to compensate for "drier" ones. In favorable hydrological years, the Hydropower Plants are able to supply the electricity demand without bad support from conventional thermal power plants. For many years, the thermal power plants remain idle, unless they declare "must run" (inflexible load).

The Country has almost 2.000 power plants in operation, totaling 92.856 MW of installed capacity². The electric power supplied to the Brazilian

¹ Source: IBGE – Obtained at [http:// www.ibge.gov.br](http://www.ibge.gov.br). in March 2006.

² Source: ANEEL – Obtained at <http://www.aneel.gov.br/15.htm> in January 2006

market in 2005 totaled 414.6 TWh³, corresponding to 47,328 MW average or 55% of South America consumption. 76.5% of the Brazilian installed capacity was supplied by Hydro Power Plants with an installed capacity of 71 GW. The Power Plants in operation are distributed as follows:

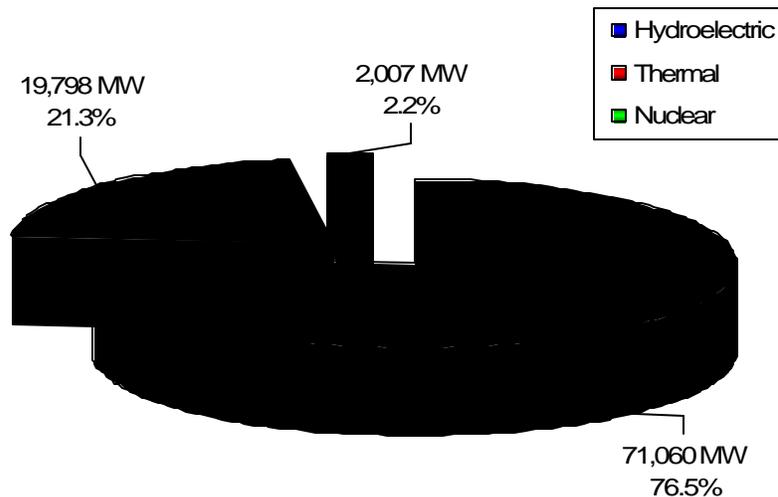


Figure 1 - Generation Capacity in Brazil by Source (MW) – Jan 2006
Source: ANEEL

As observed, Brazil is hydro-dominated, 83% of its total supply of energy comes from Hydro Power Plants. Up to now, Brazil has developed only 24% of the Country Hydroelectric Power, while France has developed 97%, Germany 70% and the USA 68% . There is still an enormous untapped potential for hydroelectricity in the Country, mostly in the North, that could be added to the existing supply to increase the total installed capacity.

³ Source:CCEE

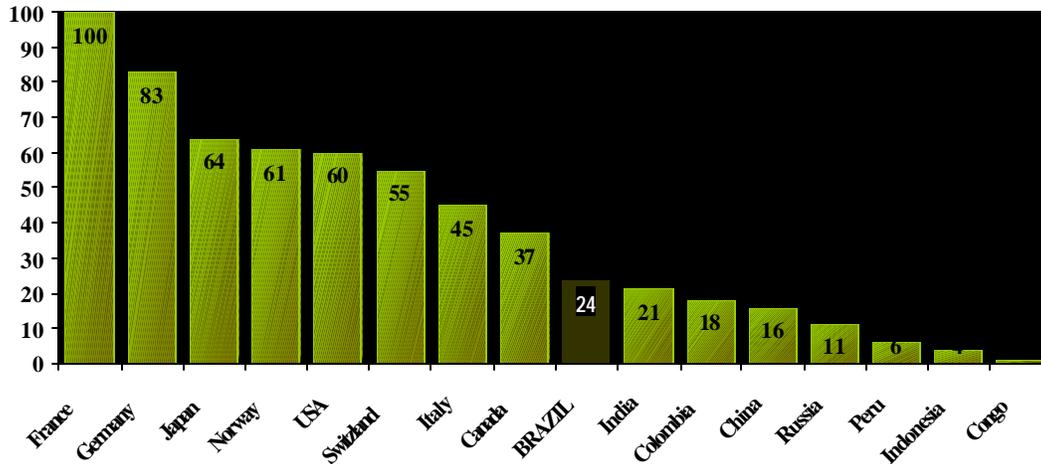


Figure 2 - Percentage of potential hydroelectric in operation

Source: ANEEL

To assist the growth of the energy demand rate, besides the hydroeletrics, new options of generation such as natural gas power plants are being implemented. It is expected an large growth of the renewable local sources of energy that is needing to be explored. It is worth stressing that public and private agents co-exist in the Electric Sector and have developed partnerships mostly in generation of electricity, 15% is under private control.

The transmission, high voltage lines, has reached in December 2005 an extension of 84,512 km⁴, able to transfer huge power blocks among regions. The participation of private agents in this activity, still in the fase of implementation with the execution of the auctions program to transmission lines. As of now, 15 of the 26 existing companies are private ones.

Due to the territorial extension of the Country and to the presence of relevant transmission constraints, the Brazilian Electric System is divided in four sub-markets corresponding to the areas of the interlinked systems:

- 1 - North
- 2 - Northeast
- 3 - Southeast/Centro-west
- 4 - South.

⁴ Source: ANEEL

Each sub-market is considered as an independent market, subject to its own SPOT Price. Such situation causes an exposure to risk due to differences of prices. In this context, the exposure to the resulting risk of the difference of prices between the sub-markets, provoked by restraints of transmission between them, complicates the competitiveness between generation agents that act between those four sub-market.

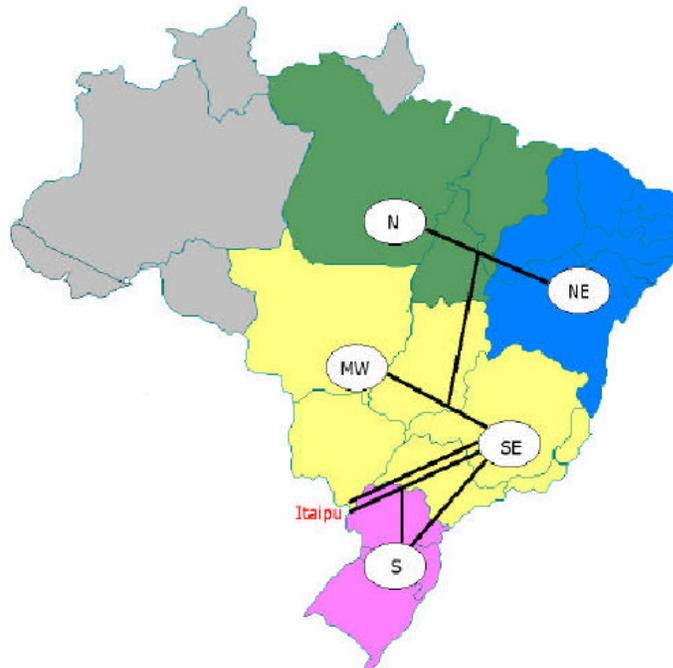


Figure 3 - Brazilian electric system - Sub-markets

The Distribution Segment is made through 64 dealerships of public service and includes the whole territorial extension. About 80% of the Segment is under private administration, so much for national groups and foreign conglomerate, especially Americans and Spanish. The private companies of distribution supply 4.756 municipal districts in twenty states.

