

THE POWER SECTOR IN: NICARAGUA

Issue Area	NICARAGUA
I. Current Status of Sector Reform: Key Points	
Power System Overview	Nicaragua had a total installed capacity of 479 MW by the end of 1998 with total generation of 2,374 GWh. Forecasts for demand growth were around 5.8% per year, but could change after the general devastation caused by Hurricane Mitch. Electricity service coverage is 50%. With the exception of some small isolated regions, Nicaragua behaves as a sole interconnected market. It will be part of the Central American interconnected market.
Structure	<p>The Empresa Nacional de Electricidad (ENEL) currently dominates the electricity market in Nicaragua, it is a vertically integrated utility and provides all the commercial services in the sector.</p> <p>The new electricity law, approved in April 1998, provides for the unbundling of ENEL into different industry segments. The resulting companies from the restructuring will be privatized, with the exception of the transmission company (Empresa Estatal de Transmisión, EST).</p>
Competition	<p>ENEL remains as the dominant market participant in the industry. Only one independent generator operates in the system. The 36 MW Amfels plant initiated operations in 1997 selling its generation to ENEL. Amfels represents 9% of the total installed capacity and generated 6.6% of the total dispatched energy in the country. Two new independent generators, with installed capacities of 50 MW each, have already signed contracts with ENEL and will begin operations in 1999. These projects were competitively awarded.</p> <p>The new electricity law contemplates the vertical and horizontal unbundling of ENEL and the creation of a wholesale electricity market, in which new investors will be allowed to participate and compete for a deregulated contracts market. Due to the size of the market, a closer look should be taken to the composition of this new market, as some participant could obtain favorable positions. Participation in the Central American common market will provide a more competitive environment.</p>
Role of the State	<p>The sector's normative and regulatory functions have already been mostly separated from sector commercial activities. The recently created Comisión Nacional de Energía (CNE) is in charge of sector policy-making and planning functions. The Instituto Nicaragüense de Energía (INE) is in charge of the regulatory and overseeing activities in the sector. It is also in charge of granting new concessions and licenses. ENEL will transfer its planning responsibilities to CNE.</p> <p>The government currently owns all the commercial activities in the industry through ENEL. After its restructuring/privatization, the government will keep the transmission assets, creating the Empresa Estatal de Transmisión (EST), which will also be in charge of the operation of the system and of the new wholesale market.</p>
Regulatory Institution	<p>Instituto Nicaragüense de Energía (INE) is in charge of the regulatory and overseeing functions of the system. The reform to INE's law was approved by congress in 1998 and strengthens INE as the regulatory and oversight entity responsible for implementing policies for the electricity and hydrocarbons sub-sectors, including sector development projects and exploration/exploitation of energy resources.</p> <p>The separation of the normative functions of INE by creating the CNE has allowed INE to concentrate on the regulatory process. It gives it more independence, and permits it to speed up the implementation of the new institutional framework.</p>
Private Sector Participation	<p>The Amfels generation project is the only private participant in Nicaragua's electricity industry. To new private generators, each one with 50 MW of capacity will begin operations in 1999.</p> <p>The electricity law allows the entrance of new investors in the industry. A competitive market will provide the incentives for private investors to perform the needed expansion of the system. Both generation and distribution activities will be dominated by the private sector, as the government will move out completely from these two activities. The government is currently performing the studies to unbundle ENEL and for its subsequent privatization. The privatization process will start with the</p>

