

## THE POWER SECTOR IN: VENEZUELA

Issue Area	VENEZUELA
<b>I. Current Status of Sector Reform: Key Points</b>	
Power System Overview	Total installed capacity in Venezuela at the end of 1998 was around 21,400 MW (61% hydroelectric, 32% gas fired, and 7% oil fired). Total electricity generation was 79,500 GWh, peak demand was around 12,000 MW and consumption reached 61,900 GWh. Electricity demand is expected to increase at an average annual rate of 3.6% over the period 1997-2005. Electricity service coverage is over 90%.
Structure	<p>The sector is comprised mainly by state owned monopolies with high degree of vertical integration. State-owned enterprises supply 82% of the electricity demand. Electrificación de Caroni (EDELCA) generates approximately 74% of all the electricity produced in the interconnected system, owns 60% of the total installed capacity and supply the electro-intensive industries of the Guayana region. Compañía Anónima de Administración y Fomento Eléctrico (CADAFE), a former vertically integrated monopoly divided into four big regional distribution companies, several generation companies and a transmission company distributes electricity around the country. Investor-owned distribution companies own 10% of the generation capacity and buy most of their requirements from the state-owned generators. The interconnected system, SNI, owned and managed by four large companies: EDELCA, CADAFE, Electricidad de Caracas (ELECAR) and Empresa de Energía de Venezuela (Enelven) covers the whole nation with the exception of small isolated communities.</p> <p>The new electricity law <sup>1</sup> refers to generation, transmission, distribution, operation and management of the interconnected system, and marketing of energy and power as separated activities. The law stipulates the unbundling of the existing generation, transmission and distribution activities and guarantee open access to transmission and distribution. A new company would own and operate the interconnected transmission system and a national power board would manage and regulate the transmission system as well as the wholesale power market. No single company may undertake any two of the generation, transmission, distribution or grid operator activities. Generators, independent marketers and distributors could undertake supply activities with their regulated customers. In addition, to the above- mentioned agents, large customers (5 MW) may participate in the market.</p>
Competition	There is no market competition yet in Venezuela. The new sector law would open generation for competition.
Role of the State	At present, there is no clear separation of roles. The Government of Venezuela (GOV) performs policy-setting, regulatory and commercial functions for the sector. The new law separates policy and regulatory functions, and ownership of electricity assets. The State will foster private sector participation in the different activities but will reserve for itself hydroelectric activities in the Caroni, Paragua and Caura river basins.
Regulatory Institution	At present, the regulatory institution in Venezuela is the Ministry of Energy and Mines, advised by an inter-ministerial Electricity Regulatory Commission (CREE), established in 1992, and with technical support from Fundación para el Desarrollo Eléctrico (FUNDELEC). The law under consideration will replace CREE with a new regulatory entity, the Comisión Nacional de Energía Eléctrica (CNEE). This entity would be in charge of regulatory and oversight functions. The CNEE will be fiscally independent and according to the law “will enjoy functional, administrative and financial autonomy”; however, the GOV will have discretionary power for appointment and removal of directors. The first two years of its existence will be critical for CNEE since the Law gave it the task of developing the detailed design of the regulatory and market instruments. To identify the best theory, methods and models that will define the prices at node levels, the tariffs in the regulated market, and the operation and management of the grid.
Private Sector Participation	The private sector will increase its participation in generation through the construction of thermal plants or small hydro projects. The privatization of electric utilities was initiated during the first semester of 1999 when the American utility CMS was awarded the Empresa Electrica de Nueva Esparta (SENECA). Waiting in line are C.A. Energía Eléctrica de Venezuela and C.A. Energía de la Costa Oriental del Lago (ENELVEN-ENELCO), C.A. Energía Eléctrica de Barquisimeto (ENELBAR) and the Sistema Eléctrico de los Estados Monagas y Delta Amacuro (SEMDA). However, the process may experience some delay until the utilities are restructured to meet the requirements of the new Electricity Law. Some of the generation and distribution companies split from the former CADAFE, as well as the new national

<sup>1</sup> The cabinet approved the new law in August 8, 1999. The law was enacted under special powers Congress granted President Hugo Chávez earlier in the year.

