

Puerto Rico sees the light

Island leaders hope to 'lead charge' across U.S. toward renewable energy

BY JOHN MARINO
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Economic Development & Commerce Secretary José Ramón Pérez-Riera and other top officials believe that lowering and stabilizing the price of electricity is one of the best ways to lower production costs for businesses, which is a key goal of the administration's new economic development plan.

The proposed Renewable Energy Policy Law hopes to drive the development of \$2 billion in island renewable energy production projects over the next four years, creating some 46,000 jobs during that period. It will set renewable energy production targets and help establish ground rules for the new green energy plants. The legislation comes as the Puerto Rico Electric Power Authority (Prepa) gears up to implement the "wheeling" concept next year, which requires the government-owned utility to open its grid to independent producers who will either sell electricity directly to Prepa or to third parties. (See sidebar.)

"The world has been going in one direction and Puerto Rico in the other," Pérez-Riera said. "We need to turn around and go with the flow. What we are working on is sufficiently cutting edge and avant-garde in terms of what is being done

in the U.S. that we will be leading the charge rather than following other jurisdictions. That's what we are setting out to do. We have to be in front of this problem and not let it determine how we do things in Puerto Rico."

If successful, the legislation will bring more than 400 megawatts of renewable energy production online over the next four years, lifting the share of Puerto Rico's renewable power production to 6% of total power production from the less than 1% today. Officials envision about 200 megawatts of wind power, 100 megawatts of waste-to-energy power and the remaining 100 megawatts split between solar, hydroelectric power and other renewable technologies. The legislation adds new, innovative incentives into the current mix with the hope of leveraging local public investment through a federal American Recovery & Reinvestment Act (ARRA) program that could pay for up to one-third of the total estimated \$2 billion cost over the next four years.

The drive toward renewable energy stems from the need to diversify Puerto Rico's near total dependence on fossil fuel-based power production, with about 70% of plants using oil and the balance roughly split between natural gas and coal. The high and volatile price of oil makes



Economic Development & Commerce Secretary José Ramón Pérez-Riera

Puerto Rico power costs too expensive and unreliable, creating one of the island's biggest vulnerabilities on the economic development front, officials say.

Last year, the cost of power in Puerto Rico averaged about 21.5 cents per kilowatt hour, versus the average 10 cent U.S. rate. And because Puerto Rico is more susceptible to oil price fluctuations, the cost of island power has increased an average of 11.6% annually versus just 5.3% in the mainland U.S.

over the last four years, according to government figures. Worse, with the price of oil expected to increase to \$100 per barrel in 2011 and to \$140 in 2015, the price of power in Puerto Rico is projected to increase to 33 cents per kilowatt hour by then, versus 13 cents in the continental U.S.

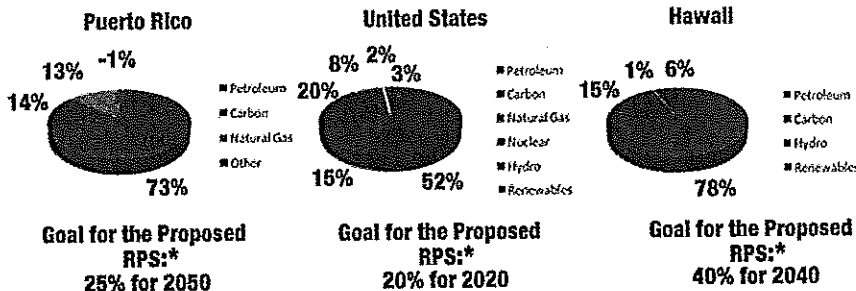
"That will have a serious impact on Puerto Rico's ability to compete," said Sylvain Mansier, assistant Economic Development secretary. "That's why we have to do this now."