Issue Area	NICARAGUA
Major Outstanding Issues	<p>distribution companies followed by the generation companies.</p> <ol style="list-style-type: none"> <li data-bbox="347 296 1481 478">1. The new laws that define the industry structure were approved by congress in April 1998. Even though the government has moved forward towards the implementation process, by creating the CNE and performing the studies for the restructuring of ENEL, the process is already delayed. The crisis generated by Hurricane Mitch might be the cause for the delays, but the government should keep its reforming pace, as a means for promoting new investment in the sector and bringing new funds to the country. <li data-bbox="347 495 1481 548">2. The political influence over ENEL should be reduced, as the restructuring process should be as transparent as possible.
II. Legal & Regulatory Framework	
Legal Basis	<p><i>Law No. 272-98:</i> This is the new Electricity Industry Law. It defines the new sector structure and determines the implementation schedule. The law provides for the establishment of a National Energy Commission (CNE) to set the policies, strategies and objectives and to approve the indicative plan for the electricity sector. The law also defines electricity supply as a public service, identifies the process and regime for authorizing licenses and concessions, outlines the rights, obligations, and responsibilities of generating, distribution, commercialization and transmission enterprises under authorized licenses and concessions, and sets the basis for pricing in each area of sector activity.</p> <p><i>Law No. 271-98.</i> This law reformed INE's founding law (Reforma a la Ley Orgánica del Instituto Nicaragüense de Energía). This law formally assigned regulatory, supervisory, inspection and oversight functions for both the electricity and hydrocarbon sub-sectors to INE, to be transformed into an autonomous state agency. INE would be responsible for implementing policies formulated by CNE. It also gives INE the authority to grant concessions and licenses in the industry.</p> <p><i>Executive Decree No. 46-94:</i> This separated INE's commercial activities by creating the <i>Empresa Nicaragüense de Energía</i> (ENEL) as a government owned enterprise in charge of the generation, transmission, distribution and commercialization of electricity on the national level. ENEL was also assigned tasks related to the development and use of energy resources, planning of the electricity sector and coordination of SIN operations. INE was delegated as the authority in charge of the normative and regulatory functions for the sector.</p> <p><i>Electric Industry Law of 1957 (la Ley de la Industria Eléctrica)</i> established INE as a state-owned sector enterprise in charge of all public electricity supply functions as well as sector policy-making, planning, development, and pricing tasks. The new Electricity Industry law revoked this law.</p>
Role of the State	<p>The government currently holds most of the institutional and commercial activities in the sector. CNE is in charge of policy-making, INE is the regulatory and overseeing agency and ENEL is in charge of the commercial and operational activities of the system.</p> <p>The government will withdraw from the generation and distribution activities and will create a new transmission company with ENEL's transmission assets. This company will have a special division in charge of system operation and market administration.</p>
Institutional and Regulatory Entities and Jurisdiction	<p>The Instituto Nicaragüense de Energía (INE) is in charge of regulation, overseeing and standard-setting activities for the electricity and hydrocarbon sector. INE is also responsible for the issuance of licenses in the sector (including permits for exploration of energy resources and other activities). It is charge of the formulation of the new market structure by developing the bidding criteria, defining the methodology for setting regulated tariffs and tolls and the formulating of technical operating and safety criteria. It should also define indicators for performance and quality of service. Furthermore, INE would assist CNE in policy-making and concession activities, and would implement further policies and directives issued by CNE. It would also oversee energy development activities undertaken by other agents of the State. Other assigned duties include safeguarding energy consumers' rights; ensuring compliance with sector norms and standards; performing inspections; approving regulated transmission, distribution, and retail tariffs; defining customer categories; resolving disputes among sector participants and acting to prevent anti-competitive practices. It is also in charge of overseeing licensees and concessionaires (including those</p>

Issue Area	NICARAGUA
	<p>undertaking energy resource development or exploration/exploitation projects) and advising CNE on the extension or revocation of licenses and concessions for generators using natural resources.</p> <p>A 3-member Management Council heads INE, these members are nominated for 6-year, renewable terms by the President and confirmed by the National Assembly. The National Assembly must approve the removal of Council members. INE would be self-financing through fees charged to regulated enterprises such as licensees and concessionaires (limited to 1.5% of the enterprise's billed charges), and fees on hydrocarbon product sales as well as income from sales of publications, reports, and studies; fines; and other mechanisms.</p> <p>The National Energy Commission (CNE) is in charge of formulating, coordinating and setting overall objectives, policies, strategies, and general directives for the entire energy sector (as transferred from INE). It is also in charge of undertaking strategic indicative planning for the energy sector aimed at achieving development goals and optimizing the use of national energy resources. CNE reviews energy demand and supply balances, pricing policies, energy conservation programs, service coverage, and investment and financing strategies. It undertakes studies; issue criteria for investment projects; promote private sector participation and propose concessions for use of natural resources by the private sector to the National Assembly.</p> <p>CNE is composed by the Ministers or Vice-Ministers of the Presidency (to be the Chairman), Economy and Development, and Environment and Natural Resources, as well as of the Director of INE and 2 civilian representatives nominated by the President of the Republic. Fees on regulated enterprises and other income collected by INE will financially support CNE.</p> <p>ENEL is the national integrated utility, in charge of all the commercial activities in the sector. It is also in charge of investigating the present and future needs for the electricity sector; undertaking studies and exploration of conventional and alternative energy resources for electricity generation; and coordinating the National Load Dispatch Control Center and operation of the SIN. After its restructuring and privatization, it will be transformed into a transmission company (EST), which will keep the National Load Dispatch Control Center and the operation of the new wholesale market.</p> <p>MARENA, the National Environment and Natural Resources Ministry will establish and oversee environmental standards applicable to the electricity sector in all stages of its development and operation, as provided in the Electricity Industry Law and other relevant laws.</p>
Sector Planning	<p>Currently, ENEL formulates an expansion plan for the enterprise covering the short, medium, and long term and submits it to INE, which is the entity in charge of sector planning. ENEL's expansion plan de facto serves as a sector expansion plan.</p> <p>CNE will absorb the new planning activities for the industry. It will be in charge of elaborating the guidelines for an indicative sector expansion plan, which will aim at achieving development goals and optimizing the use of national energy resources. All available energy resources will be considered. Generators, transmission, and distribution enterprises are expected to refer to (i.e., be compatible with) this plan when contemplating new projects. Sector participants will present proposed investment projects to INE, which will then review them.</p>
III. Sector Structure and Participants	
Structure	<p>ENEL, the national utility company currently controls the sector, it is a vertically integrated utility in charge of the generation, transmission and distribution activities. It is also in charge of system operation. ENEL is currently under a restructuring process in which its generation, transmission, and distribution/commercialization activities will be separated. The resulting generation and distribution companies will most probably be privatized.</p> <p>A separate national transmission enterprise, EST, will be created using ENEL's transmission assets. It will remain under public sector hands and will be in charge of system and market operation.</p> <p>There is currently one private generator in Nicaragua, the 37 MW Amfels plant, which holds a contract with ENEL.</p>