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Major Outstanding Issues	<p>transmission company, are targets for future privatization.</p> <ol style="list-style-type: none"> <li>1. Implementation of the new electricity law will require the MME to draft the regulations governing CNEE and the Centro Nacional de Gestión del Sistema Eléctrico (CENGSE), to staff and set up both institutions, and to perform all the fine-tuning required. This is a demanding task in spite of the support from FUNDELEC and will demand strong support from multilaterals.</li> <li>2. The existing companies must convert to the new structure within the next three years, which may result in delays in the ongoing privatization processes.</li> <li>3. The government must issue as soon as possible the measures aimed at fostering the participation of indigenous engineering, goods and services, and capitals in the power sector activities announced in Article 10 of the electricity law. Ending this uncertainty will clarify the environment for foreign investors.</li> </ol>
<b>II. Legal &amp; Regulatory Framework</b>	
Legal Basis	<p><i>Law of Servidumbre de Conductores Eléctricos (1928)</i> regulates the execution of transmission and distribution projects.</p> <p><i>Law of the Environment (1976)</i> prohibits and controls the activities that affect the environment, imposes restrictions to the operation of steam generating facilities burning highly pollutant fuels.</p> <p><i>Law of Municipal Regimes (1978)</i>, amended in 1988 and in 1989, transfers to the “municipios” some power in electricity distribution and sales. However, the GOV regulates tariffs, and establishes the contents of the concession contracts (including a concession term up to 20 years). The Law didn’t introduce any regulations regarding the companies already operating when it was adopted.</p> <p><i>Presidential Decree No 368 (1989)</i> declares the electricity service as a basic need and establishing criteria for the determination of tariffs.</p> <p><i>Law of Consumer Protection (1992)</i> authorizes the GOV, through its Ministries to establish the maximum tariffs for public services.</p> <p><i>Decree No. 2383 (July 1992)</i> created the Electric Energy Regulatory Commission (CREE). The Commission determines the maximum annual rate of return, establishes a tariff regime approving expansion plans and coordinates future investment. The Minister of Energy and Mines functions as Commission’s President.</p> <p><i>Decree No. 2384 (July 1992)</i> creates the Fund for Development of the Electric Power Service (FUNDELEC) which monitors the evolution of the cost structure of electric facilities and reviews technical aspects of the regulations.</p> <p><i>Decree-Law of “Concesiones de Obras y Servicios Públicos” (1994)</i> assigns regulation of public utilities concessions to the GOV, establishes the content of the concession contracts, and mandates that ownership of their assets must revert to GOV at the expiration of the concession.</p> <p><i>Presidential Decree No. 1558 (1996)</i> includes guidelines for the regulation of the electricity sector. Among them the Decree defines a subsidiary role for the State in the electricity sector; opens generation to competition; mandates unbundling of generation, transmission and distribution; provides free access to the transmission and distribution grids; establish tariffs based on the cost of service for each class of client; and the possibility for the GOV to establish direct, clear and transitory subsidies. This decree also included some temporary provisions such as a two- year period for the separation, as business units, of generation, transmission and distribution segments of the state-owned enterprises; the creation of a new transmission company, composed with the assets of the government owned utilities; the assignment of privatization functions to the FIV; and the establishment of 5 MW as the minimum demand for deregulated consumers.</p> <p><i>Electricity Law (1999)</i> formalizes and further develops many features of the 1996 Presidential Decree. The main points covered by the new law are:</p> <ul style="list-style-type: none"> <li>✓ Guarantee uninterrupted electric supply at the lowest possible cost.</li> <li>✓ With state and private sector capital, develop real competition in generation and marketing, and permit free access to transmission and distribution networks</li> <li>✓ Reserve to the state, through the Energy and Mines Ministry, the right to fix tariffs for generation, transmission, distribution and marketing.</li> <li>✓ Establish legal, accounting and management separation between generation, transmission, distribution and marketing of electricity companies. Promote extension of services to isolated and depressed areas and encourage alternative energy sources</li> </ul>

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	<ul style="list-style-type: none"> <li>✓ Respect rights of municipal governments.</li> <li>✓ Establishes the new Comisión de Energía Eléctrica (CNEE) to regulate and oversight the sector.</li> <li>✓ Creates the new Centro Nacional de Gestión del Sistema Eléctrico (CNGSE) to operate and manage the interconnected system.</li> </ul> <p>Under terms of the law, electricity companies will split into separate distribution, transmission and generation units, all of which will be open to private investment. Hydroelectric plants however will remain under state control due to their "strategic importance."</p> <p>The national transmission network, formed in 1968, will become a separate state-run enterprise, which will plug power generators with local distribution firms.</p> <p>The law envisages that the new institutions to regulate and operate the sector will be in place before two years from its enactment. During the interim, the Ministry of Energy and Mines with the support of FUNDELEC will fill the place of CNEE and the existing system operator OPSIS will perform the operation and control of the generation and transmission activities.</p>
