CARILEC

An Association Of Electric Energy Solution Providers

Position Paper on Regulation and Energy Transition

(Minimization of barriers and provision of incentives for renewable energy technologies and energy efficiency measures)

JUNE 2021

ABOUT US

The Caribbean Electric Utility Services Corporation (CARILEC) is an association of electric energy solutions providers and other stakeholders operating in the electricity industry in the Caribbean region, Central and South Americas and Globally. The CARILEC Secretariat endeavors to improve communication among its members, providing technical information, training, capacity building, conference, and other services. The Secretariat plays a leading role in electric utility advocacy, growth, and sustainability in the Region.

Mission

CARILEC will enhance the effectiveness of its members by providing industry related services, creating regular networking, training and knowledge sharing opportunities; supporting mutual assistance programs and accelerating the Caribbean Region's energy sector transition, through innovation and advocacy.

Vision

To be the Premier Association of Energy Service Providers and their partners, facilitating the development of world class sustainable electric energy solutions for all peoples of the Caribbean Region States.

Values

Collaboration: We foster and celebrate team work across the Caribbean region and beyond; bridging gaps between private and public sector, local, regional and international organizations, technical and policy expertise.

Innovation & Agility: We are catalysts for change in our region: we create multiples opportunities for our stakeholders to experience and adopt the latest technologies and opportunities in the fields of energy solutions.

High Ethical & Professional Standards: We cultivate trust from all our stakeholders by maintaining the highest quality of service and integrity standards.

Social & Environmental Responsibility: We ultimately work for the benefits of the people of our region and the welfare of our planet: we orient our decisions to increase the prosperity and sustainability of the Caribbean way-of-life.

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LIST OF ACRONYMS

CARICOM	Caribbean Community
CSO	Civil Society Organization
EU	European Union
ESCO	Energy Service Company
GDP	Gross Domestic Product
IPP	Independent Power Producer
IUS	Integrated Utility Service
KPI	Key Performance Indicator
ktoe	Kiloton of Oil Equivalent
MW	Megawatt
MWh	Megawatt hour
NGO	Non-governmental Organization
PPA	Power Purchase Agreement
VRE	Variable Renewable Energy

0 EXECUTIVE SUMMARY

Assuring an affordable, clean and reliable supply of electricity is an important condition for economic development in the Caribbean region. Availability of predictably priced electricity allows economic processes to take place on a continuous and reliable basis. Energy affordability is not only related to costs and prices for electricity supply but also includes the productivity and energy intensity of electricity consumers and the supply system itself. Caribbean electric utilities are fully aware of the important role that the power sector plays in the development of their economies. It should be recognized that power utilities play a key role in capital market development and help to increase the flow of foreign capital into the region and provide opportunities for regional/local capital investment. Also, financially stable power utilities are a key success factor for enabling the transition towards a more sustainable, resilient and climate-friendly energy sector.

The Caribbean power sector is witnessing important changes in the regulatory framework, featured by the introduction of regulatory entities, competition, and an increasingly important role for energy transition, renewable technologies and energy efficiency. In order to address the barriers to allow renewable technologies and energy efficiency measures to be introduced, a change in the regulatory framework and the introduction of policy initiatives are required. At the same time, the limitations of intermittent renewable technologies in addressing the security of supply of electricity and the necessity of respective compensatory measures should also be recognized. Additionally, the availability and accessibility of capital to finance renewable technologies and energy efficiency measures should be ensured through the facilitation and promotion of respective loan programs and other financing models[1].

The Caribbean Association of Electric Utilities (CARILEC) and its Member Utilities recognize the need for and the benefits of changes in the power sector and welcome them. To increase the involvement of electric utilities in the Caribbean regulatory policy process, CARILEC has prepared this Position Paper. It outlines the views of CARILEC's member utilities on the issue of regulatory reform in the Caribbean and particularly in the context of minimizing the barriers to implementing renewable energy (RE) technologies and energy efficiency (EE) measures.

In the ongoing discussion about regulation and energy transition in the Caribbean power sector, CARILEC wishes to express its view through the following position statements:

1. CARILEC welcomes and supports regulation in the Caribbean and believes that it will play a crucial role in further shaping and developing the power sectors in the region. To assure that regulation is effective, the design of the regulatory framework needs to properly incorporate the specific characteristics and realities of the Caribbean region. This includes the limited economies of scale related to energy infrastructure, its specific exposure to natural hazards and disasters and the isolation and lack of interconnection of power markets.

2. A stable, competent, and independent regulatory framework is important to assure a financially healthy sector in which investments can be undertaken to facilitate a secure, affordable and clean energy supply and thus sustain economic development of the Caribbean countries.

1 i.e. ESCo-model, IUS-model

3. Incentives related to tariff setting and quality standards should be fair and symmetric. Utilities should not only be penalized for low performance but also rewarded for good performance.

4. The electric utility should continue to be actively involved in the planning process of the power system, supporting governmental institutions and regulating authorities in the definition and set-up of respective policies and expansion strategies. Support could encompass the provision of information and recommendations on existing network capacities, power plants as well as the identification and tendering of new capacities, including those based on renewable technologies. However, the provision of specific data should be subject to confidentiality, where required. Open communications and discussions between policy decision-makers and affected stakeholders, such as electric utilities should ensure the consideration of relevant expert opinions in the planning procedures for energy transition.