The consuming market with 56,3 million of residential consumers⁵

⁵ Source: ELETROBRAS – Projeção do potencial de consumidores de eletricidade da classe residencial – Ciclo 2005 - Obtained at <http://www.elektrobras.com> in November 2005

units is concentrated in the more developed regions of the South and Southeast. In the North Region, the isolated systems predominate assisted by small central generating, mostly old oil diesel plants.

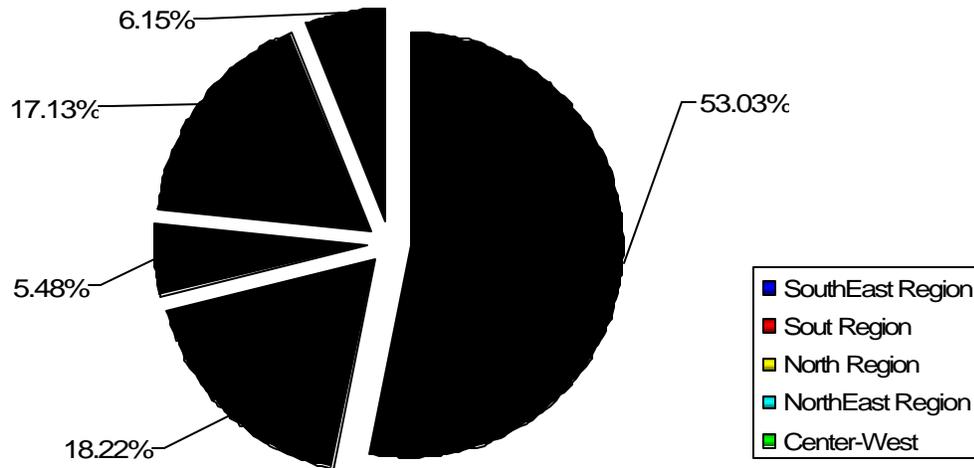


Figure 4 – Participation of the Demand in the Areas of the Brazil

Source: ELETROBRAS – Projeção do potencial de consumidores de eletricidade da classe residencial – Ciclo 2005 - Obtained at <http://www.elektrobras.com> in November 2005

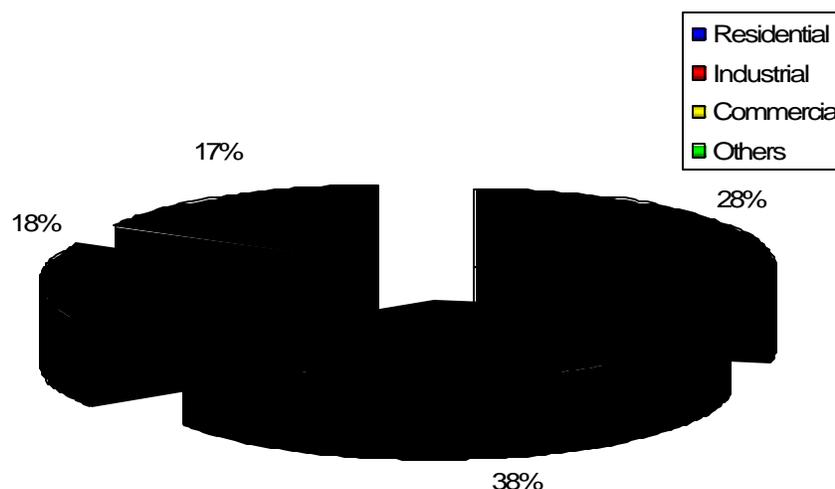
Along the last two decades, the Electric Power consumption presented indices of expansion much bigger than the GDP, caused by high population growth in urban areas, the effort of universalization activity and the modernization of the Country economy, which shows the youth of the Brazilian Electric Sector. The exception occurred in 2001, an atypical year, due to the energy crisis that the country lived, where consumption fell in all regions, in a differentiated way.

Table 1 - Relation between Growth of GDP and of the Electric energy consumption 1994 to 2008

Year	PIB (Growth %)	Growth of the consumption of Electric Energy (%)
1994	5.85	3.58
1995	4.22	6.01
1996	2.66	4.86
1997	3.27	6.12
1998	0.13	4.19
1999	0.81	2.5
2000	4.36	4.43
2001	1.42	-7.9
2002	1.9	3.2
2003	0.5	3.8
2004*	3.6	4.5
2005*	3.6	5.4
2006*	3.9	4.5
2007*	4.5	4.9
2008*	4.4	6.3

Source: IBGE (www.ibge.gov.br), * Source: Analytical report Eletrobrás (2003) e ONS (2004)

In Brazil, the Industrial Sector is the largest consumer of the Electric Power with 38% of total consumption. The Residential use follows, with a consumption of 28% and the Commercial use of 18%. The remaining 17% is distributed among Rural Sector, public illumination, the Government organs and other, as shown in Figure 5. Reference is made to year 2004.