Issue Area	NICARAGUA
	Vertical integration will be restricted, distribution enterprises would be allowed to have a generating capacity up to a certain threshold (10 MW) and isolated systems could remain vertically integrated.
Participants and Degree of Private Sector Participation	<p><i>Generation:</i> ENEL is the state-owned, vertically integrated, national monopoly utility providing virtually all power supply in the country. To date, only 3 power purchase contracts with private generators have been issued. The 36 MW Amfels plant began its operations in April 1997 under a 7-year PPA with ENEL. The two other contracts have been awarded for the construction of two 50 MW plants that will begin operations in 1999. The Government expects to privatize/capitalize the generating assets resulting from ENEL's restructuring following the privatization/capitalization of the distribution assets.</p> <p><i>Transmission:</i> Transmission assets are currently under ENEL. They will be transferred to a new state-owned National Transmission Enterprise at the end of the 3-year transition period after the implementation of the electricity law. This entity will continue to be the main operator of the SIN through the National Load Dispatch Center. The electricity law permits any economic agent to build transmission lines/systems after obtaining the required license (from INE) or concession (from CNE).</p> <p><i>Retail Distribution:</i> ENEL provides all distribution/commercialization services in the country. Studies are currently being performed to propose a new structure for ENEL, within this new structure new distribution zones will be created and separate distribution companies will be assigned to those zones. These new distribution companies will be further privatized.</p>
Targets for Privatization	After the <i>divestiture</i> of ENEL, the Government plans to privatize/capitalize the resulting distribution and generation assets. Only the transmission assets will remain under government ownership.
New Investments	Private investors are currently building two 50 MW generation projects under contract with ENEL. The first contract was signed with the Tipitapa thermal plant, owned by COASTAL, in December 1997 and the second one was signed with the CENTRAN thermal plant owned by Enron, in January 1998. The two plants are expected to begin operations in 1999 and in combination with the rehabilitation of some of ENEL's assets will ensure the capacity to supply the demand growth in the country. Even if the liberalization process is put in place, there are no further capacity needs until year 2003, which means that the only prospects for new investments could only come from the privatization process or through possible exports using the Central American electricity market.
IV. Electricity Markets: Areas of Competition and Monopoly	
Bulk Power	<p>There is no competition in the wholesale power market, which is dominated by ENEL. Although allowed to purchase electricity from other generators in its founding decree, ENEL holds only one active power purchase agreement (PPA) with a small private generator participating in this activity. ENEL's reorganization entails horizontal as well as vertical desegregation of activities. Thus creating multiple independent generating business units that, along with new investments expected to be made by the private sector, will help to introduce competition in the wholesale power market.</p> <p>Under the Electricity Industry Law, transmission and distribution enterprises may generally not own generating plants after the sector transition period. The main exception is for isolated systems, where service providers may be vertically integrated and own (or contract) enough generating capacity to meet their requirements, up to an aggregate ceiling of 15% of the national generating capacity. In addition, the proposed industry law allows distribution enterprises in the interconnected system to own up to 10 MW of installed capacity. This restriction applies not only to direct ownership but also to affiliated companies. Otherwise, any economic agent may undertake generation as a deregulated activity, complying with relevant environmental and sector laws as well as established safety and property protection criteria.</p> <p>The law allows generators to sell power to distribution enterprises or to large consumers, or even to export markets over their own private transmission lines or through the SIN. Retail distribution enterprises must maintain power supply contracts with generators that cover their requirements over a 24-month year period. These contracts must be the result of competitive bidding procedures.</p> <p>According to the law, generating projects less than 10 MW in size will not require authorization. Above this level, a 15-year license will be required from INE if the project does not use domestic natural</p>

