



Bermuda Energy Summit 2017

Building Bermuda's Energy Future

Panel Discussion – From Policy to Practice

November 16, 2017

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THE **Brattle** GROUP

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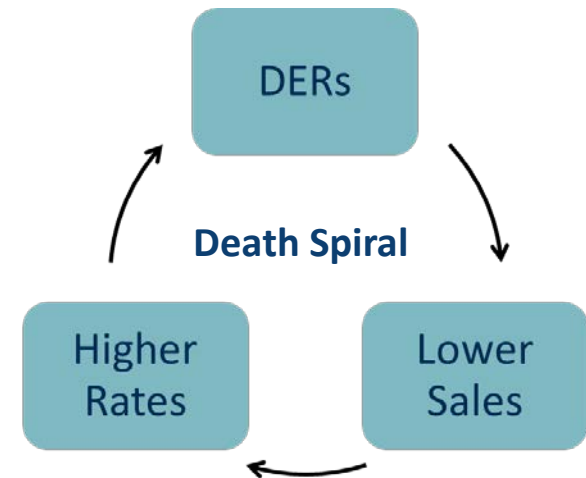
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Issues Faced Today by Island Utilities

High, volatile costs, and adverse environmental impacts of fuel oil has led many island communities to develop renewable generation resources with near-zero marginal costs.

- **Renewable plus storage** is seemingly the technical/engineering solution.
- Many islands have successfully launched their first utility-scale renewable projects. However, the real challenge is in the subsequent projects needed to reach the longer term goals.
 - **Grid Defection:** Many customers are also considering DG, DR, and EE options while using the utility (with the obligation to serve) service as storage.
 - **Back-up Resources:** DG, DR, and EE options may require more back-up generation capacity.
 - **Cost Recovery:** Storage, PPA-based renewables, or back-up capacity will not increase sales, and volumetric rates do not help the utility recover costs. This may lead to the “Death Spiral.”
 - **Increased Uncertainty:** Multiple decision makers and increase in renewables lead to higher uncertainty in both utility operations and planning.
 - **Funding Needs:** Foreign funding/investments are needed but at what expense? Significant investment needs will likely require establishing policy frameworks and rules that allows the islands to attract foreign funds and further secure financing.
 - **Other Economic Factors:** Specific considerations (closed island economy, role of utilities, impact to other island industries, etc.) are needed.



Regulating the Utility Industry

Utility is called a Utility because.....

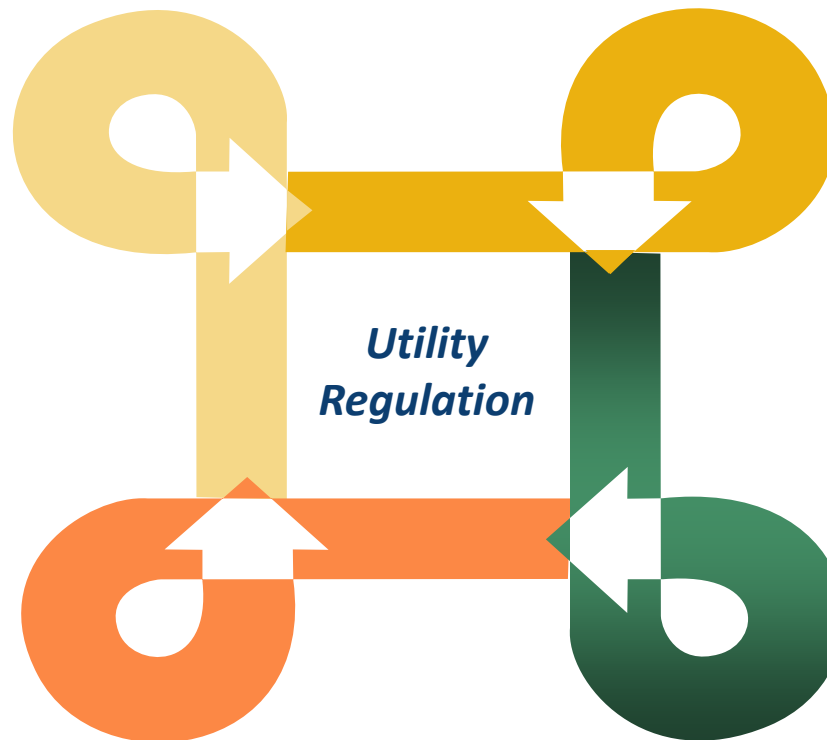
- The public service aspects align and cannot be separated from the objectives of society.
- Regulation is an alternative to (replacement of) market forces (to encourage efficiency) in providing this public service.