**Figure 5 - Electric Energy Consumption 2004**

Source: ANEEL

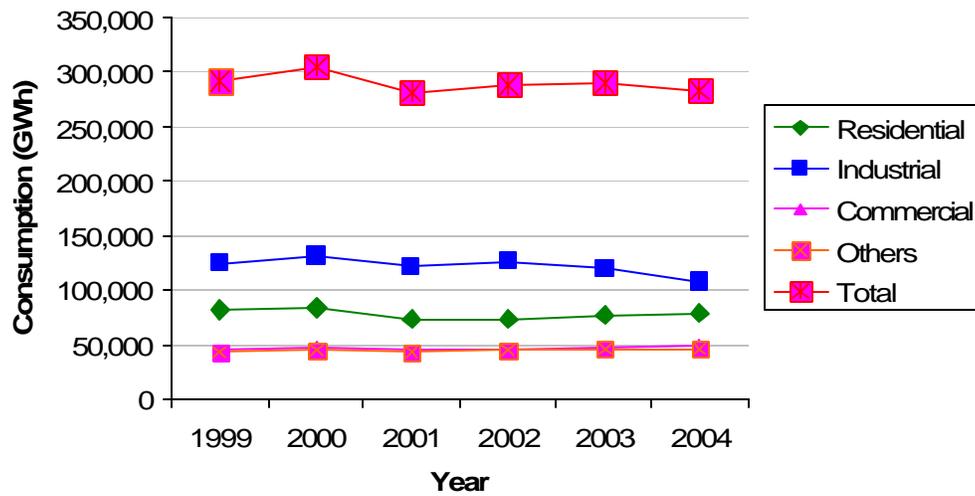


Figure 6 - Profile of the Electric Energy consumption in Brazil
Source: ANEEL

The classes of Commercial and Residential consumption obtained expressive growth in participation, while the Industrial Segment did not participate in this growth, mainly because of the use of more efficient technologies in the final use of the electricity, ally to the consumption rationalization measures place in practice specially in the year of 2001.

SECTION THREE

3. REGULATORY ISSUES

As noted in the previous Sections and will be able to perceive with the evolution of the legal mark, the effort of the Brazilian State to introduce competition in the Retail Segment of the Energy Industry. The freedom of choice for Consumers is being implemented progressively. In a first phase, only larger consumers are permitted to choose their power providers.

3.1. Federal Law n. 9,074 - July 7, 1995

This Law brought a series of structural changes for the Electric Sector, established rules for Electric Power Concessionaries, recognized the role of the Independent Power Producer (IPP), freed Large-Scale Consumers from the commercial monopoly of the utility and guaranteed access to the transmission and distribution systems, with the clear objective of establishing a competitive atmosphere, whereby the price is the instrument of the agents' orientation.

In introducing the concept of the Independent Power Producer, the Government intended that generation and commercialization of electric power passed to be performed by a dynamic, agile and especially competitive economic Agent, producing and trading energy on his own risk and account, with prices not subjects to tariffs defined by the Grantor Authority.

By the same token, the opening of the Consumers' possibility, under certain conditions, to exercise their options of free electric power purchase aimed at, in the same way, to implement conditions of competitiveness in the market.

In this evolutionary process in order to promote competition, that Law also assured the suppliers and the respective consumers free access to

the power distribution and transmission systems of the public utility concessionaire and permit-holder through reimbursement of the transmission cost involved, calculated on the basis of the criteria established by the Grantor Authority.

Until then, the structure of transport tariffs was billed under a supply tariff, which incorporated the wires services and the power service. In the direction of the establishment of an energy market, it became necessary to identify the portion of the supply tariff that represents the cost of the transport net, as well as the one that represents the cost of the energy.

3.2. Federal Law n. 9,427 - December 26, 1996

This law created the Brazilian Electricity Regulatory Agency – ANEEL, the Regulator for the Electricity Sector, with operational and financial autonomy, and the legal power to regulate and focalize the electric energy production, transmission, distribution and commercialization according to the policies and directives established by the Federal Government, and to carry out public utilities tendering for the hiring of public utility concessionaires for electric energy production, transmission and distribution, as well as the granting of concessions for the use of hydraulic potentials;

This Law introduced competition in the generation and supply sectors considering the singular character of the Brazilian hydraulic generating park. The introduction of the competition was implemented progressively, without harming the operation of the system and the destabilization of the prices of energy.

3.3. Federal Law n. 9,648 - May 28, 1998

This Law alters some dispositions of Law n. 9,074 in what refers to the free consumers. It establishes that starting 1998, the Free Consumers will be able to have the option to purchase energy from any distribution company, generation or energy trader.

This Law also allows that the exercise of the option by the consumer may not result in any increase in rates for the remaining consumers of the public power services concessionaire whose market share has shrunk.

It permits the Distribution Concessionaires negotiate new power supply conditions with the Free Consumers. Such disposition will be altered hereafter when the new framework for the Brazilian Electricity Sector implanted by President Lula's government enters in practice.

This Law also create a new niche for the Electricity Market in the country. When giving new composition to § 5 of the art. 26 of the Law n. 9,427, it permits that Small Consumers, usually small business, with an installed load of 500 kW or more (In this paper we will qualify these consumers as "Special Consumers"), buy electric power from wind, small hydroelectric plants, biomass or solar sources with an installed power of up to 30 MW.

This Law ensured the free access to the transport networks, which establishes the compulsory requirement that authorization to transmit blocks of energy traded by the Agents be subject to the payment of due charges for the use of the electricity network.

This Law creates the Wholesale Electricity Market – MAE, with the function of intermediating all electricity sale and purchase transactions in each of the interconnected electricity systems. In 2005, with the implementation of the new framework for the Brazilian Electricity Sector, this Institution was happened by the Electric Energy Trade Chamber – CCEE, that possesses the same institutional paper.

This Law, which, among other things, also created the National System Operator (Operador Nacional do Sistema - ONS), and authorised the comercialization of Electric Energy by traders.

3.4. Federal Law n. 10,848 - March 15, 2004

This Law introduced the new regulatory framework for the Electricity Sector in Brazil after changes in Government in the year of 2003. It

created two separate environments for electricity agents to carry out electricity purchase and sale transactions: The Regulated Contracting Environment – ACR and the Free Contracting Environment – ACL.

In the ACL, all electricity agent, except the distributors, would be allowed to freely negotiate power purchase agreements - PPAs. In the ACR, the distribution concessionaries would purchase, at public auctions, the totality of the electricity that they have to acquire in order to meet the needs of the consumers.

The modifications in Law n. 9,074 brought by this Law, in what refers to Free Consumer, are as follows:

1 - The Free Consumer must inform its load requirement to the Federal Government and shall contract the totality of such load, subject to penalties in case of forecast deviation.

2 - Consumers that have not entered into definite term agreements with their Distribution Concessionaire may start acquiring electricity from another supplier starting in the year following that in which they give the Distribution concessionary notice of their intention to change suppliers. Return to the regulated condition must be requested with an advance of at least 5 years. The prior notice for Free Consumer status was exceptionally reduced to only 180 days for Consumers that intend to develop self-generation facilities. This exception will be valid until December 31, 2009.

It seals the possibility of the distribution concessionaries negotiate energy supply conditions distinct of those practiced in his captive market with the Free Consumers. Now, the Distributors will be able to attend Free Consumer only in the case that the consumers units are located in the area of concession of the Distribution Company and under the same conditions of price applicable to the Captive Consumers.