Issue Area	NICARAGUA
	resources. CNE will issue concessions for a 30-year term if domestic resources are involved. Solicitations for generating licenses and concessions may be undertaken according to guidelines to be established by INE. The National Assembly must approve all concessions. Studies of potential generating projects require a license issued for a maximum of 2 years, and CNE will competitively award concessions for studies on the use of natural resources in potential generating projects.
Transmission and Distribution (Networks)	<p>All network operations are currently carried out as part of ENEL's monopoly operations in the sector.</p> <p>Transmission is defined in the Electricity Industry Law as the transport of electricity from the generating plant to the distribution centers through lines and substations at a voltage level superior to 138 kV. Any type of economic agent may carry out this regulated activity with the appropriate license or concession. Licenses, issued for a 15-year term, will be offered under competitive solicitations. All generators may connect their facilities to the SIN according to the relevant technical criteria. Owners must maintain their transmission facilities in good working order and provide open access in return for a toll to third parties requesting connection to transmission lines or systems. Electricity may be exported over private transmission lines or the SIN. All entities operating in the SIN must comply with established operating criteria and instructions issued by the system's dispatch center.</p> <p>Distribution enterprises must construct, install, operate and maintain their network facilities so that these won't pose safety concerns and will meet all environmental criteria as well as INE's design/installation criteria. Owners of distribution networks or facilities are required to allow other sector participants, upon request, open access to their facilities in exchange for a toll.</p>
Retail Distribution	<p>Retail distribution is currently undertaken exclusively by ENEL as part of its integrated supply services.</p> <p>The Electricity Industry Law defines this activity as the supply of electricity undertaken by distribution enterprises at voltage levels less than 138 kV and maximizing safety, quality, and reliability factors. Beyond ENEL during the proposed sector transition phase, this activity may not be undertaken by generating enterprises or their associated interests or affiliates except as provided by law. An exception is made for isolated systems, where electricity service providers may simultaneously undertake integrated generation, transmission, distribution, and commercialization activities.</p> <p>CNE, with the approval of the National Assembly, will issue 25-year concessions for distribution/commercialization activities. These concessions will be awarded through competitive solicitations or direct negotiation. Retail distribution enterprises must provide service to any customer located within their defined, exclusive service territory and requesting the service. Only large consumers (with a demand of 2 MW or more) are free to obtain supply from other sources.</p>
V. Load Dispatch and Pool Planning	
Dispatch Entity and Basis	<p>Currently, ENEL provides transmission and central load dispatch service over the SIN through its National Load Control Center.</p> <p>The Electricity Industry Law directs transmission and dispatch service to be undertaken according to criteria set by INE and incorporated in the Regulation for System Operation. The operation of the SIN and international interconnections will be the responsibility of a state-owned National Transmission Enterprise (EST), via the National Central Load Dispatch Center. System participants must follow the Dispatch Center's operating guidance. The Center will coordinate the (preventive) maintenance program for SIN facilities and formulate regulations for the SIN, to be approved by INE. It will establish short-term (spot) transaction prices and record and account for the energy produced by each generator and delivered to each distribution entity or large consumer. It will also gather information needed to perform its dispatch activities and periodically report on related topics. The center will report to INE on infractions of SIN operating rules.</p> <p>Isolated systems not connected to SIN will coordinate their operation and maintenance via their own control center, which has the same functions as the National Central Load Dispatch Center except for those related to international connections. INE may require isolated systems to connect to the SIN for reasons of public good or convenience.</p>