Over-reliance on foreign oil and fossil fuels also means the island pays an ever-increasing bill to offshore companies, which only diverts precious capital off island. Renewable energy, even if produced on the island by offshore firms, would refocus the majority of money spent on energy back into the island economy, and help spur increased local development. Currently, Puerto Rico's electric bill adds up to 8% of the gross national product, while overall energy costs are 16% of GNP. Besides the high cost and volatility of oil, Puerto Rico could face steep penalties in the near future for its heavy fossil-fuel production. The U.S. House already passed legislation that calls for an 80% cut in greenhouse gas emissions by 2050, and the U.S. Senate introduced legislation on the subject earlier this month. Meanwhile, the Environmental Protection Agency (EPA) announced its intention to begin regulating greenhouse gas emissions and the Obama administration is expected to pledge to cut the use of greenhouse gases during a United Nations global-warming summit later this year in Copenhagen.

Both President Barack Obama and EPA Administrator Lisa P. Jackson have said they would prefer to have Congress write up rules to cut greenhouse gas emissions, but it's clear the EPA will act if Congress does not. In either case, while the rules have yet to be written, it's likely that power plants and other facilities will have to substantially cut emission of greenhouse gases, or pay steep taxes or penalties. Puerto Rico's

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Electricity Generation by source



Sources: Prepa, Energy Information Administration, FERC
* Renewable Portfolio Standard

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current 98% reliance on fossil-fuel production makes the island especially vulnerable in this evolving scenario. The new rules mean that Prepa's plans to retrofit or replace existing plants with natural gas or coal production will face greater federal environmental scrutiny, and may add to requirements. The rules will undergo a period of extensive review and public comment before becoming final, expected sometime next year. Currently, local environmental officials, including those in Puerto Rico, are taking an inventory of greenhouse gas polluters.

"We either diversify or we will be at the mercy of volatile oil prices and whatever happens in Congress. If Congress decides to start a carbon tax, with the majority of our power coming from fossil fuels, it is going to make it that much more expensive. It just won't be about production costs," Pérez-Riera said.

SETTING NEW STANDARDS

Through the legislation, the island

will join 30 states and Washington, D.C. in establishing a Renewable Portfolio Standard (RPS), which will establish goals for renewable-energy production based on what is being contemplated in the federal sphere. While Department of Economic Development & Commerce (DEDCC) aides cautioned that nothing was set in stone, in general terms the administration expected the standards to call for around 400 megawatts of power, or 6% of total generating capacity from renewable resources, by 2013, a figure that will ratchet up to 25% in 2025.

Those goals are pegged to federal RPS standards included in the American Clean Energy & Security Act of 2009 approved by the U.S. House. While the island government may be hard pressed to enforce sanctions against its own Prepa utility, the legislation will contain enforceable standards. Their real benefit, however, is in their aim of getting island power production in compliance with expected federal standards to avoid future penalties. Also, other jurisdictions have experienced a boom

in renewable-energy development after adopting RPS standards, with the DEDCC providing figures showing more than double the renewable-energy investment during 2008 in RPS jurisdictions versus jurisdictions that have not adopted the standards.

"It tells investors we are serious," Mansier said. "Renewable Portfolio Standards create the environment for investment in renewable-energy projects. The record is clear. The numbers prove it."

A big caveat to the approach to peg the local RPS to evolving federal standards involves waste-to-energy (WTE) technology, which is not expected to be considered renewable energy under future U.S. rules. EPA officials have recognized the technology as a partial solution to the island's burgeoning solid waste management program, however, saying that WTE projects will emit less greenhouse gases than the landfills they aim to replace. While the proposed energy-reform legislation will extend incentives to the technology, energy generated from the WTE probably won't be able