This Law created the Electric Energy Commercialization Chamber – CCEE, the successor of the Electric Energy Wholesale Market – MAE. CCEE is responsible for managing the power commercialization in the ACR and ACL environments. CCEE is incorporated as a private legal entity subject to ANEEL's authorization, regulation and supervision. Concessionaires, permissionaires and authorization holders within the electric industry as well as free consumers shall participate of CCEE. The members of CCEE shall provide funding for its operation. Such cost shall not be passed through to the consumers' tariffs and therefore will be entirely borne by the Agents. CCEEs charter shall be published by ANEEL and shall include arbitration as the applicable dispute resolution mechanism.

SECTION FOUR

4. RETAIL COMPETITION OR CONSUMER CHOICE

Hunt and Shuttleworth (1996) described the “classical” retail competition model as the possibility available to end consumers who, having reached the voltage level of residential consumers, can choose the electricity supply company of their choice freely. In this case, generation and retailing are fully separated of the transportation business (natural monopoly⁶), whether in high voltage - transmission or in low voltage - distribution. This separation is important to ensure free access to transmission and distribution networks. Therefore, the distribution activity is limited to wires and serving captive consumers. In this model, competition has been introduced into all levels of the industry, ideally from wholesaling down to individual domestic consumers.

In retail competition, a distinction is made between the revenue from using wires and the one from power service. Consumers can buy electricity from any agent in the market which is authorized to sell it. Electricity transmission and distribution companies, when providing wire services to any interested party, are refunded for the transportation cost involved. Therefore, rules for open access to wires need to be established. The reason for such separation is that the wire service will remain a monopolized activity, whereas the sales segment is open to competition.

Created Electricity Retailers whose business is buying and selling electricity (electrons) under longer term (hedged) contracts and spot contracts. These new agents are important for disseminating the competition. They don't need to own any asset, whether for generation or transportation purposes.

⁶ In the literature, Natural Monopoly is a market failure that has led to public production arises when markets are not competitive. A common reason that markets may not be competitive is the existence of increasing returns to scale; that is, the average costs of production decline as the level of production increases. In that case, economic efficiency requires that there be a limited number of firms. Industries where increasing returns are so significant that only one firm should operate in any region are referred to as natural monopolies. See Joseph Stiglitz, *Economics of the Public Sector* (New York: W.W. Norton, 1988).

Apart from this, electricity generating companies and retailers agents should be able to enter and leave the market freely, so that as to bring it as close as possible to a competitive market.

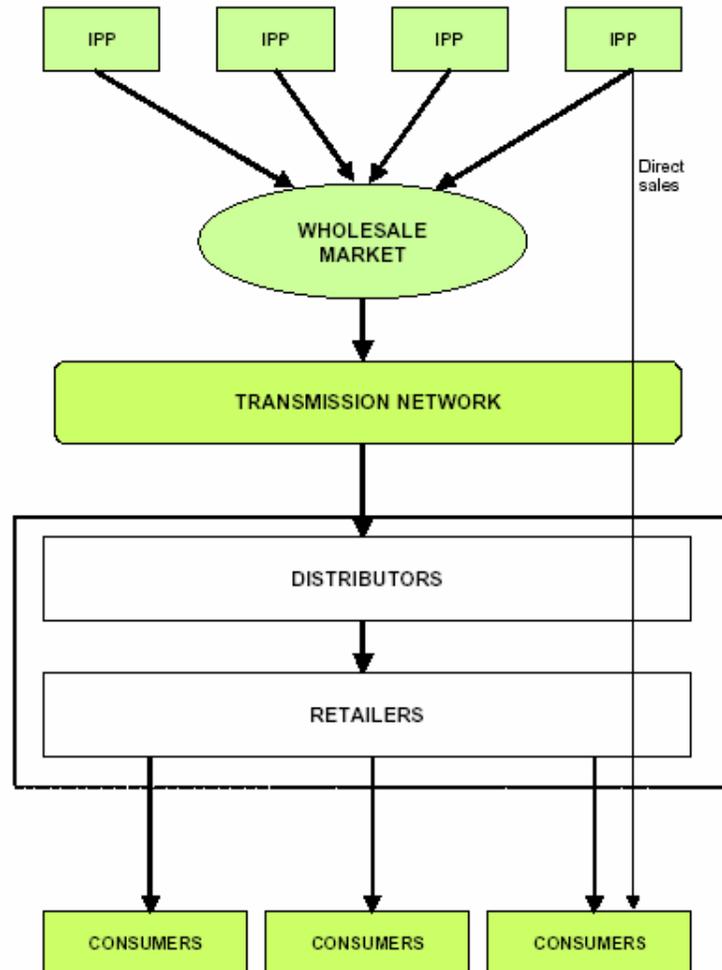


Figure 7 - Retail competition model

The requirements for a market operator role is to meet the needs of the system from a commercial point of view by keeping track of differences between contracted and metered consumption.

Separating technical and commercial activities has become increasingly important. The responsibility for installing metering systems and establishing standards their respective standards the flow of information between generation and load should be clearly defined between the owners of generation, transmission, and distribution facilities and the market operator.

In the retail competition model, transaction costs rise as more trade relations are established amongst the different agents [Paul Joskow 2005]. This will probably translate into advantages to large consumers, since their scale for negotiating electricity is larger.

For small consumers, the alternative available may be that of setting up an organization to facilitate electricity purchase and sale negotiations or else continue to be captive consumers of the distributing company.

The main differences between the retail and wholesale competition models are the following ones:

First, in the retail competition model, all consumers have the prerogative of choosing their own supplier, while in the wholesale competition model only distribution companies have this right.

Second, selling in the retail market is a marketing role which does not require that agents acting as retailers physically own distribution or transmission facilities.

Third, in the wholesale competition model, only generation, distribution and retailers companies have free access to transmission and distribution networks, while in the retail competition model consumers also enjoy this free access.

The decision to implement a retail competition model in the Brazilian consumer market was made at the Federal Level. The free choice process was gradually introduced, initially for large industrial consumers and, progressively, to medium-sized consumers. The ultimate objective, as signaled in the Law n. 9,074 of 1995, was to open the competition for residential consumers, when full competition in the retail market would be implemented. This stage should have been reached in the Brazilian market by 2005. However, due to the strong resistance from electricity distribution companies,

the process was postponed. Notwithstanding, social pressures have increased and become more scattered for regulations to be approved ensuring more freedom to consumers.