5. Where competition is introduced in electricity generation, the Single Buyer Model can be considered as the most suitable option to enable energy transition in comparatively small power markets as is the case in most Caribbean countries. This applies to additions of both conventional and large-scale renewable capacity. The utility should also be in the position to bid for new capacity if it has not been involved in the prior bid preparation.

6. The expansion of renewable technologies, especially those with fluctuating electricity generation such as large-scale solar and wind energy, should be accompanied by respective support measures and regulations. Support measures include, among others, reliable generation forecast mechanisms, allocation of balancing responsibilities and im-balancing costs, improved grid infrastructure, installation of storage and flexible generation capacities and increased requirements on grid management, resilience, flexible supply and demand. These measures should be supported through respective regulations. Increased costs for the implementation and operation of such measures are to be considered and accordingly allocated when setting respective tariffs for electricity consumption and injection into the power network.

7. Governments, with the help of the utility, should actively promote the use of renewable technologies. Where applicable and required, Governments may need to provide cost-efficient incentives, financed by taxes or levies without affecting the utility financially. Regulatory authorities will be required to accordingly develop and adopt rules and regulation for the setting, allocation and financing of such incentives. Where incentives are to be financed by separate levies or charges on electricity prices, energy affordability and thus the society`s acceptance and willingness to support energy transition should be considered. To ensure cost-efficient support allocation for RE expansion, competitive bidding procedures (RE auctions) should be introduced awarding the support to the bidders with the lowest price for future electricity sale.

8. For small-scale renewable energy, regulation should be in place that allows customers to use and interconnect these systems to the main grid accounting for technical conditions. Households, citizens, and enterprises should be able to generate part of their electricity needs from their own small scale RE based power plant while using the distribution grid to inject excess production and to withdraw electricity when self-production is not sufficient to meet their own needs. The compensation for injected electricity should not exceed the avoided costs per kWh – typically the energy component of the retail price without levies, taxes and additional charges on grid use and measurement. A viable grid services fee should be allocated that reflects the utility cost of providing grid services to such customers. Tariff regulation will need to properly reflect this requirement, i.e. through the introduction of a net billing mechanism.

9. Regulating frameworks should allow electric utilities to offer innovative energy services to their customers that include the financing and implementation of energy efficiency measures on the demand side. Such frameworks should consider respective provisions related to the commercial mandate of utilities and network licensees, standardization and labelling of equipment, respective tariff methodologies and, if required, access to capital. This will help to lift the potential for decarbonization through energy conservation while at the same time allowing energy utilities to diversify their business models, becoming more resilient to changes in the electricity demand and to economic crises.

10. Regulation in the Caribbean should be in line with the principles of best-practice regulation, namely - independence, communication, consultation, consistency, predictability, flexibility, capacity, effectiveness, accountability, and transparency.

11. CARILEC, as well as its utility and Independent Power Producer members, will continue to play a constructive role as subject matter experts in the further progression of the regulatory landscape in the Caribbean. This initiative will continue for the purpose of moving towards an effective regulatory framework for the Caribbean power sector.

TABLE OF CONTENTS

CARILEC
An Association Of Electric Energy Solution Providers

1 INTRODUCTION

Electricity and the Economy

Electricity plays a vital role in economic development. Availability of predictably priced electricity allows economic processes to take place on a continuous and reliable basis and accommodates the introduction of modern and more efficient production techniques. Access to electricity also results in a higher standard of living as consumers are able to utilize more sophisticated electrical equipment and further improve their quality of life. Moreover, the ongoing and continuing digitization of economies and households, as an important pillar of economic progress of societies, requires a permanent, predictable and affordable electricity supply. Ensuring a secure and reliable supply of electricity is an important condition for economic development.

Caribbean electric utilities are fully aware of the important role that the power sector plays in the development of their economies. This awareness is reflected in the efforts made by electric utilities to ensure the supply of electrical power at lowest possible costs and highest reliability.

Another significant condition for economic development is energy affordability, not only related to costs and prices for electricity supply but also reflected within the productivity and energy intensity of electricity consumers and the supply system itself. Energy efficiency measures together with a smart demand and supply management will help to reduce electricity costs on both sides. This will ease the financial burden on economies and societies and enhance the potential for economic development and progress. In this regard, digital technologies will also help to make energy systems in the Caribbean more connected, intelligent, efficient, reliable and sustainable.

At the same time, it should also be recognized that power utilities play a key role in capital market development in the region. This should happen especially in those jurisdictions in which the utility has significant private capital in its ownership structure and is listed on regional or national security exchanges. The electricity industry is one of the most capital-intensive sectors in the economy. It is therefore an important vehicle to increase the inflow of capital into the region and provide opportunities for local/regional capital investment and hence achieve further economic growth. An effective regulatory framework is crucial in creating an attractive investment climate with stable returns for investors. This increases access to capital, reduces the costs of capital, and creates spin-off effects for other parts of the economy as well. Also, Caribbean power utilities can provide attractive investment opportunities and play a major role in attracting a stable flow of foreign capital into the region. They can also provide attractive options to encourage Caribbean capital to invest in the region. This includes capital for green investments into renewable technologies, resilient energy infrastructure and energy efficiency measures.