Issue Area	NICARAGUA
Pool Operation	<p>ENEL's current structure does not include a wholesale market, as it performs all the commercial activities in the sector.</p> <p>The new industry structure will include a wholesale market, which will be formed by generators, transmission companies, distributors, marketers and large consumers. Distribution companies will be forced to hold contracts that guarantee the coverage of all their capacity and demand for the following 24 months. Due to that restriction, most of the energy will be traded in the contracts market, in which prices and quantities are traded via competitive procedures. The National Dispatch Center will be in charge of determining the dispatch of the system and performing the transactions that are not included in the contracts.</p>
VI. Pricing	
Bulk Power	<p>ENEL currently offers a compounded tariff that does not differentiate between the different industry segments. The purchases of generation from private producers are defined in the contract. These contracts are awarded in a competitive basis, depending on the offers of the different companies.</p> <p>Under the new industry, the contracts market will be deregulated. The participants in this deregulated market will be the generators, auto-generators, cogenerators, distribution companies, large consumers, marketers and electricity exporters and importers. Additional transactions will be regulated according to short run marginal costs.</p>
Transmission/ Distribution (Networks)	<p>A system of regulated tolls will apply for pricing transmission, distribution network, and dispatch services. INE will establish these tolls based on the amount of transferred power (energy and capacity), the costs of investment, operation, maintenance, and losses over the relevant portion of the system, and according to the requirements of an efficiently sized and operated system.</p>
Retail Tariffs	<p>Large consumers will be allowed to negotiate supply terms and prices with any provider. Regulated retail tariffs for medium and small (captive) consumers will be the sum of the distributor's generation costs (purchased competitively), the transmission and distribution tolls and fees paid to the dispatch entity and the direct costs of the distribution company. These costs include operation, maintenance, recovery of capital costs (with an adequate rate of return) and system losses. This component is based on an incentive structure, which means that are set comparing an efficiently run enterprise of comparable features. The principles for the new tariff regime will be economic efficiency, financial self-sufficiency, simplicity, equality within customer categories, and income redistribution (from high level consumers to low level consumers). Other tariff provisions will be detailed by INE. The rate base will be reviewed every 3 years.</p>
Subsidies	<p>Residential customers consuming less than <u>50</u> kWh/month will be subsidized through additional charges on residential consumers with the greatest consumption level. The actual subsidy program will be further defined in more detail.</p>
VII. Sector Problems and Priorities	
Framework and Other Issues	<ol style="list-style-type: none"> 1. The government should push the implementation process of the electricity law. The one-year term for the restructuring of ENEL has already passed, and no final strategy has been proposed. INE needs to provide the regulatory framework, so it is almost ready when the privatization process is in place. 2. The law dictates that the National Assembly must approve all concessions, which is introducing a political element into what should be an objective commercial procedure.
Operating Needs	<ol style="list-style-type: none"> 1. The entrance of the new generation capacity will be enough to supply the needed capacity in the country. A new industry structure should guarantee the entrance of private investors. 2. As stated in the Electricity Industry Law, the capacity of the transmission system (lines and substations) needs to be increased as quickly as possible to accommodate greater generating output. 3. There were large, steady increase in system losses over the 1991-1995 period, from 23% to just under

Issue Area	NICARAGUA
	<p>30%, which need to be reduced.</p> <p>4. ENEL (and formerly INE) has been subject to overstaffing by as much as 40%, which contributes to the utility's lack of financial viability.</p>
Electrification and Energy Efficiency	<p>Nicaragua's current electrification level is 50%. The Government will be responsible for rural electrification and service extension to small population groups that are not of interest to economic agents in the sector, and will assign funds to the relevant sector entity to carry out the desired program.¹</p> <p>The law modifying INE and the new industry law dictate the use efficiency criteria in planning the best use of energy resources for the country and the promotion of end-use energy efficiency. The regulatory entity will elaborate, implement, and oversee norms and regulations aimed at energy efficiency and conservation.</p>

VIII. Sources and Relevant Web Pages

Sources

ECLAC-United Nations, Energy Unit, 1999. "La Industria Eléctrica del Istmo Centroamericano: Situación de los Procesos de Reforma y Perspectivas para el Corto y Mediano Plazo".

Relevant web Pages:

Instituto Nicaragüense de Electricidad (INE): <http://www.ine.gob.ni>

Catholic University of Chile: <http://www.ing.puc.cl/~power/southamerica/southamerica.htm>

¹ These funds are collected through concession and license fees and other mechanisms, and placed in a national "Special Fund."