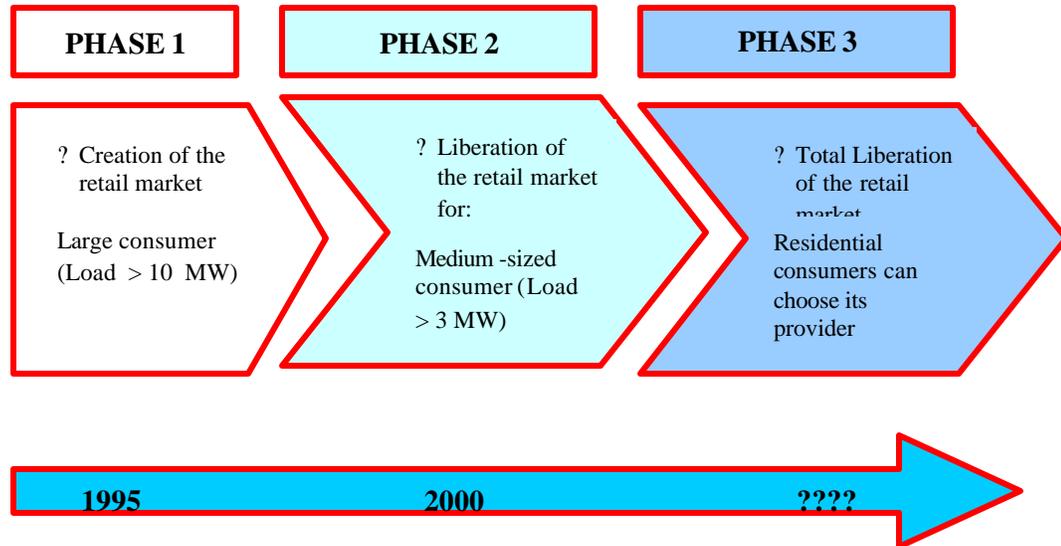


Figure 8 – Opening of the Brazilian retail market

SECTION FIVE

5. FREE CONSUMERS IN THE BRAZILIAN MARKET

Currently, there are two types of Electricity Consumers in Brazil: “Free” Consumers, who have the right to choose their electricity supplier paying a rate for using the distribution or transmission system; and “Captive” Consumers, who are supplied by the distribution company operating in its concession area, having their rates regulated by ANEEL.

The right to become a Free Consumer was provided for in Law n. 9,074, enacted in 1995, which put an end to exclusive rights to supply electricity by Distribution Concessionaires within their respective concession areas. The Law established that the market should be gradually liberalized over a five-year period to allow Large Consumers to become Free Consumers. Between July 1995 and July 2000, this possibility was restricted to Large Consumers with an installed load of 10 MW or more served by a voltage of 69 kV or more.

From July 2000 to-date, competition was made available to Consumers connected before July 8, 1995 with a load in excess of 3 MW and facilities connected to the electricity grid with a voltage of 69 kV or greater and consumers connected after July 8, 1995 with a load above 3 MW and served with any voltage.

Table 2 – Criteria to be Free Consumers

Consumption	Load	Voltage
Connected before 08/07/1995	> 3 MW	> 69 kV
New	> 3 MW	Serviced at any voltage

The Law also stated that after eight years (starting 2003) the Ministry of Mines and Energy could expand this market even more, reducing the initial load and voltage limits.

It should be observed that consuming units are not compulsorily required to become eligible, as this is a right that they can exercise or not. Therefore, if a consuming unit meets one the requirements shown in the table above, it is potentially a Free Consumer and from now on we will refer to it as a “potentially Free Consumer.”

If a Free Consumer wants to return to the condition of a Regulated Consumer, it must notify the Distributing Company of its concession area 5 years in advance, a deadline that can be reduced at the discretion of the Distributing Company.

Consumers in the free environment must enter into bilateral contracts with one or more suppliers for all their load and they are subject to heavy penalties if they don't.

Free Consumers can buy electricity from the local Distributing Company only under the same regulated conditions applicable to the other Captive Consumers, including in terms of rates and deadlines, making it unfeasible for distributing companies to compete to win or maintain this type of consumer.

As a means to foster the implementation of renewable electricity sources in Brazil, small consumers, usually small business, with an installed load of 500 kW or more were allowed to buy electricity from wind, small hydroelectric plants, biomass or solar sources with an installed power of up to 30 MW. Such contracting environment is full of exceptions, special treatments and commercial restrictions and its market is limited because the offer from renewable sources capable of meeting the needs of these consumers is still small.

Table 3 – Special Kind of Consumers

Consumption	Load	Voltage
Who buy electricity from wind, small hydroelectric plants, biomass or solar sources with an installed power of up to 30 MW.	≥ 0,5 MW	Serviced at any voltage

5.1. Barriers that consumers face to get into Retail Competition

In Brazil, most trade relations between electricity consumers and distributing companies consisted in vague, not very detailed, and often very old contracts, based on automatic renewal clauses, since there was no market environment, but mere formal procedures between the parties.

With the establishment of a competitive model for electricity, only in 2000 a rule was issued setting out general supply conditions which constitutes the main benchmark for regulated commercial practices between Electricity Consumers and Distribution Concessionaires.

Experience has shown that there are contract modalities which include clauses precluding any contract rescission or fixing amounts to be paid for rescinding a contract which have nothing to do with the actual value of the commercial operation, making any rescission unfeasible for all practical purposes.

There are also cases of rescission clauses which can only be applied in the event of bankruptcy or if consumers discontinue their operations.

In this scenario, the existence of effective contracts between Distributing Companies and Large Consumers ends up making any migration attempts and the existence of a truly Free Market more difficult, as Consumers must abide by their contracts with Monopoly Companies until the end before they can migrate to the competitive environment.

In an attempt to soften this entry barrier, Law n. 10,848, enacted in 2004, established new rules allowing captive consumers who have contracts with distribution companies without a final date to migrate to the free environment.

The Law determined that once a consumer expresses the intention to migrate to that environment, such migration would be possible

within a maximum period of 36 months and that specific regulations would regulate this matter. Those specific regulations, which were issued four months later, determined that the deadline in these cases would be one year after a formal notification from the consumer to the distribution agent.

Another factor that has been hindering the migration of consumers to the free market is access to low voltage (Distribution) wire. Although the law provides for the right to access transmission and distribution systems on a free and non-discriminatory basis, this right is still not applicable in practice. The owners of network assets resort to anticompetitive practices and impose many difficulties to allow access to them. The regulator could avoid this attitude by adopting tougher measures to curb abuses.

