Barbados microgrid design

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Energy systems around the world are witnessing a shift towards smaller, more sustainable, and more accessible electricity generation and connection options. Microgrids are at the center of this fundamental change, bringing new and innovative business models to the traditional energy model.

A microgrid is a group of distributed energy resources - typically including generation, storage, and demand management capabilities - that function as an independent power system, with the ability to enhance grid resiliency and customer reliability. As the Caribbean moves to cleaner and renewable energy sources, microgrids can help islands achieve carbon emission reductions and improve remote customer access to reliable electricity.

Three recent projects with support from Rocky Mountain Institute - Carbon War Room exemplify the shift away from traditional diesel-based systems to lower-cost hybrid microgrids:

As the smallest islands build new infrastructure or transition existing systems to renewable microgrids, they are setting a compelling example for what is cost competitive on larger island grids in the Caribbean, and other regions around the world.

This is according to Minister in the Office of the Prime Minister for Energy, Immigration, Telecommunications and Invest Barbados, Senator Darcy Boyce, who delivered the Minister"s Address at the Chief Executive Officers and Leadership Conference under the theme "Leadership in an Age of Disruption - Managing the 3 D"s - Digitalisation, Decarbonisation and Decentralisation" on Sunday night at the Hilton Hotel Barbados.

He stated that decentralised grids would be a better bet for this island as in addition to having safety mechanisms built into it, it can also provide energy if the main grid were to get disconnected during and after a natural disaster.

"Microgrids, in combination with distributed energy generation, provide a system of small power generation and storage systems which are located in a community. Given our geographical location, decentralised grids provide a safety benefit as they have built-in redundancies which are needed should the main grid become inoperable to natural disasters."

However, before we can embark on such an initiative, we must ensure that we have the adequate technology to do such and that the power generation is safeguarded in order to protect the energy supply from cybercrime, which is growing at an alarming rate.

"Extreme care must be taken that the technology that makes it possible to gain the benefits of smart grids and

decentralised power generation is very well-protected. Cybercrime is a fast-growing activity pervasive throughout all areas of society; its prevention in the electricity sector is vital."

Boyce said that such a move would be cost-effective and new infrastructure will have to be implemented to support this move. This means that the Government and stakeholders in the energy sector will have to address the technological, financial and regulatory matters in order to be able to take advantage of these decentralised energy grids.

"The transition from a centralised to a decentralised grid is cost-effective as new infrastructure will have to be developed and built. Policymakers and regulators will have quickly and comprehensively to address thefinancial, regulatory and technological issues that will need resolution if we are able to reap the benefits of the realisation of the decentralised energy grids."

He continued, "The electricity sector in the region is right to continue to modernise the grids, focus on energy efficiency and deploy more renewable and decentralised energy generation hubs. For this modernisation the governance in the industry must adapt, we must build capacity and we have to manage quickly and well the many associated risks inherent in the modernisation - but modernise we must!"