Role of the State	<p>According to the new law, the State has the ultimate responsibility for the provision of the service. “ <i>The State will watch that the activities comprising the electricity service are executed under the principles of economic equilibrium, reliability, efficiency, quality, equity, non discrimination, and transparency so to provide electricity at the least cost and quality required by users</i>”. The State will foster private sector participation in the provision of the service, will promote competition in those activities in which it is feasible and desirable, and will regulate those activities in which competition does not guarantee economic efficiency. However, the State will keep for itself hydropower generation in four river basins.</p> <p>The GOV, through the Minister of Energy and Mines, will issue the Development Plan of the National Electric Service, which is indicative. A new entity, the CNEE, will be in charge of regulatory and overseeing functions. While nominally autonomous, the appointment and tenure of CNEE’s board members are mainly in the country’s President hands. CNEE has restricted tariff-setting functions, it will establish the principles, methodologies and models defining the tariff regime for regulated customers but the GOV, through the Ministers of Energy and Mines and Industry and Commerce will establish the tariffs. The State will also intervene to improve the competitiveness of local engineering, goods and services, and capital in the power sector activities.</p>
Institutional and Regulatory Entities and Jurisdiction	<p><b>Ministry of Industry, Energy and Mines:</b> At present this Ministry is in charge of policy-setting and regulatory functions for the sector. The Ministry is advised by the Comisión de Regulación de Energía Eléctrica (CREE) and has the technical support of FUNDELEC.</p> <p>The <b>Comisión de Regulación Eléctrica (CREE)</b> and <b>FUNDELEC</b>, CREE’s technical advisory board, were established in 1992 to formulate the new sector organizational, regulatory and operating structures, and draft the complementary legislation needed to support the reform initiatives.</p> <p>Under the new law, a new institution, the <b>Comisión Nacional de Energía Eléctrica (CNEE)</b> will be in charge of the regulatory and overseeing functions for the power sector replacing CREE. CNEE will have a five-member Board of fulltime Executive Directors. The President of the Country directly appoints three members and the president of the Commission. Members serve a five-year term but their appointments don’t have tenure, i.e. the President could remove them at any time.</p> <p>Drafting the regulations and performing other task required in setting up both, CNEE and CNGSE will take some time. During the interim, the Ministry of Energy and Mines, with the support of FUNDELEC will fill the place of CNEE, and the existing system operator OPSIS will perform the operation and control of the generation and transmission activities.</p> <p><b>The Fondo de Inversiones de Venezuela (FIV)</b> is the government agency in charge of the privatization of infrastructure.</p>
Sector Planning	<p>A commission formed by the four owners of the SIN was in charge of the coordination of the expansion plans for the sector. However, during the last years the work of the Commission has been greatly reduced.</p> <p>According to the new law, the GOV has the responsibility for planning of the power sector activities through the MEM, subject to the National Land Use Plan, and the countries’ Economic and Social Development Plan. The MEM, with the support of the CNEE and the CNGSE, will formulate the National Electricity Service Plan. This Plan will be indicative in nature and will include: The sector policies, a forecast of future power demand, the estimate new generation capacity requirements, the portfolio of investment projects, the transmission expansion requirements, guidelines to foster end-use energy efficiency and the expansion to off-grid areas using renewable sources.</p>

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<b>III. Sector Structure and Participants</b>	