Another recurrent problem is the metering system for charging consumers who opt for the free market.

When they migrate to the free market, consumers must install or adjust the metering system according to the technical specifications set by the system and the market operator.

However, because of technical limitations, such as the non-availability of meters in the market which meet the specifications established by the system and the market operator, and due to regulatory distortions which must be corrected, such as requiring medium-sized consumer to have the same metering equipment that a large-sized industrial consumer is required to have, the former is excessively and unnecessarily burdened.

The points made above constitute hurdles which have been jeopardizing the consolidation of the free market to a certain extent. The need to improve the regulation to encourage the entry of non-franchise consumers to the system is undeniable.

5.2. Forces Pushing Consumers toward Retail Competition

The Brazilian industrial consuming units (which incidentally are the consumers that may migrate to the free market) were paying electricity supply

rates which had been subsidized for at least 20 years. Residential, commercial, rural and other consumers pay proportionally higher electricity rates in relation to industrial consumers. This rate distortion has the effect of a crossed subsidy, through which certain classes of consumers pay more while industrial consumers pay less.

Since 2003, the Federal Administration began to apply a rate realignment process to annual rate adjustments for the purpose of putting an end to the subsidy which makes the rates paid by residential, commercial, rural and other consumers higher. This is a gradual process that will be completed in 2007. Until then, the rates charged from industrial consumers will be subject to higher adjustments than those paid by residential consumers.

The rate realignment process will be based on adjustment levels applied to rates for a period of 5 years. In 2003, a 10% realignment percentage was applied; in 2004, the percentage was 25%; in 2005, it was 50%; in 2006, the percentage will be 75% and, finally, in 2007 all the supply rates will have a realignment of 100%, meaning that they will have been aligned to the actual costs of the service.

A study carried out by ANEEL⁷ shows that the electricity price charged from residential consumers would decrease by 12.38% in average and the one charged from industrial consumers would increase by up to 41.12% during the rate realignment process.

This means that if no other variable were involved in the rate correction procedure and the realignment process were applied all at once, the rate for residential consumers would drop by 12.38% and the one for industrial consumers would rise by 41.12%.

Another factor encouraging consumers to migrate to the free market is a contribution called Extraordinary Tariff-rate Recomposition – RTE, which was established to make up for revenue losses experienced by

⁷ Source: Nota Técnica n. 083/2003-SRE/SRD/ANEEL of april 23, 2003

generating and distributing companies as a result of the electricity rationing program adopted in Brazil in 2001 and 2002.

According to the Law, captive consumers pay 2.9% (residential, rural consumers) and 7.9% (industrial and commercial consumers) over the electricity price, while non-franchise consumers are not subject to this contribution.

The deadline for ending the collection of the RTE is December 2007 (72 months after it began to be collected, in December 2001).

Another factor which motivates potentially non-franchise consumers to opt for the free market and stop paying the regulated rate captive consumers pay is the fact that the mix of electricity purchase contracts adopted by certain distributing companies in Brazil, which is made up of different MWh costs, has increased considerably, as a result of which the average electricity purchase rate of distributing companies has become higher than the marginal cost of new electricity sources available to these consumers. This is due to two factors.

The first one is a compulsory requirement imposed on some distributing companies to buy a certain amount of electricity from the Itaipu power plant, the electricity of which is very expensive as compared to other competitive sources available on the market.

Besides the requirement to buy electricity from Itaipu, some distributing companies of Brazil, mainly in the northeast region, signed a long-term (30 years in average) electricity purchase contract with natural gas thermal generating companies under the Thermoelectric Priority Plan - PPT⁸.

⁸ The Brazilian government has acknowledged that it is strategically important for the country to increase thermoelectric generation and consequently be less dependent on hydro power. With that in mind the federal government launched in 2000 the Thermoelectric Priority Program – PPT “Programa Prioritário de Termoeletricidade”, by Federal Decree n. 3,371, enacted in 2000, which originally planned the construction of 47 thermoelectric plants using natural gas imported from Bolivia, totaling 17,500 MW more capacity before December 2003. During 2001 and the beginning of 2002 the plan was rearranged to 40 plants and 13,637 MW, to be installed before December 2004.

In a particularly extreme case, a distributing company replaced 60% of its supply mix by replacing hydraulic electricity from already amortized plants bought at low prices with electricity generated by new natural gas thermal plants of a generating company linked to its economic group at a much higher cost.

5.3. Advantages and Risks

This gradual liberalization of the electricity market in Brazil affords various opportunities to consumer. The expectations for the police are that several advantages both in terms of price and of the quality of the additional products and services provided by generating and marketing companies.

Industrial companies are realizing that operating in the free environment ensures them a gain that should not be despised, as apart for ensuring electricity purchase contracts at more competitive prices, leading to significant savings in relation to the captive rate and contributing to enhance their competitiveness, the contracted sums can be better adjusted to the profile of daily, monthly, and annual use of electricity by consumers.

Another aspect that should be highlighted is the possibility available to consumers to link the annual adjustment rate of their electricity purchase contract to a rate that represents their actual production costs. Such mechanism is not possible in the captive market, where ANEEL defines the adjustment rate that each distribution concessionaire is to apply to electricity sold in the regulated market.

As an example, the chart below shows that the adjustment rate adopted by distribution companies is much higher than the one adopted in the free market. In almost all bilateral contracts, the IGP-M (General Market Price Index) is adopted as the adjustment index.

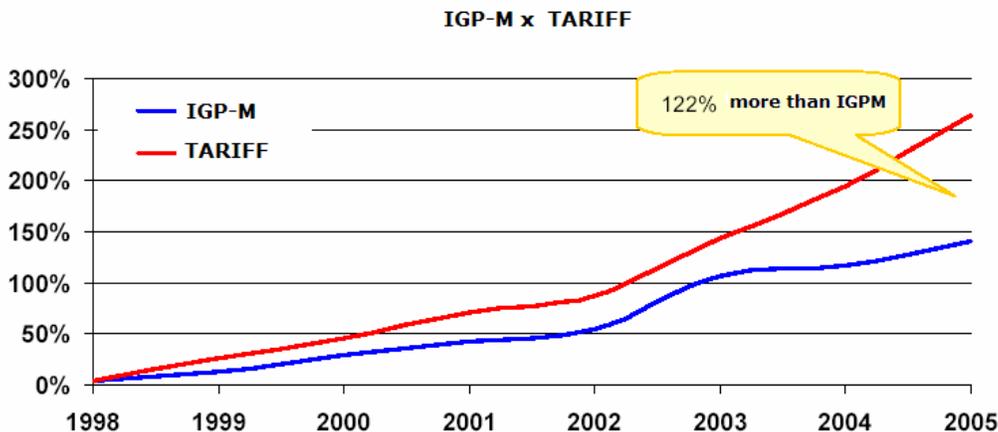


Figure 9 - Adjustment rate adopted by distribution companies x IGP-M index
 Source: CBIEE – Câmara Brasileira de Investidores em energia elétrica.