Electricity and the Environment

Worldwide, the electricity sector is the largest contributor to climate change, accounting for almost a third of global greenhouse gas emissions.[2] The Caribbean energy industry is also directly impacted by climate change and global warming. Many of the impacts have been manifesting themselves through increases in intensity and frequency of extreme weather events and rising sea levels, that seriously affect local energy infrastructure,

2 https://www.eea.europa.eu/data-and-maps/daviz/change-of-co2-eq-emissions-2#tab-dashboard-01 (excluding LULUCF)

leading to damages and disruption of supply. All segments of the energy industry will be affected by the changing global climate and the policy responses to it.

With the ongoing energy transition towards a clean and efficient energy sector, the construction of new energy infrastructure, such as Renewable Energy (RE) power plants, transmission networks and distribution lines, micro-grids, flexible generation and storage systems is required.

Each of these infrastructural components can have environmental impacts at multiple stages of their development and use. Impacts can be experienced in their construction, during electricity generation, and in their decommissioning and disposal. In keeping with the sustainability goals of energy transition, the construction and operation of energy infrastructure must be carried out with the lowest environmental impact possible. Planning of RE and grid expansion should therefore follow international, regional and national environmental standards. The standards should ensure climate-friendly energy supply of low environmental impact and resilience to the occurrence of extreme weather events.

Therefore, regulatory frameworks, financial mechanisms and programs should be in place allowing electric utilities to consider such standards and enable investment in resilient energy infrastructure without reducing the affordability of energy supply.

Drivers for Power Sector Reform

Traditionally, electric utilities have been operating as vertically integrated monopolies in the power sector. It was generally perceived that the task of electricity supply is best left to the monopoly of the electric utility. In the past decades however, this view has changed. In developed countries, such as the United States and EU Member States, technological improvement in bulk electricity production has been the main driver for introducing competition into the power sector. Technology has developed such that it is now possible to consider competition in the production and supply of electricity. Especially in countries with smaller power markets, the network part of the power sector however remains a natural monopoly.

The impetus for regulatory reform in the Caribbean comes from the observation that most Caribbean Utilities continue to operate as monopolies, while there is a trend in the more developed countries to introduce competition in the power sector. This impetus seems to have received much attention due to the success of the introduction of competition in other sectors such as telecoms.

The ongoing energy transition is an additional driver for a regulatory reform of the power sector. In particular, it is related to the decarbonization of the sector combined with a reduced dependence on fossil fuel imports through a higher share of RE based electricity generation and reduced energy intensity on the demand side.

The role of RE is particularly important in the context of the volatility in international oil prices and the potential of RE to increase energy security in the region. In its 2020 Position Paper on Energy Policy and Energy Transition, CARILEC highlighted the need for fuel diversification through the introduction of renewable energy sources, in order to increase security of supply and reduce exposure to international fuel prices.[3]
The slow introductory pace of renewable technologies in the region is primarily due to the existing barriers:

3 CARILEC (2020), Position paper on Energy Policy and Energy Transition, November 2020.

- Lack of scale-effects for the installation of cost-efficient and clean power supply and distribution infrastructure due to small and isolated power markets;

- Lack of technical and financial capacities of Caribbean consumers to implement energy efficiency measures that help to reduce their electricity bill;

- Lack of detailed implementing and regulatory frameworks for supporting renewable energy generation, energy efficiency measures and increasing the resilience of the Caribbean power systems to meet more ambitious targets for renewable energy and energy efficiency as set in regional policies for energy transition.

There is a need to understand that in order to allow a higher share of renewable technologies to be introduced, a change in the regulatory framework and the introduction of policy measures are needed. This will require the introduction of regulatory mechanisms and financial incentives, as well as a change in the regulatory approach with respect to the market, tariffs, quality and demand-supply balancing.

The same applies for the introduction of measures to stimulate energy conservation and a lower energy intensity. Electric utilities possess the knowledge and the technical capacity to provide energy services to electricity customers that could contribute to more efficient energy consumption on the demand side. However, for utilities to actively engage and further develop their business activities to offer such services, the respective adoption of new regulatory frameworks is required. These frameworks should define clear market rules, technical standards, and the legal foundation for energy services.

Power Sector Regulation

In many CARICOM member states, independent regulators have already been introduced or respective tasks have been allocated to specific ministries or other governmental institutions.

Competition is generally considered an important mechanism to achieve higher productivity, cost-efficiency and provide customers with goods that match their quality expectations. In the power sector, effective competition cannot exist without effective regulation. There is a need for proper regulatory and legislative frameworks to accommodate competition and to effectively coordinate between all power sector entities – both the incumbent utility and new entrants. Regulation needs to assure that all power sector entities[4] are treated fairly, rules and regulations are enforced, and the sector can operate in a reliable and efficient manner.

Another important area where regulation plays an important role is in creating a predictable and low risk environment under which necessary investments in the power sector can be undertaken in an efficient manner. The electricity sector is highly capital intensive, and the cost of capital forms a significant part of the sector's overall costs. With the transition towards decarbonization, additional investments into a more resilient energy infrastructure are required. A well-regulated sector provides for a stable environment with lower risk. In this regard, the presence of an independent and competent regulator is crucial as this reduces the costs of capital and allows investments to be undertaken efficiently. Eventually, this works to the benefit of customers as they can be served with a reliable service at the lowest possible price.
With regards to their role in energy transition, regulators should:

4 Including utilities, independent power producers (IPPs), customers and other market players.

- Recognize the acceleration and confluence of multiple agents of change,
- Acknowledge the role that power utilities will play in enabling the energy transition and keeping reliable electricity supply across networks at the best cost to users,
- Prepare the ground to effectively incentivize investments, innovation, and research and development and
- Define tariffs that enable i) fair recovery of grid operation, maintenance and investment costs, based on usage by different consumer groups as well as ii) the provision of new energy services that unlock the potential for energy efficiency on the demand side.

