Renewable Energy, Where Are We?

Dating back to the era when sugar was “king”, Barbadian sugar producers exploited wind energy to grind canes and pump water. Bagasse, the cellulose by-product of crushed canes, was used as a fuel source, mainly for heating. Today solar water heaters are used extensively across the island and Barbados is seen as a leader in this technology. This nation is therefore not a stranger to the use of renewable energy. In this current age where renewable energy and its associated technologies are being catapulted to the main stage of energy generation the world over, the question in Barbados is, where are we?

The legislative framework for the energy sector is outlined in the Electric Light and Power Act, the Fair Trading Commission Act, and the Utilities Regulation Act. The legislation, as it now stands, does not facilitate, without a licence, the establishment of independent power producers (IPPs) which are commercial entities that generate and transmit electricity to the national grid for profit. The law, however, allows for domestic generation and consumption. Electricity tariffs and standards of service are set by the Fair Trading Commission (the Commission) in accordance with the provisions of the Utilities Regulation Act. The Commission is vested with the task of ensuring that the electric utility complies with the aforementioned Acts, and this is achieved by active monitoring of the company’s financial and operational principles and practices.

The Global Environment Facility has suggested, based on its experience with developing countries, “that two key forms of support go hand-in-hand in helping develop a market for grid-connected renewable energy: creating a favourable investment climate for private power projects, and establishing a regulatory framework for independent power production”.

Although the cost of electricity generation from renewables has fallen significantly over the last decade, the reality remains that electricity generated from “green” sources is still unable to compete favourably with electricity generation from fossil fuels, from a purely economic stand-point. Recognising this, governments around the world have moved to provide an enabling platform for the adoption and application of renewable electricity systems.

Some 36 years ago the government of Barbados instituted a number of fiscal incentives to support renewable energy initiatives. The Fiscal Incentive Act of 1974 grants import benefits and tax exemptions to solar water heater producers. Under the 1984 Income Tax Amendment, tax payers may directly and fully deduct solar water systems from their taxes. In addition, all electric water heaters are subject to 60% consumption tax, which makes them financially unattractive. In a similar move, the Jamaica government reduced the import duty from 30% to 5% and zero rated the government consumption tax on renewable energy equipment.

While these policies impose a cost on the economy there are significant arguments why governments might choose to promote renewable electricity use. The first compelling reason is to address the environmental and health concerns associated with fossil fuel electricity generation. The main advantage of renewable electricity generation is that it does not produce any significant greenhouse gases, other air pollutants or respiratory irritants.

Economic and technological development also play a part in renewable energy policy. Policies designed to promote renewable electricity generation may be classified as subsidies, quotas or market-based instruments. Examples of subsidies are production tax credits and feed-in-tariffs (FIT). Production tax credits may be made available to eligible renewable electricity generators through a designated rate per kWh subvention in addition to the wholesale price for a prescribed period. Canada and the USA utilise this mechanism. The feed-in tariff is a more common scheme which has been widely used throughout Europe.

Under this scheme the electric utility is obligated to purchase electricity from certified renewable electricity generation facilities at a rate determined by the regulator. FITs are attractive to renewable electricity generators as it considerably reduces risks such as price, hedging and loan interest. Many American states and some Canadian provinces opt to use quotas rather than fixed prices. With quotas the regulator sets the minimum quantity of renewable electricity that the utility is required to purchase.

Market-based policies are usually designed with an underlying environmental component – emission taxes and cap-and-trade (carbon trading) systems. These implicitly encourage renewable electricity by making conventional (fossil fuel) generation more expensive. The most appropriate choice of incentive is largely determined by the intended goal; if it is to reduce emissions, market-based instruments have proven to be more effective as they are broader and offer more flexibility. Where the goal is rapid uptake of renewable electricity, targeted renewable systems are more suitable.

In a more recent commercial thrust towards the utilisation of renewables, Barbados Light & Power Company Limited has been given planning permission to construct a wind farm at Lamberts in St. Lucy. Its designed generation capacity is 32 million kWh/year. Last year the company introduced a renewable energy rider pilot programme which allows eligible customers with renewable power sources to sell excess power to the grid. All kWh sold to the grid are credited at 1.8 times the Fuel Clause Adjustment or 31.5 cents/kWh, whichever is greater. This rider provides a model for broad-based decentralised domestic and IPP grid connections in the future. Eligible customers are encouraged to participate as there is compensation for excess energy that would otherwise be wasted.

The government of Barbados in association with the Inter-American Development Bank commissioned a study on the Sustainable Energy Framework for Barbados; the final report was submitted in July 2010. This document highlights viable opportunities for investment in renewable technologies, energy efficient strategies, financial instruments and regulatory reform among others. As renewable energy policy is being developed the Commission has adopted a pro-active approach in readying itself, through research, for the effective implementation of such policy directives when they come on-stream.