In the retail market, changing suppliers does not change in any way how consumers receive the electricity to be consumed. For the consumer, this change is merely contractual.

It is also a known fact that competition entails risks. We know today that market risks for a consumer comprise a broad range of specific features and that no proper mechanisms are available for quantifying most marketing risks.

However, the large amount of diverse information required for managing market risks is efficiently manipulated by retailers, which rely on highly skilled experts in their staff to deal with systemic aspects.

Retailers have been operating in the market as brokers seeking to bring together buyers and vendors who enter into contracts amongst them or as traders, who buy electricity from those who sell it and pass it on to their own clients, the consumers.

Consumers know their needs, but they are not aware of the technical limits imposed on generating companies. Retailers are familiar with the implicit risks of energy planning in its different horizons, given their direct impact on spot market pricing.

The greatest risk for free consumers is the cost of electricity, the possibility that prices might go up in a way they did not anticipate.

5.4. Adhesion to retail competition

Free consumers constitute one of the most visible faces of competition in the electricity industry. By introducing them, Law n. 9,074, enacted in 1995, enabled these consumers to respond to economic signals which are necessary not only to induce efficient investments in the long run, but also to make possible a more rational use of resources in the sector.

The retail marketing of electricity in Brazil is a relatively recent phenomenon and it only began to crawl in November 1999, four years after the law that created this consumer was passed.

In July 2000, when consumers were only allowed to migrate to the free market if their demand exceeded 10 MW, only five consumers acted as players in the free market, totaling a load of 150 average MWs, a figure that was still very incipient and accounted for 0.51% of the electricity consumption of the national system. It should be highlighted that these five consumers were physically located in the Southeast/Centro-west sub-market, Brazil's most developed region.

In July 2000, in a second stage, the law expanded the universe of the Brazilian retail market, lowering the demand level to be met by consumers to 3,000 KW. However, late in 2001 the situation was practically the same, as there were only nine consumers in the free market.

The first 1,000 average MWs traded in the free market were only achieved in September 2002, while the second 1,000 MWs were achieved in November of the same year. Since then, the participation of consumers in the retail market has grown sharply.

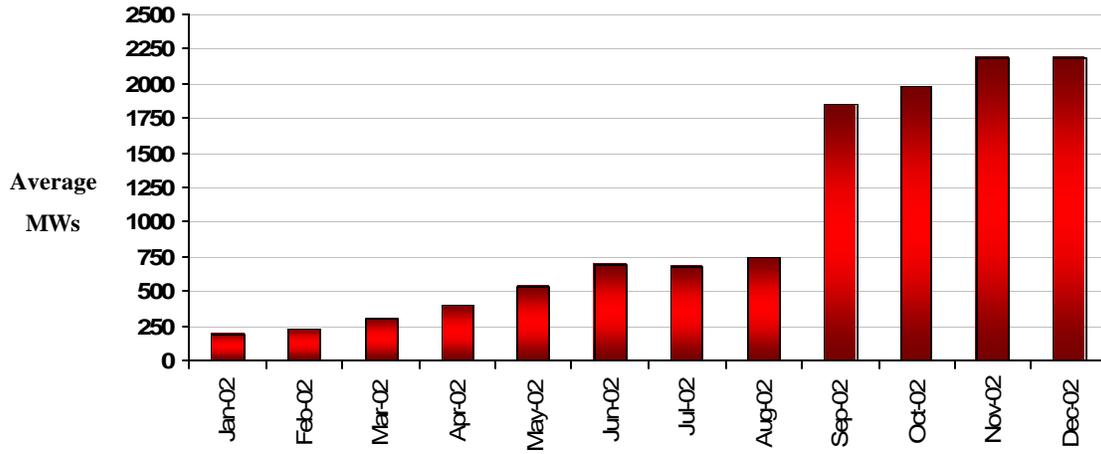
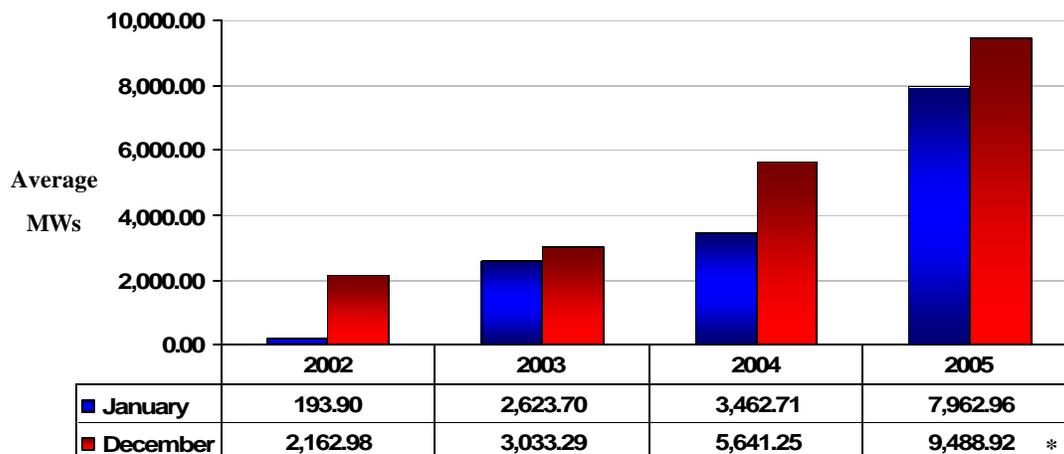


Figure 10 Evolution of the consumption in the retail mark in 2002 (average MWs)
Source: ANEEL

In 2004, the free market continued to grow at a fairly high rate, closing the year with 340 consumers, representing 5,640 average MWs. This is due to the perception of executives of medium-sized industrial corporations, who were not aware of the gains they could secure by saving on electricity bills. When it became clear that electricity marketing contributed to enhance competitiveness on a large scale, these companies migrated to the free market.