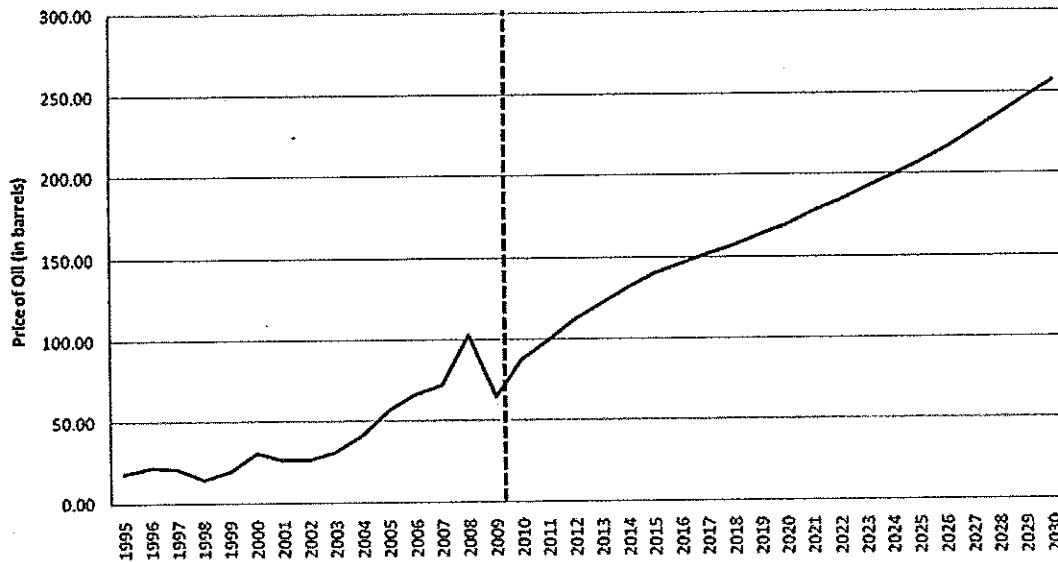
to help comply with future federal requirements.

A closely related development to the new standards will be the introduction of "wheeling" next year, which mandates that Prepa lease out its grid or purchase power from independent producers who set up shop here, who are expected to supply the new production of alternative energy sources. The regulations for the open energy market are currently being drawn up.

Prepa Executive Director Miguel Cordero said the new rules will force the government utility to increase efficiency or cease to exist. Cordero has been working hard to improve service and cut expenses since arriving in January, to both shore up the public corporation's shaky finances and prepare for competition. Prepa transmission, distribution and overhead costs add nearly 10 cents per kilowatt hour on top of the production price of island electricity, according to DEDCC estimates, which puts the average production cost at

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Projection in Oil Prices



Forecast assumes 3% inflation rate

Sources: Energy Information Administration

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12 cents per kilowatt hour, while the delivered cost is a whopping 21.5 cents. The spread is more than the nine-cent average cost over the last five years of delivered power in the mainland U.S., where transmission and related costs hover around two cents-to-three cents per kilowatt hour. Part of the reason for it stems from the \$280 million Prepa must grant annually in electricity subsidies and other payments to municipalities, hotels, public housing residents, agricultural businesses and other entities mandated by legislation. Cordero's goal is to drive down the price of electricity over the next four years so the utility can sell it at 12 cents per megawatt hour. The effort is being made through increased administrative and technological efficiency and diversification of production sources.

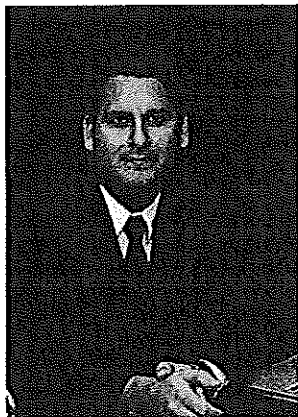
The RPS standards will also mirror local government development goals in this renewable-energy area. Officials foresee bringing online about 400 megawatts of renewable energy over the next four years to meet the 6% standard.

A DIFFERENT KIND OF INCENTIVE

Through the establishment of the Green Energy Fund, officials have created an incentives program that aims to both develop alternative energy sources while decreasing and holding down power costs. The incentive is aimed at bridging the gap between the costs of renewable



Adriana Ramirez Martinez, DEDC legal advisor



Sylvain T. Mansier, assistant Economic Development secretary

power production and the price the independent producer would have to sell to Prepa in order for the utility to reach its 12-cent per kilowatt hour pricing target.