Customers

- Behavior
- Self-Serving Interests
- “Rights”

Technologies

- Renewables
- Storage
- Electrification



External Considerations

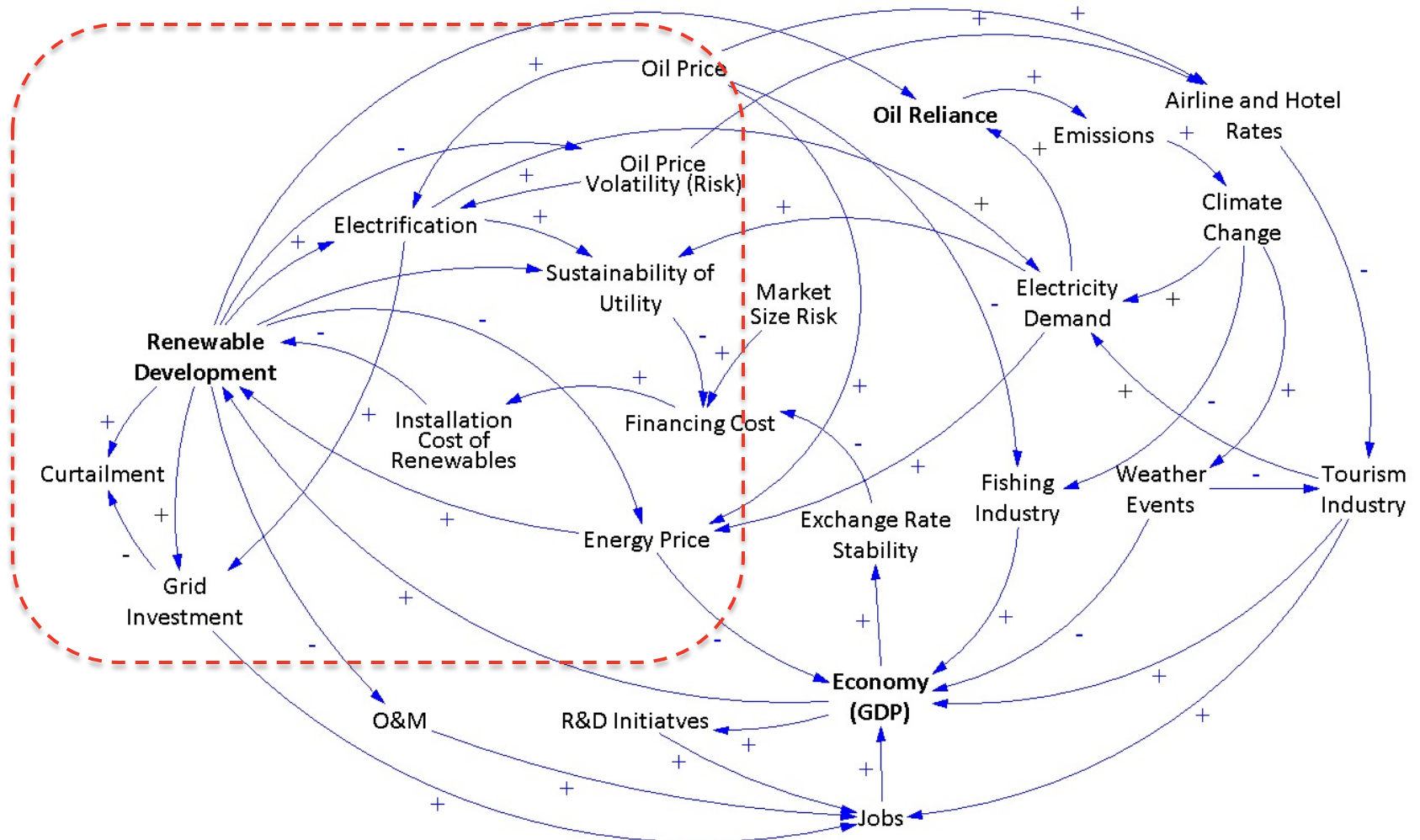
- Other Industries
- National Policies
- Role of Utility
- Jobs

(Macro) Economics

- Financing Costs
- Fuel/Commodity Prices
- GDP/Exchange Rates
- Other Industries

Illustrative Sketch of an Island System

An island utility system, accounting for interdependencies with other economics factors.



Regulation - What will it look like????

What is a tariff?

“There has never been any lack of interest in the subject of electricity tariffs. Like all charges upon the consumer, they are an unfailing source of annoyance to those who pay, and of argument in those who levy them. In fact, so great is the heat aroused whenever they are discussed at institutions or in the technical press, that it has been suggested there should be a “close season” for tariff discussions. Nor does this interest exaggerate their importance. ***There is general agreement that appropriate tariffs are essential to any rapid development of electricity supply, and there is complete disagreement as to what constitutes an appropriate tariff.***”

-D.J. Bolton, Costs and Tariffs in Electricity Supply, 1938

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