Objectives of this Position Paper

The Caribbean power sector is witnessing important changes in the regulatory framework, evidenced by the introduction of regulatory entities, competition, and an increasingly important role for renewable technologies and energy efficiency measures. The Caribbean Electric Utility Services Corporation (CARILEC) and its Member Utilities recognize the needs for and the benefits of these changes and welcome them.

At the same time, CARILEC believes in the importance of effectively designing regulatory frameworks which lead to productive outcomes for all stakeholders involved. This requires regulation to be customized to the specific characteristics and realities of the Caribbean region.

Member Utilities of CARILEC are of the opinion that electric utilities can and should provide valuable input in helping to shape the regulatory frameworks for the power sectors in the region. Indeed, international experience shows that the experience and knowledge of utilities is an important factor in ensuring the development of an effective regulatory framework.

In order to increase the involvement of electric utilities in the Caribbean regulatory policy process, CARILEC has prepared this Position Paper on Regulation and Energy Transition. In this paper, CARILEC utilities collectively express their views on the important issues of regulation and energy transition for their countries and/or the Caribbean region.

Paper Outline

The remainder of this paper is set out as follows.

- Section 2 provides an outline of the objectives of regulation, its main areas and the preferred approaches for the Caribbean.
- Section 3 focuses on the role of regulation, specifically for energy transition.
- Section 4 sets out a list of generally accepted best-practice regulatory principles, which should also be followed in the Caribbean.
- Section 5 summarizes CARILEC's positions with respect to regulation and energy transition in the Caribbean.

2. DEVELOPING THE REGULATORY FRAMEWORK

Objectives of Regulation

Regulation can broadly be described as government-imposed, but independent control on commercial activity. The main tasks of regulation are to make sure that electricity prices are kept low as possible, electricity is delivered at reliable levels, while at the same time ensuring that utilities can operate in a financially sustainable manner. Additionally, and keeping with national and international commitments towards a climate-friendly energy sector, regulation should provide the regulatory pathway for enabling sector resilience and energy transition.

Specific targets for energy transition and respective incentive schemes should be defined in a consultative process, coordinated by the policy and legislative authorities. Regulation should support such processes and monitor the resulting implementation of developed policy measures and mechanisms. This includes the introduction and operation of cost-effective incentive schemes for renewable energy and energy efficiency measures. It also includes setting up the regulatory framework for technical integration of renewable energy and sustainable energy policies in general.

Worldwide, a change can be observed in the regulatory approach for the power sector. This is witnessed by the establishment of independent regulators, new roles and tasks for regulatory authorities with regards to energy transition, the introduction of competition, and a change in the regulatory approach for setting prices and quality targets.

Changes in the regulation of the power sector are also being witnessed in the Caribbean. It is important that the regulatory models suit the specific Caribbean situation. Models that work well outside the region may not be entirely applicable for the Caribbean. This section provides a general outline of the preferred regulatory approaches for the region. Here, a distinction is made between the three main regulatory areas, namely - (1) Market regulation, (2) Tariff regulation, and (3) Quality regulation.

Market Regulation

Market regulation of the power market is associated with setting in place proper rules that regulate the competition process, and the interfaces between the different power sector stakeholders to assure an effective and reliable power supply.

The introduction of competition implies that the incumbent utility will no longer be the sole entity active in the power sector. To assure the safe and reliable operation of the system, there will be a need for clear regulations to govern the conditions under which new producers enter the market, how energy is supplied to the power system, and the technical characteristics that need to be complied with.

When introducing competition, the international experience presents three main models: (1) Wholesale Competition, (2) Retail Competition, and (3) Single Buyer Model. While Wholesale and Retail Competition target a cost-efficient energy supply and to unburden governments' liability and creditworthiness, these models imply high requirements on regimes for third-party access to transmission and demand-supply balancing. Wholesale Competition and Retail Competition models have been successfully applied in other regions, for example Europe and the USA, to enhance cross-border electricity trade.

For many Caribbean countries, the situation and the framework conditions are somewhat different. Most of the island electricity networks are not connected to each other. Additionally, markets are comparatively small[5] and institutional capacities to introduce complex regulations, market balancing and monitoring systems are limited. Given the aforementioned characteristics, and due to the lack of scale effects for generation capacities and energy market infrastructure, the introduction of wholesale and retail competition in the Caribbean may even increase energy costs. This would result in stranded assets and a reduced energy affordability.

When considering introducing competition in Caribbean power markets, in most of the national markets the Single Buyer Model is the most effective choice. Here, competition is introduced by setting in place a transparent and competitive bidding process for new generation capacities. Any developer, fulfilling the defined qualification criteria, can participate in the bidding process to become an Independent Power Producer (IPP). The winning bid then earns the right to build and operate new capacity and to enter into a power purchase agreement (PPA) with the utility.

An important advantage of the Single Buyer Model is that it allows competitive pressure to exist, but at the same time does not make its effectiveness a function of the market scale. This makes it particularly suitable i) in the context of the relatively small power markets in the Caribbean and ii) in the planning and implementation of energy transition in those power markets.