"We are giving a subsidy to green energy production so that Prepa does not have to increase costs to the end user," Pérez-Riera said. "It's allowing Prepa to buy energy from renewable resources without increasing the cost because green energy is initially going to be more expensive."

For the purposes of its incentives fund, the government is defining "green energy" as any renewable source of power generation (including solar, wind, ocean thermal and

currents, and biomass) as well as waste-to-energy power production, which uses garbage to generate power.

Instead of granting a traditional tax exemption, credit or construction grant, the legislation will create a production-based incentive through which the government will purchase a "renewable energy credit" (REC) for each unit of green energy a plant produces. The production incentive will be in the form of a long-term contract between the government and producer, with one REC purchased for each megawatt hour (mWh) of "green" energy produced. The program will provide an essential

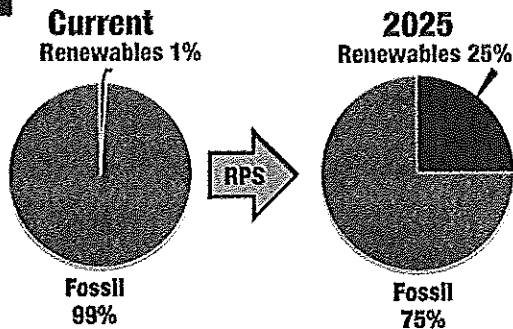
stream of revenue once the plant is operational, but more importantly the initial government commitment, together with a Prepa power purchase agreement, will allow developers to secure project financing.

While Prepa's goal is to sell power at 12 cents per kilowatt hour, it will have to decide on a power purchase price in order for the value of the RECs to be set. Regulations are expected to be drafted calling for an annual pricing review. Officials say there is likely to be a difference in the value of RECs granted to different technologies, although projects using the same technologies should receive RECs of the same value. That's because different technologies have different cost structures. DEDC officials estimate local wind energy costs to hover around 14 to 15 cents per kilowatt hour, while solar costs 20 cents per kilowatt hour. Because technologies are evolving, and pricing could change with new developers, officials say the government will seek to develop a mix of renewable options.

Other existing government incentives also apply to the new ventures. The ARRA program also offers up to one-third project financing in tax credits for projects completed by the end of 2013. For projects that get under way next year, the credits can be converted into cash grants. While local officials say permitting may make the deadlines challenging, particularly for WTE plants, they still expect the federal stimulus package to fund much of this development. The government figures the local incentives will cover \$300 million, while the federal incentives will cover up to \$600 million, leaving \$1.1 billion to be raised through private capital and financing.

Financing options for the government incentives are still being discussed, but the program may cost from \$300 million to \$400 million to provide the incentives necessary to fund the first \$2 billion in projects. The advantage for the government is the incentives will be doled out in annual doses of between \$30 million and \$40 million over a decade, making it much easier to finance given tight government finances. Also, the RECs will be a fully securitized, tradable commodity which has an economic value based on

Year	Percentage % of Renewable Energy
2012	6.0%
2013	6.0%
2014	9.5%
2015	9.5%
2016	13.0%
2017	13.0%
2018	16.5%
2019	16.5%
2020	20.0%
2025-2039	25.0%



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the environmental attributes of the power production. They can help companies offset power produced either on the island or elsewhere through carbon sources. Because carbon-footprint reductions have become an increasingly important aspect of corporate social-responsibility programs, a "voluntary" market for RECs has already developed in the United States. This market is expected to become more developed as evolving federal carbon standards are enacted into law or new regulations are drafted.

The government could use the RECs it buys from the project developers to substantially lower the cost of its initial investment. It is expected to be able to resell the RECs to companies needing to offset their carbon production on the island or elsewhere, and could use the proceeds to refund the incentive program. Another possibility would be for the government to use the RECs to show compliance with future federal energy requirements. Pérez-Riera said the incentive, by targeting energy production rather than construction costs or tax breaks on profits, is designed to ensure that the new green energy producers are

as efficient as possible.

