

OWNERSHIP, FINANCING, AND LICENSING OF GEOTHERMAL PROJECTS IN EL SALVADOR

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1. INTRODUCTION

El Salvador passed the legislation in 1996 that liberalized the electricity market, and this brought a radical change in the way geothermal projects were promoted, developed, and operated. Since then, geothermal power plants have competed successfully in the open market with other sources of electricity solely on an economic basis, without any other form of incentives. The basis of reform was the General Electricity Law (Ley General de Electricidad, or LGE), passed on October 10, 1996. The stated objectives of the legislation were:

- a) to develop a competitive electricity market;
- b) to grant free access on the part of generators to transmission and distribution grids;
- c) to promote efficient and rational use of resources;
- d) to grant access to electricity service to all the population; and
- e) to protect the rights of users and all entities that are active in the sector.

In order for the new electricity system to function properly, a regulatory entity was created, named as Superintendencia General de Electricidad y Telecomunicaciones (SIGET), dispatch and operation of the grid were granted to a club of market agents, the Unidad de Transacciones (UT), and CEL, the national utility company, was broken down into its transmission, distribution, and generation components. Today, the transmission grid is owned and maintained by ETESAL, a wholly owned subsidiary of CEL. Distribution is separated into five different companies, four owned by AES and another owned by PP&L. Generation is divided into several groups: thermal generation owned and operated by several private investors, hydro by CEL, and geothermal generation is a joint venture company (LaGeo) owned by CEL and Enel, of Italy.

2. OWNERSHIP

Article 103 of the Salvadorean Constitution states that the subsurface belongs to the State, which may award concessions for its exploitation. The process and conditions for the award of the concession are defined in Section I of LGE with SIGET being responsible for the process. Concessions are permanent and transferable, however, SIGET has the right to monitor the exploitation in order to verify that it is done “efficiently and rationally”, and all the conditions that the concessionaire must observe are specified in a Concession Contract.

In order to obtain a concession, the developer must initiate the process by requesting an award for concession for a specific project. SIGET then must call a public hearing to find out whether there is opposition to the project, or alternative projects for the same resource. Afterward, SIGET must select a project to be put to tender in a public process, and the winner of this tender is finally awarded the

concession. In the past, these processes have taken two and a half years to conclude, but recently the by-laws were modified in order to expedite the concessions.

The developer must then execute the project in accordance to the Concession Contract, and he will be the owner of all the installations, except for the geothermal resource itself. Transferal of ownership and the right of concession is possible, but must meet with SIGET's prior approval. The recipient of the concession must demonstrate the qualifications to develop and operate a geothermal field. The exploitation of the geothermal resource must be demonstrated to be "rational and sustainable", as per SIGET's requirements.

3. PERMITTING

In addition to the concession, the project developer must obtain permits to generate electricity from ETESAL, the UT, and SIGET, and the environmental permits necessary to develop and exploit a geothermal resource.

Award of the concession requires that the developer presents SIGET with an environmental impact study, previously approved by the Ministry of the Environment and Natural Resources (MARN), that considers all phases of the development, operation, and abandonment of the project, in full detail. As this may be a difficult or even impossible task before deep exploration activity starts and the project is completely conceptualized, MARN reviews and approves the environmental impact studies on a "best guess" basis. MARN will then extend separate environmental permits for each component of the project, as they are required and defined by the developer, each with its own, short EIS.

Operation of the project to generate electricity requires that the project be registered in SIGET, and that ETESAL and the UT guarantee that there will be no problems associated with the physical interconnection, or with the physical or commercial operation. In order to ensure compliance, the interconnection point of the project must pass the corresponding technical audits.

4. FINANCING

Renewable energies do not receive incentives or preferential treatment in El Salvador, thus, financing large renewable projects must be done creatively. There are two aspects, however, that make it possible to obtain financing for local geothermal projects. The first is that El Salvador has some of the lowest interest rates for bank loans in Latin America. The dollarization of the economy, together with a large influx of cash remittances from Salvadoreans living abroad, combine to put pressure on the banking system to keep interest rates low. Secondly, electricity derived from geothermal sources is competitive in price to other sources available in the market. As there is no significant nearby supply of fossil fuels, these are obtained abroad at international market prices, and the electricity derived from them is typically priced above what would normally be necessary to sustain high-temperature geothermal development. This ensures that, in a competitive electricity market, a geothermal project could obtain the revenues to make it economically feasible.

The difficulty in obtaining financing for these renewable energy projects lies more in the uncertainty regarding the long-term revenue stream than in the economics of the projects themselves. There have been several significant changes to the market rules in the past few years that have impacted the way projects are evaluated. The electricity market has gone from a marginal-price market for all operators to a pay-as-bid for thermal operators and marginal-renewable-price for renewables; then to a pay-as-bid for all operators except hydro; then to a marginal-cost market with long-term contracts that are transferable to tariffs. Currently, the price paid for electricity for geothermal sources is some 40% lower than the price paid to thermal generators. These changes introduce significant market risks that could make geothermal projects inviable.

The introduction of legislation to promote long-term contracts between generators and distributors was perceived as a way to promote investment in electricity generation projects of all sorts, by defining a stable revenue stream for the generator. However, there are some aspects of the rules that make it difficult, or sometimes even impossible, for geothermal projects to compete for these contracts. For example, the generator must offer power in blocks, defined by the distributor, for the contract. If each block of power is more than what is available for a given geothermal resource, then the geothermal developer cannot make an offer. Furthermore, long-term contracts will be contracted with a 3 to 5 year lead time to be defined by the distributor. If the lead time is less than what is required to develop a geothermal project, again, the geothermal developer cannot make an offer. Another difficulty is associated to market risk: the long-term contracts must be for supply of power that follows the load curve of the distributor on an hourly basis. As geothermal power is base load only, the geothermal operator must take a significant market risk by offering to buy from the spot market to complement his own power in the peak hours, when there is scarce supply, or sell to the spot market in the early morning, when there is excess supply. These are all examples of risks that a thermal developer does not have to face, as he can tailor-design a project to a specific tender.

What has given a strong backing to the development of geothermal in El Salvador is the introduction of a strategic partner for LaGeo, in the form of Enel, SpA, of Italy. The strategic partner was selected in order to expand geothermal operations in El Salvador and other countries in the region from a base of qualified professionals and ongoing operations in El Salvador, and these objectives matched those of Enel. This alliance, with Enel's strong financial backing, has made it possible to expand generation capacity in Berlín and Ahuachapán, as well as explore possibilities in Cuyanausul, San Vicente, and Chinameca, even with uncertain market conditions.

5. CONCLUSIONS

Geothermal development in El Salvador must compete in the electricity market without incentives against thermal projects, in a market designed for a hydro-thermal generation system. This is only possible for high-temperature resources, when the economics of high international prices for fossil fuels favour alternative projects. The system in El Salvador is oriented to ownership of the projects by private developers, but the owner must meet the requirements of MARN, SIGET, UT, and ETESAL, in order to operate.

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