Given the need for additional renewable energy capacity to enhance transition towards climate-friendly energy generation, energy independence and affordability, governmental involvement in planning and tendering of generation capacities can be a crucial success factor for sector sustainability. The Caribbean islands particularly have a limited number of locations with a feasible renewable energy potential and low environmental impact. These may demand a more intensive governmental steering of renewable energy expansion. The Single-Buyer-Model, especially under public involvement, reduces the complexity and administrative efforts of such steering.

The role of the Single Buyer in the Caribbean is typically best fulfilled by the incumbent electric utility. Most of the Single Buyer's main functions are normally already being executed by or with the utility's support: (1) planning of the power system and identification of new capacity needed to achieve national targets, set by governments and regulators[6], (2) organization of the tendering process for new capacity, (3) evaluation of the bids, (4) conclusion of PPA's with the winning parties to procure their power, and (5) sell this power to electric customers.

It is also important that the incumbent utility is provided the opportunity to bid for new capacity as well. Clearly, this can give rise to a conflict of interest if the bid evaluation were to be done by the utility. In those cases, it is therefore appropriate that the preparation of the bidding documents and the evaluation of the bids are performed by an independent party, such as the designated regulatory authority.

Tariff Regulation

Tariff regulation relates to the application of methodologies to set the tariffs that electric utilities can charge their customers. In most cases a distinction is made between the fuel charge and the base charge. The fuel charge consists of the costs of fuel and related items, which are passed through to customers based on actual costs. With the introduction of competition, care should be taken that the energy purchase costs paid by the utility are appropriately allocated into the fuel charge.

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5 Among the CARICOM Member States, only the Bahamas (536 MW), Jamaica (926.4 MW) and Trinidad and Tobago (2,368.0 MW) have generation capacities above 500 MW ➡ Alexander Ochs et al., Caribbean Sustainable Energy Roadmap and Strategy (C-SERMS): Baseline Report and Assessment (Washington, DC: Worldwatch Institute, 2015)

6 By incorporating the expertise and recommendations of electric utilities.

The base charge generally consists of the non-fuel costs incurred by the utility i.e., the operational and capital costs. The base charge will need to be set by the regulator at a level that allows the utility to cover its costs of running and maintaining the system and to assure sufficient funds to invest in and maintain a safe and reliable service. The utility will need to operate as a viable enterprise that is fully able to satisfy all its financial obligations and continuously attract capital to fund expansions of the system in an efficient manner.

International experience shows that the introduction of competition and the associated change in regulatory framework is often accompanied by a change in the tariff methodology used by regulators. This approach in setting prices is generally known as price-cap regulation. Price-cap regulation has, for example, been widely applied in Europe, Australia, Asia, and Latin-America. Also, in the Caribbean examples of price-cap regulation may be observed.[7]

Under price-caps, the base charge is no longer set on actually observed costs, but rather on a benchmark target set by the regulator.[8] In developing this benchmark, the regulator accounts for cost projections including operational and maintenance costs and capital costs. The base charge is subsequently set based on these cost projections. With the base charge disconnected from the utility's actual base costs, improvements in cost effectiveness by the utility translate into higher profitability. This creates incentives for the utility to improve its productivity.

For price-cap systems to be effective, it is important that the regulated utility is provided a fair chance to retain the productivity improvements that it can achieve. This in fact is the true incentive to engage into productivity improvements in the first place. At the same time, it is also important to realize that the unlinking of actual costs and prices introduces risks for the utility. These risks will need to be reflected in the allowance for the costs of capital faced by the utility.

Reflections on tariff regulation related to the remuneration of RE based electricity and to the provision of energy services for the implementation energy efficiency measures at the demand site will be provided under section 3.

However, considering future changes towards the integration of distributed small-scale and fluctuating large-scale renewable energy sources (see also section 3.), customer tariff systems should reflect respective costs related to the network connection and operation, as well as for metering and administration separated from costs related to electricity generation and distribution. This could be realized by the introduction of grid and measurement charges. These will be taken from the current base charges and listed separately on the bill, without increasing the total electricity tariff.

Moreover, the introduction of separate charges for grid operation and management in all tariffs would allow a cause-based and transparent designation of additional costs for the investment into more resilient grid infrastructure (i.e., for spinning and back-up reserves, flexible generation, storage, forecast and dispatch software). This is especially important with regards to the expansion and integration of (intermittent) RE. While generation related price components may decrease with the expansion of RE in the grid, cost for grid infrastructure and provision of back-up reserves and flexibility for all generators will increase. A more detailed aggregation of the base charges could help to visualize actual costs of RE expansion. In that way, it will contribute to the further planning process as well as to increase acceptance for energy transition among customers.

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7 Price-cap systems are for example applied in Belize, Jamaica, and Trinidad & Tobago.

8 As fuel costs depend on fuel prices, which are outside the utility's control, the price-cap method is not applicable to the fuel charge.

Where applicable and required, Governments may provide cost-efficient incentives for renewable energy and energy efficiency measures, financed by levies charged to final electricity customers but without affecting the utility financially. If incentives are to be financed by additional levies on electricity prices, energy affordability and thus the society`s acceptance and willingness to support energy transition should be considered when planning the expansion of RE technology and EE measures.

Quality Regulation

Another area where a change in the regulatory approach can often be observed is the area of quality regulation. Under the price-cap system, there is a risk that part of the desired cost savings will be achieved through quality reduction rather than through cost improvements. To prevent this, the price-cap is typically augmented with quality incentive schemes.