Structure	<p>Services are provided by five vertically integrated state owned monopolies (68% clients and 85% of the installed capacity) and seven investor owned utilities (IOU's) (32% clients and 10% of the installed capacity). Around 5% of the installed capacity is self-supplied. The largest publicly owned enterprises are EDELCA y CADAPE. EDELCA, a hydro generation and transmission company supplies bulk power to other utilities and to industrial complexes in the Guyana region. EDELCA plays a dominant role; it generates more than 70% of the electricity transmitted in the SNI, it is by far the lowest cost producer, and it owns most of the high voltage transmission (765 kV and 400 kV).</p> <p>Until recently, CADAPE operated as a fully integrated generation, transmission and distribution company, supplying about 60% of the total residential consumers in areas beyond mayor urban centers. In 1997, CADAPE reorganized its business units into four regional distribution subsidiaries: ELEORIENTE, ELEOCCIDENTE, ELECENRO, and CADELA, a separate transmission unit and various separate hydro and thermal generating units. Privatization is expected for many of these units. The three remaining state-owned companies are C.A. Energía Eléctrica de Venezuela (ENELVEN), C.A. Energía de la Costa Oriental del Lago (ENELCO) and C.A. Energía Eléctrica de Barquisimeto (ENELBAR).</p> <p>Electricidad de Caracas (ELECAR) is the main IOU, supplying most of Caracas and holding part ownership in 3 other IOUs, C.A. La Electricidad de Valencia (ELEVAl), C.A. Luz Eléctrica de Yaracuy (CALEY), C.A. Luz y Fuerza Eléctrica de Puerto Cabello (CALIFE), C.A. La Electricidad de Guarenas y Guatire (ELEGGUA), C.A. Luz Eléctrica de Venezuela (CALEV), and C.A. La Electricidad de Ciudad Bolívar (ELEBOL).</p> <p>The new power regulatory framework unbundle generation, transmission, distribution and supply operations, assigns the administration of the national transmission grid to a single company, provides free access to the national grid and distribution networks, proposes a single power pool and freedom of entry to new generating participants. The FIV will be in charge of the privatization process, according to the timetables established by the Privatization Law.</p>
Participants and Degree of Private Sector Participation	<p>Generation: EDELCA is by far the largest generator with its hydroelectric developments in the Caroni River Basin: Guri, 10,000 MW; Macagua, 2,000 MW; and in process of construction, Caruachi, 2,400 MW and Tapoma 2,400 MW. CADAPE owns 3,500 MW thermal and 700 MW hydro. Other generators include SENECA (170 MW)<sup>2</sup>, ENELBAR (151MW), ENELVEN/ENELCO (1370 MW) and SEMDA (536MW). At present around 2,400 MW of installed capacity are in private sector hands.</p> <p>Transmission: The new law calls for the creation of a company that would own and operate the majority of the nationwide inter-connected transmission system currently in public hands. The bill guarantees unrestricted access to transmission and distribution systems.</p> <p>Distribution: CADAPE and EDELCA are the largest distributors each one sharing around one third of sales to final consumers. All IOUs own distribution business totaling around 32% of distribution clients but only 17% of the energy consumed, the biggest one being ELECAR supplying most of Caracas power requirements, and holding part ownership in three other small distribution companies. The remainder of sales to final consumers is shared between ENELVEN (13%) and ENELBAR (4%).</p>
Targets for Privatization	<p>The Government, through the state privatization agency, FIV, privatized the integrated electricity systems SENECA (170 MW), serving Margarita Island, and SEMDA earlier in 1999. However, the intended privatization of ENELVEN/ENELCO (1,370 MW) and ENELBAR (151MW), may be delayed due to the restructuring required by the new law. In addition, the government has plans for selling the transmission company in the future.</p>
New Investments	<p>The most pressing need is the reinforcement of the transmission system requiring some US\$200 millions in the short term to avoid recurrent blackouts and brownouts. The Government expects that the private sector will undertake new additional capacity by building thermal plants or small and hydro projects, but it will keep for itself the development of big hydro projects. Altogether, the investment needs are estimated around US\$5 billions.</p>

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<b>IV. Electricity Markets: Areas of Competition and Monopoly</b>	
Bulk Power	<p>At present, there is some degree of competition for contracts with distribution companies and for large customers, such as the oil and metallurgic industries, and the big water companies. There are two kinds of transactions in the wholesale power market depending on the participating companies. Power and energy exchanges among the four companies comprising the SIN are made within the framework of the Interconnection Contract, signed by them for that purpose. Purchases made by medium and small distributors are done through contracts negotiated with the owner of the transformer feeding them, with the exemption of a medium size distributor which buys from EDELCA but pays wheeling charges to CADAPE. Large customers also pay wheeling charges to CADAPE in case they buy from a different provider.</p> <p>The new law provides open entry to the generation sector.</p>
Transmission and Distribution (Networks)	<p>The new law guarantees free access to the transmission system. CNEE will regulate the new monopoly, the National Transmission Company, which will be created with EDELCA's and CADAPE's transmission assets. Up until now, CADAPE permits the use of its high voltage lines charging a toll.</p>
Retail Distribution	<p>Retail distribution enterprises will have quasi-exclusive concession contracts although deregulated large consumers will be able to purchase power directly from generators.</p>
<b>V. Pool Operation and Load Dispatch</b>	
