

5-4-2011

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Recommended Citation

Gaudín, Andrés. "Uruguay Banks on Wind Power." (2011). https://digitalrepository.unm.edu/la_energy_notien/50

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Uruguay Banks on Wind Power

By Andrés Gaudín

Little more than two years after initiating a wind-energy pilot project, Uruguay has made a decisive commitment to substantially change its energy matrix. In April, besides sealing various agreements, it held a series of invitations for bids to offer the private sector—national or international—contracts to build several wind parks in the next four years that will allow the country to add 500 megawatts of energy produced by the generous winds that sweep across almost the entire territory.

Since the first project was inaugurated in October 2008 by the Argentine firm Nuevo Manantial, which contributes 10 MW of installed capacity to the state-owned Usinas y Trasmisiones Eléctricas (UTE) network, the South American country has followed a fertile path in search of incorporating nonconventional, nonpolluting energies—including solar, biomass, biofuel—that reduce greenhouse-gas emissions, the determinant factor in climate change.

Country's small size, population facilitate alternative energy

With the 500 MW that the UTE and private firms from Spain, Germany, France, and Argentina will produce, Uruguay is taking advantage of having only 3.4 million people, limited industry, and small cities, which should allow the country to satisfy its needs gradually, phasing in smaller-sized projects.

The option, according to experts, is one of life or death, because the country has almost exhausted its hydroelectric-power-generation capabilities and must import 100% of the oil it consumes. The idea of turning to nuclear energy—costly and requiring years to implement but, say supporters, "clean and safe"—had made notable advances in the past two years. However, the nuclear disaster in Japan after a March 11 earthquake followed by a tsunami that resulted in extensive damages to the Fukushima plant, with immeasurable consequences, completely and as if by magic eliminated the issue from Uruguay's government, political, and business agenda.

Uruguay's Programa de Energía Eólica, begun in 2005—early in the administration of the first progressive government in the country's history—was a joint initiative of then President Tabaré Vázquez (2005-2010) and the UN Development Programme (UNDP). The Ministerio de Industria, Energía, y Minería (MIEM) runs the program, and the Global Environment Fund (GEF) provides much of the funding. The program's original statement says that it "aims to create favorable conditions and promote the introduction of wind energy in the country from a multidisciplinary approach to help reduce greenhouse-gas emissions."

The work areas encompass aspects of regulation and procedures, wind-resource information and evaluation, and environmental, technological, and financial issues, among others. Another

aim is to create technical capacities in both public institutions and private developers as potential suppliers to the wind industry. Thus, a public competition has been initiated for the local design of a wind turbine that would eliminate the current need to import the turbines from Spain. In addition, a domestic company has already begun to export—first to Argentina—nationally designed compact transformers based on technology developed by its own technical teams.

Wind energy already a success

A few examples illustrate Uruguay's enormous potential for incorporating wind energy into its energy matrix. That first venture of Nuevo Manantial, with its scant 10 MW potential, was sufficient to cover the energy needs of three sparsely populated towns in the eastern department of Rocha: Castillos, La Paloma, and Rocha, the departmental capital. The 20 MW generated by the state-owned UTE in the eastern department of Maldonado met all the electricity needs of the 25,000 inhabitants of the city of San Carlos. And the 12 MW produced by a park in the central department of Lavalleja provides all the public lighting in Uruguay's capital Montevideo.

These figures demonstrate the significance of the agreement between UTE and Finnish multinational Botnia, operator of a large pulp mill. With the waste from wood used in its industrial process, not only is Botnia able to generate enough energy to satisfy the plant's needs, but it sells a 30 MW surplus to the national UTE network. Another example is the 80 MW that UTE will buy beginning in 2012 from another pulp producer, Montes del Plata, a joint venture between Chile's Arauco and the Swedish-Finnish company Stora Enso.

Even with its limited energy needs, Uruguay cannot launch the program alone and needs private investment, which until now has come mostly from foreign capital.

Uruguay has already awarded concessions for projects for one-third of the 500 MW that will have to be incorporated into the network by 2015. The winners were Spanish firm Teyma and Argentine companies Impsa and Fingano, which will each invest about US\$100 million to build their wind parks in the departments of Tacuarembó (450 km north of Montevideo) and Maldonado (150 km east of the capital). In the final agreements, signed in the second half of April, UTE committed to buy all the energy produced during 20 years at a cost of US\$85 per MW-hour, a very good deal for both sides.

Fifteen firms bid on the projects, among them several first-rate companies such as France's Akuo Energy and German firms Elecnor and Sowitec. Because they had surpassed the stated objectives, their proposals were not discarded but rather passed on for consideration in a new phase of the program. For the next phase, state companies UTE, ANCAP (oil), and ANTEL (telephone) have each already pledged investments of between US\$180 million and US\$200 million for their respective wind parks.

The project is extremely ambitious and goes beyond wind-energy generation, said Vice Minister of Industry, Energy, and Mines Edgardo Ortuño. The invitation "is extended, with a clear spirit of integration, to all the Southern Cone Common Market [MERCOSUR] countries," he added.

Ambitious goal of 50% renewables

Ortuño said, "Uruguay is processing a silent revolution in its energy matrix as a result of the introduction of all forms of renewable energies, with noteworthy advances in wind, solar, biomass, and biofuel energies, while seeking new, concrete South American integration and cooperation projects. Regional agreements will allow the country to add the electric interconnection with Brazil to the one currently available with Argentina, multiply gas availability with a regasification plant scheduled to be functioning by 2014, increase the energy exchange with Paraguay and Bolivia, and strengthen integration agreements with Venezuela, which have been extremely favorable for supplying oil and for opening new cooperation prospects with state businesses."

Uruguay's goal is to have 50% of its primary supply matrix covered by renewable energies. "The main component of this new policy is the commitment to diversification, in both sources and suppliers, to reduce costs, reduce dependence on crude, and foster participation of local energy sources, particularly renewables. It supports the transfer of technologies and the development of national capabilities and assumes a commitment to promote clean energies," said Ortuño.

Uruguay is now close to fulfilling a first, simple goal: that 10% of energy used in the entire country—industrial, family, and business consumers, public lighting, state-bureaucracy requirements—be generated based on renewable resources. Meeting the objective puts the country at the vanguard of Latin American countries in the use of nonpolluting and non-fossil-fuel energies, on their way to extinction.

To achieve its goal, Uruguay has resorted, among other things, to the most ingenious resources, such as promoting the use of mini-windmills in family homes, an innovation that has spread in the last four years, especially in rural areas and small cities. Such mini-windmills could reduce household consumption by as much as 30%. In addition, installing a two-way meter could establish a compensatory regimen that would record the cost of energy consumed from the network and, at the same rate, subtract the value of what the mini-windmill contributes to the public grid when there is an excess in the home.

The government has decided to make this its major legacy. Thus, the campaign to publicize the official program resorts to all sorts of arguments, generally clever, to explain, for example, that wind technology is expensive, that it implies units of great size and relatively low power but that can, nevertheless, be improved through their own developments. It also points out that wind power has environmental and economic advantages over hydrocarbons, since the principal input—the wind—is in the country and widely available, eliminating any foreign-dependency factor.