Different approaches exist for establishing quality regulation. Minimum standards are commonly used by regulators. These specify the minimum level of performance to be achieved by the utility. In case the minimum target is not met, the utility could be penalized financially. Areas where these standards apply include for example the reliability of the system, the handling of complaints and phone calls from customers, the speed of providing new connections, etc.

Some regulators also use quality incentive schemes, which are an extension of minimum standards. These impose a more direct relationship between performance and financial outcome. The advantage of incentive schemes is that rather than only getting penalized for low performance, there is also the possibility to be rewarded for superior performance.

The introduction of quality regulation requires proper judgment about the appropriateness of the desired level of performance as reflected in the setting of targets. Performance levels which are observed elsewhere may well be achieved in the Caribbean but may come at considerable costs. The performance observed elsewhere may thus not be realistic for the Caribbean region. Furthermore, where improvements in quality performance are required, it should be realized that this will require investments, which should also be reflected in the tariffs.

Quality regulation not only refers to the performance of operating utilities. It includes the setting of a licensing and permitting regime and rules of interconnection for IPPs and new market participants. Respective administrative procedures and technical requirements should be clearly defined by the regulatory authority. Rules and procedures should be made available to the public in order to enhance fair and transparent competition, reducing the risk of cost increases for project development.

3. REGULATION WITH RESPECT TO ENERGY TRANSITION

Objectives of Energy Transition

Most of the Caribbean countries disproportionately depend on imported fossil fuels for electricity generation. Currently, petrol products accounts for over 90% of the Caribbean's primary energy consumption and a large share of its power generation stems from fossil fuel imports exposing the region particularly to fluctuations in global oil prices. Several Caribbean countries spend up to approximately 10% of their GDP on imported fossil fuels.

Electricity rates in the Caribbean are among the highest in the world and directly impact the competitiveness of tourism, commerce, industry as well as national budgets. The natural limitation of comparatively small energy markets has up to now limited the options for energy utilities to invest into capital-intensive technologies, that in the long-term may lead to reduced generation costs and more sustainable and resilient energy systems. This accounts for generation facilities and complex equipment for grid infrastructure and energy efficiency measures.

The vulnerability of the region to natural disasters like hurricanes, floods, droughts, earthquakes, volcanic eruptions and the adverse effects of climate change are additional key factors that are hampering their economic growth. Climate- and disaster-resilient designs of energy plants and infrastructure are ranking high on key energy stakeholders and power utilities' lists, however addressing that topic is just at the beginning.

Despite the significant and largely untapped potential of renewable energy resources such as wind, hydro, solar, geothermal and bioenergy – in addition to the potential from energy conservation – implementation of renewable energy (RE) projects and energy efficiency (EE) measures in the region is largely unrealized.

Key barriers hampering the shift from cost-intensive, fossil fuel dominated to sustainable energy landscapes are the lack of i) scale-effects in the relatively small and isolated power markets and ii) consistent supporting and regulatory frameworks.

Over the past decade many Caribbean States have adopted or started to draft National Energy Policies. The main thematic objectives of those policies for sustainable transition towards universal access to affordable, clean and secure energy are:

- Resilient energy systems, related to security of energy supply, fuel diversification, the response to climate change, natural disasters, and hazards and to the modernization of energy infrastructure,
- Energy affordability, related to affordable energy cost and prices, reduction of final energy consumption and enhancing conditions for economic development and
- Decarbonization of energy systems through increasing the share of renewable energy and reducing primary energy consumption,

While these policies are already adopted and approved in more than 50% of CARICOM countries, their

implementation still requires further support and regulatory frameworks which are not yet in place.
The following sub-section addresses specific issues of regulation for renewable energy and energy efficiency.

Renewable Energy Policy

The primary objective for expansion of renewable energies within energy transition is the decarbonization of the sector. Nonetheless, renewable technologies offer the possibility to decrease costs of energy supply in the long term, reduce dependence on fossil fuel imports, increase energy security and local added value of the energy supply chain. To achieve this potential, the regulatory framework will need to accommodate the introduction and integration of renewable technologies. Furthermore, Governments may provide additional incentives to promote the use of renewable energy (RE).

Driven by competition and scaling-effects, most of the renewable technologies already generate electricity at competitive cost levels. The cost of electricity from onshore wind and solar PV is increasingly cheaper than from new and some existing fossil fuel plants. In most countries, renewables are the cheapest way of meeting growing demand.

However, some variable RE technologies (VRE) such as wind and solar PV are intermittent and still require back-up supply from other (renewable) sources flexible generation capacities and storage systems.

Generally, a limit is set on the degree of penetration depending on the grid capacity and compensatory measures in place as well as on the restrictions to maintain or achieve a determined level of energy affordability.

While several islands and regions around the world with favourable local conditions have already managed to cover their complete electricity demand with 100% of RE based electricity generation[9], some larger countries also have reached hourly maximums of 100% RE based electricity generation.[10] In this light, renewable technologies have reached a competitive market status. They could, together with respective improvement measures for energy infrastructure and supply and demand balancing, significantly contribute to increased fuel independence, energy affordability and security of supply while decarbonizing the energy sector.