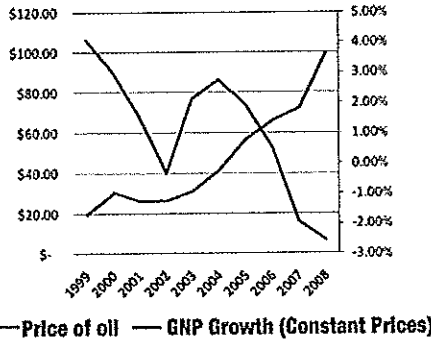
"Here, in order for you to reap the benefits of the incentive, you need to produce, and the more you can produce, the bigger the benefits," Pérez-Riera said.

The Green Energy Fund and REC

purchases will be available to energy producers with the capacity to produce a megawatt or more of energy. The legislation also provides "installation credits" for alternative energy systems below a megawatt for businesses and consumers. The

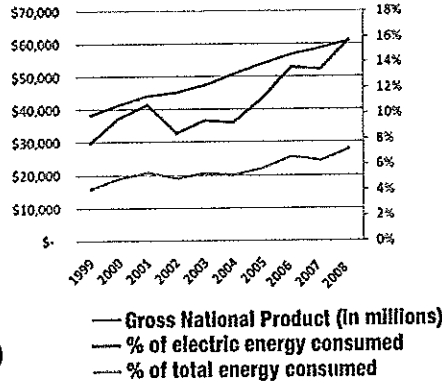
legislation calls for the Energy Affairs Administration to establish both the size of the installation credit (up to a 60% maximum annually) and market reference costs on an annual basis. ■

Relation between GNP & Price of Oil



Sources: Energy Information Administration, Prepa, PR Institute of Statistics

Cost of Energy in the Economy



Competition comes to electric power production

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The Economic Incentives Law of 2008 mandates the introduction of "wheeling," which is the retail sale of electric power. It means the Puerto Rico Electric Power Authority (Prepa) has to open up its network so that private power generators can sell electricity they produce over the island's electric grid.

The law allows large firms to build their own power plants and to sell any excess power they generate over the Prepa grid to third parties or back to Prepa. It also allows private operators to build and construct power plants and sell the power directly to Prepa or third parties. While Prepa will get paid for

"leasing" its grid to private power producers, it also means the public utility will face competition for the first time. Wheeling is already exerting a force for increased efficiency inside Prepa as management prepares to compete against private industry. More importantly, it will allow for the cost reductions of privately produced power to be brought into the island electric system, over which Prepa has maintained a monopoly, controlling the transfer of electricity through its own grid, the generation of electricity and the price it pays for power generated by two private cogeneration plants.

Several large firms are expected to establish private power plants as a

means of lowering operating costs. The new wheeling rules, which are still being drawn up, are also allowing the government to tap private investment to begin the badly needed work of diversifying the island's power base by building more renewable energy plants. This will bring the new power production online more quickly and efficiently than the cash-strapped government could accomplish alone, officials say.

"High energy costs affect industry, tourism, individuals in homes, schools, hospitals, commercial establishments, everyone—all because of Prepa's inefficient monopoly," Puerto Rico Manufacturers Association Executive Director

William Riefkohl recently told CARIBBEAN BUSINESS. "Now, we have an opportunity to move beyond this situation through wheeling, which, for the first time, breaks Prepa's monopoly."

In tandem with wheeling has been the introduction of "net metering," which allows for the interconnection of home-based energy systems to the Prepa grid. Prepa Executive Director Miguel Cordero said a few dozen clients currently use net metering.

Under the concept, homeowners can sell the excess power they produce to Prepa, which will credit the customers and deduct it from the cost of any power the homeowners buy from the utility. ■