* June

Figure 11 Evolution of the consumption in the retail market.
Source: ANEEL

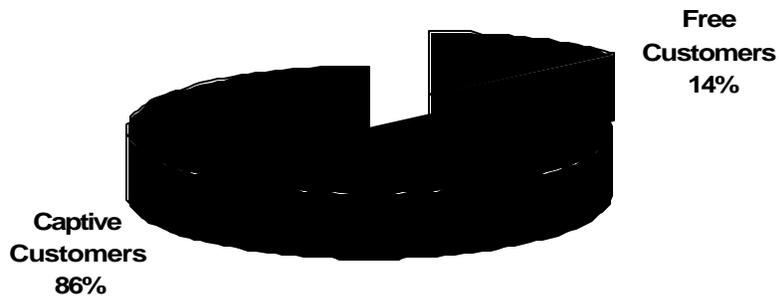


Figure 12 Composition of the energy market in 2004
Source: ANEEL

The greatest boom registered in this market was in 2005, when a marked increase in free consumers in the retail market in Brazil was registered in the first semester, from 491 to 607. The consumption of this category of consumers in average MWs increased from 7,960 to 9,500 during that period.

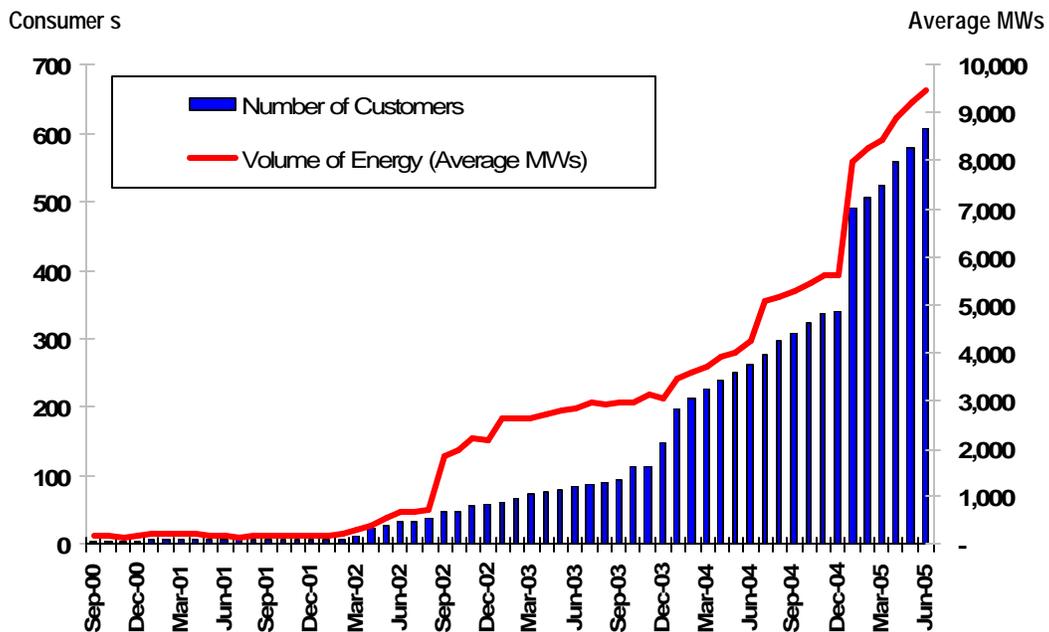


Figure 13 - Evolution of the Free Consumers' Market
Source: ANEEL

Studies show that, in its largest dimensions, the free electricity market could hit the mark of 35% of the electricity consumed in Brazil, something in the area of 14,500 average MWs.

It is interesting to observe that the price reduction benefit derived from competition in the retail market, given the new commercial strategies adopted by corporations to win consumers, accounted for savings in the order of 20-25% for consumers who opted for this market.

SECTION SIX

6. CONSIDERATIONS

In countries where the introduction of competition in the consumer segment was successful, electricity trading in the retail market led to reductions in the electricity price for captive customers. In Brazil, this situation cannot be observed yet because of the existence of crossed subsidies. On the other hand, however, the ones who benefited most from more competitive electricity prices were the customers who migrated to the free market.

The economic signal that should be issued to consumers is that the incentive for them to become free customers should be the perspective of better prices for purchasing electricity and not their release from financial burdens.

The free market brings opportunities, but it also entails risks and customers should know how to take advantage of opportunities as much as possible, so as to minimize their risks.

More than a decade after a free market was created in Brazil, it can be seen that adhesion to it is growing exponentially. In its early stages, customers were rather hesitant to enter this market because, among other reasons, they felt that they were venturing into unknown territory.

Competition in the segment of medium and small customers is limited. The timeline for liberalizing all the market has not been defined yet. The segment of medium-sized and small residential and corporate customers accounts for a fairly high share of the market and postponing this liberalization can hinder competition.

However, the benefits of extending retail competition to small customers such as residential users remains subject to debate (Joskow, 2003).

For most products, to suggest consumers would be better off served by a regulated monopoly than by a competitive market would be a heresy, but for electricity, experience in Britain with small consumers suggests that this would indeed be the case (Steve Thomas).

As Steve Thomas said, the main reasons that retail electricity competition is bad for small consumers is that competition is not a 'free good'. Introducing competition imposes a range of additional costs that must be paid by consumers and these costs are very high and it is far from clear that the benefits will outweigh them. Retail electricity competition will result in a transfer of costs from large to small consumers because large consumers have the incentive, negotiating skill and resources to get the best deal from the market.

The Brazilian Government should analyze very carefully this issue before introduce the small consumers in the electricity retail competition.

Organizing an electricity industry with competition in the retail market is advantageous for industrial consumers, as it affords them more options in terms of electricity supply and risk management mechanisms.

However, this organization requires the presence of an independent regulatory agency capable of ensuring the necessary conditions for the existence of a competitive market by, for example, monitoring market power practices and non-authorized cost transfers.

With the consolidation of the retail market in the country, a diversification in the activities of large customers can be observed as they take responsibility for managing electricity as a new input in their production chain. This management implies the development of new training courses and then the establishment of teams devoted to this new activity and the practice of continuously monitoring market conditions to take advantage of opportunities.

The main consequence of market liberalization for free customers in Brazil includes, on the one hand, a new freedom to choose their own supplier

and conditions for their electricity supply and, on the other hand, the impact of competition on prices.

The freedom for customers to select the supplier of their choice allowed them to optimize their electricity purchase with greater flexibility and balance amongst energy inputs, etc. As for the improvements observed in services, they became a factor of attraction for new customers.

We can also mention that a stronger competition amongst free customers ensures a market for new generation undertakings.

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