Given the sizes and limited economies of scale of Caribbean power markets, RE expansion will not necessarily result in a reduction of electricity costs. Even though the variable costs of renewable sources are minimal, there are still significant capital costs involved which may be larger than those of for example, diesel generators. This especially applies, if being combined with required investments in energy infrastructure, such as storage systems or technologies for grid upgrading. These capital costs will need to be properly reflected in the electricity tariffs, for which an effective regulatory framework is crucial. Although in international markets, generation costs, especially for solar and wind power have been decreasing significantly over recent years, cost reductions may not be as significant for the Caribbean region due to i) the lack of scale-effects, ii) lack of interconnection, iii) additional costs for transportation and import and iv) more complex requirements regarding the construction design[11] and environmental impacts.

To promote the further expansion of renewable technologies, Governments should undertake specific initiatives. These can include the provision of land for renewable energy projects (for example: wind and solar parks), financial incentives (including feed-in-tariffs or premiums where feasible and effective), underwriting debt with

9 See database of countries, regions and islands targeting or having achieved 100% RE supply: https://www.100-percent.org/country-island/

10 In Germany for example, VRE shares in electricity demand have reached hourly maximums of 100%, while contributing on average between 20 to 50% of the electricity supply throughout the year. - Please check https://www.iea.org/reports/covid-19-impact-on-electricity for further details.

11 i.e. to prevent damages from extreme weather events (hurricanes, floods, etc.)

sovereign guarantees, or subsidies. Financial incentives could also include grants to reduce upfront capital costs, soft loans, loan guarantees, tax credits, and other financial assistance. Additional incentives such as feed-in-tariffs, premiums or grants should however be financed by taxes or levies and should not affect the utility financially. In case incentives are to be financed by additional levies on electricity prices, the resulting energy affordability and thus, the society's acceptance and willingness to support energy transition, should be assessed and taken into consideration as well.

Planning of Renewable Energy

The potential of renewable energy sources in the Caribbean varies from one country to the other. An appropriate renewable energy policy will therefore need to be country specific. In this respect, governments together with their utilities should seek to identify available renewable energy sources and technologies that are practical, commercially viable, environmentally appropriate, and suited for their respective island. Where feasible and to benefit from excess potentials of a specific RE source in neighbouring islands, the option of submarine cable interconnecting island systems could also be considered.

Renewable energy should form an integral part of the utility's power sector planning process. In doing so, applicable reliability margins and operational constraints as well as the technical and economic feasibility of different renewable technology options will need to be considered. Also, the penetration of renewable generation sources should be compatible with applicable technical limits in order to assure a safe and reliable operation of the power system.

The modest addition of RE generally has little impact on most power systems and is easily managed and balanced by the existing generating assets and conventional system controls. However, unless policy, regulations, long term resource planning, modern power system analysis and the appropriate technologies, such as forecasting and flexible generation, are implemented, the penetration of RE will be limited and generation costs will increase – all coupled with an overall reduction in system reliability and resilience.

Forecasting mechanisms, either through the IPP or the responsible network operator, have been proven a cost-effective solution and indispensable source to increase RE penetration without reducing security of supply. Solar power forecasts can be realized on a day-ahead basis with a high accuracy and even 24h wind forecasts do not deviate much from their prediction.

At the same time, flexible generation capacities, and systems to shift energy supply (i.e., battery storage) should be provided to plan and balance the actual supply according to the forecasted generation. Methodologies and rules for dispatch priorities, forecasting responsibilities, procurement and evaluation of grid flexibility and curtailment would thereby help to define the appropriate technical requirements and conditions to help to increase the penetration of cost-efficient intermittent RE into the power network.

Support schemes and regulations should include mechanisms to incentivize such measures and to cover their costs. Potential mechanism to finance these solutions could be:

- A cost allocation scheme that considers positive and negative deviation from forecasted generation, obligating the IPP to accordingly pay these costs of imbalance to the utility as Balancing Responsible Party (BRP).

- Alternatively, the cost for the latter could be included in the customer tariff as (fixed) costs for grid use (grid operation).

Similar to the setting of the tariffs for RE dispatch, the overall electricity price increasing through additional costs for grid operation and thus, the society's acceptance and willingness to support energy transition, should be assessed and taken into consideration for the planning of RE expansion as well.
To assure the effective addition of renewable energy sources to the system, it is important that clear regulations and procedures govern the administrative procedures for application for interconnections, the technical and safety standards, and the commercial and tariff aspects of the interconnection.

A distinction can be made between two classes of renewable power namely - (1) large-scale renewables, and (2) small-scale renewables. Large-scale renewable power generation applies to the situation where electricity generation has a commercial nature. Small-scale renewables refer to installations serving the purpose of self-consumption and feed-in of excess electricity into the grid up to a defined capacity threshold, set by the regulating authority. Capacity thresholds to distinguish between large- and small-scale renewables should be set country and RE technology specific, considering the respective grid impact and realistic implementation potentials.

Large-Scale Renewable Power

Large-scale or utility-scale renewable power generation applies to the situation where electricity generation has a commercial nature. Here, the renewable energy producer will need to enter into a PPA with the utility. In order to obtain the right to conclude a PPA, a competitive bidding process is recommended.

Large-scale renewable power can be integrated into the Single Buyer process. The need for new renewable capacity will be identified during the planning process undertaken by the responsible governmental authority in close collaboration with the utility. A participative approach for the planning of RE expansion should therefore be applied that involves the consultation and the feedback from relevant stakeholders and experts such as national and regional research institutions, the private sector, NGOs and CSOs. This would contemplate differential commercial consideration for intermittent versus firm assets, levelized generation costs per type of RE technology and its economic potential within the particular power market. When planning large-scale RE power expansion, a specific focus should be on a diversified RE technology mix that allows a high overall availability of RE power.