Dispatch Entity and Basis	<p>The organizational structure for the operation of the Interconnected Power System established in 1968 was ratified in the Interconnection Contract. For that purpose, its four signers created OPSIS, an associative organization that functions as the National Dispatch Load Center.</p> <p>To perform its duties OPSIS seeks the support of the six regional dispatch centers owned by the four IC signers. Dispatch operating guidelines were set predominantly by EDELCA and CADAPE. In the future, the CNEE will set new guidelines based on economic dispatch criteria.</p>
<b>VI. Pricing</b>	
Bulk Power	<p>There will be bulk power and energy transactions in the Wholesale Electricity Market among its members. The CNEE will establish principles, methodologies and models that will rule price formation in the Wholesale Electricity Market.</p>
Transmission/ Distribution (Networks)	<p>The new law states that transmission pricing will be based on the efficient cost of investment, operation and maintenance of the facilities and other cost required to develop the activity and to obtain a just retribution.</p>
Retail Tariffs	<p>Venezuela has the lowest electricity rates in the region. In June 1997, the Government approved an increase in electricity rates. Residential rates were increased immediately by 20%, and were adjusted monthly during a 6 month period. However, inflation has eroded most of the gains. The CNEE will establish the principles, methodologies and models that will define the tariff regime for the regulated sector. The tariffs that distribution companies will apply to its customers will be established by the government through the Ministry of Energy and Mines and the Ministry of Production and Trade keeping in mind the following elements:</p> <ol style="list-style-type: none"> <li>1. The cost of energy contracted or procured in the Wholesale Electricity market.</li> <li>2. Transmission cost reflecting the consumer location in the grid.</li> <li>3. The cost of operation of the system</li> <li>4. The distribution cost in conditions of maximum efficiency</li> <li>5. The cost of marketing</li> <li>6. The operation cost of CNEE</li> </ol>
Subsidies	<p>At present, industrial and commercial rates carry a 15 to 20% surcharge to subsidize residential customers. The new Electricity Law allows the government, once the opinion of the CNEE has been consulted, to establish subsidies to very low-income residential consumers or specific sectors. These subsidies will be financed by either cross-subsidies from other residential consumers living in the same area, budgetary allocations, or by a special fund fed by contributions from generators up to 1% of transactions in the Wholesale Electricity Market. The contributions of other customers will have</p>

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	a cap of 20% of the cost of the service and will be dismantled by 5% every two years once the opinion of the CNEE has been heard.
<b>VII. Sector Problems and Priorities</b>	
Framework And Other Issues	<ol style="list-style-type: none"> <li>1. The main issue confronting the sector, other than the regulation of the Electricity Law and the establishment of the regulatory and power market institutions, is the future nature and pace of the privatization process. While the Law sets a clear role for the participation of the private sector there is not agreement within the government yet on the procedures and/or criteria to be followed in the privatization of existing assets.</li> <li>2. The new Law allows for cross-subsidies to the poor as well as other transfers. The regulation of the subsidy system will be key to the financial health of the new sector.</li> <li>3. The definition of the new Pool rules will be critical for the possibility of competition because of the dominant role that the Caroni River Hydroelectric projects play in the system. Also important is the liberalization of the natural gas market.</li> <li>4. At present a single institution is in charge of system and market operation and, while they may be split in the future, this choice somehow restricts the range of models candidates for the wholesale market. Also, another improvement that may enhance the scope for competition could be to make limit the distribution companies to the wire business not allowing them to participate as marketers.</li> </ol>
Operating Needs	The most pressing operating need is the elaboration of the regulations of the Electricity Law and the establishment of the market institutions. Also the improvements in the transmission grid are a priority activity.
Electrification And Energy Efficiency	CADAFE and new distribution concessionaires will be responsible for continuing electrification programs. Overall, electric service coverage had already attained over 90% before reforms were initiated. Budget funds and earmarked taxes are used to fund electrification programs.
<b>VIII. Sources and Relevant Web Pages</b>	
<p><b>Sources</b></p> <p>Latin American Power Watch. Monthly Newsletter. Washington DC.</p> <p><b>Relevant Web Pages:</b></p> <p>Consejo Nacional de Promoción de Inversiones (CONAPRI): <a href="http://www.conapri.org/">http://www.conapri.org/</a></p> <p>Fondo de Inversiones de Venezuela (FIV): <a href="http://161.196.215.77/english/homepage/main.htm">http://161.196.215.77/english/homepage/main.htm</a></p> <p>Electricidad de Caracas (EDC): <a href="http://www.edc-ven.com/">http://www.edc-ven.com/</a></p> <p>Catholic University of Chile: <a href="http://www.ing.puc.cl/~power/southamerica/southamerica.htm">http://www.ing.puc.cl/~power/southamerica/southamerica.htm</a></p>	