In order to increase competition in comparatively small Caribbean power markets and thus reduce electricity costs, specific sites for tendering, installation and operation of defined RE technologies could be identified and predeveloped by governmental authorities together with the incumbent utility.
A higher level of standardization and regulation may be advisable in the event that more enabling conditions for investments into the sector are required i.e. to achieve specific targets for RE. In that case, regulation can encompass basic requirements and ground rules for relevant features for procurement of new capacities, such as:

- ✓ Awarding procedure for a competitive bidding process
- ✓ Price or formulae for setting of the price and future adjustments, guaranteed feed-in-tariffs, premiums, upper and lower caps for purchased electricity
- ✓ PPA contract duration and termination
- ✓ Dispatch risk and responsibilities
- ✓ Remuneration and obligations in case of curtailment
- ✓ Rules for interconnection (Grid Code), generation, feed-in, dispatch, forecasting
- ✓ Responsibilities for forecasting, supply balancing and respective cost allocation

More general features defined in the PPA, such as risk allocation, force majeure, and dispute resolution, may also be prescribed in more detail by regulation, i.e., in case the applicable legislation stipulates to conclude the PPA based on a predefined contract template with determined roles, responsibilities and conditions.

Financial features of a PPA, such as pricing, curtailment, liability and guarantees, are particularly important for a Project`s bankability. With an increasing penetration of intermittent RE, technical PPA features for the interconnection as well as the respective rules, responsibilities, and cost-allocation for dispatch obligations, forecasting and supply balancing will become increasingly relevant for the incumbent utility. In order to facilitate a coordinated supply and demand balancing, respective requirements and conditions should be standardized and determined through rulebooks and codes, adopted by either the incumbent utility[12] or by the regulatory authority.

Small-Scale Renewable Power

Small-scale renewable generation applies to the situation where the primary purpose is self-generation by customers. Here no commercial motivation is present other than reducing the customer's electricity bill and contributing to the reduction of greenhouse gases, even at a small scale. Small-scale renewables include technologies such as roof-top solar panels and small wind turbines. Customers that own and operate an installed distributed generation system based on renewable energy, intended for their own or on-site consumption are hereinafter referred to as "Prosumers". A prosumer produces part of his/her electricity needs from his/her own power plant and uses the distribution grid to inject excess production and to withdraw electricity when self-production is not sufficient to meet his/her own needs.

Given the economic nature of small-scale renewable technologies, it is important that a standardized process is in place that allows prosumers to easily use and interconnect these systems to the main grid. Regulations will need to prescribe the steps involved in the interconnection, the technical conditions to be met, and any other provisions required to ensure the safe and reliable operation of the system. Regulations should also include the financial and tariff aspects of the interconnection of prosumers. The costs involved in establishing the connection as well as for the operation of the grid will need to be properly remunerated.

The regulations should also clearly set out what tariffs will apply for feeding into the grid. The utility should not pay more than avoided costs per kWh – typically the energy component of the retail price without levies, taxes and additional charges on grid use and measurement. Where financial incentives are provided by the Government, these should be treated outside the tariff system.

Electricity consumption from the grid should be paid based on the customer tariff, applicable to the Prosumer`s customer classification. In order to fairly allocate costs for grid operation, measurement and overhead among all customers including Prosumers, the charges for these purposes should be applied on fixed rates, i.e., based on the connected capacity, instead of being based on the withdrawn amount of electricity. The cost for grid services used should not be shifted to grid customers who do not have the possibility to become prosumers.

Even when Prosumers have installed renewable sources, they will normally still be connected to the grid. During certain hours of the day, electricity will still be procured from the grid. The costs of the grid connection (whether to consume or feed-in) would thus still need to be paid by the customer. Tariff regulation will need to properly reflect this requirement, i.e., through the introduction of a net billing mechanism .

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12 i.e. Good Utility Practice

In order to ensure system stability, the installed capacity eligible for prosumers shall not exceed the requested connected and/or contracted capacity of the customer.

Until the regulatory framework on setting the tariffs for access to the distribution grid is revised to account for the new reality of a system with significant penetration of self-consumption, electric utilities should be allowed to set overall capacity limits in the system. This will ensure a smooth transition for the operation and viability of the networks. These overall capacity limits should be revised and set annually.

Energy Efficiency Policy

Given the high costs for electricity throughout the Caribbean, energy conservation is a key success factor to improve energy affordability in the region. Despite the well-recognized potential for, and ongoing activities to promote energy efficiency, progress in deployment has been slow thus far. Customers typically are aware of financial benefits from energy conservation but do not possess the financial capacity and the required knowledge to select, invest and implement comprehensive EE measures on the demand side. This results in a high financial burden from energy consumption on customers, leading to a comparatively high share of unpaid bills that can affect the financial stability of electric utilities as well.

Natural disasters and global pandemic crises additionally amplify such impacts. During the global pandemic crisis around COVID-19, decreased energy demand on the commercial side and increased energy demand of the residential sector due to social distancing measures such as working from home, were already observed. Furthermore, the lockdown of the tourism industry has led not only to a significant decrease in energy demand of commercial customers, but also to reduced income and liquidity of businesses, citizens and residential customers.

This has resulted in exposing vulnerable utilities, already operating on small profit margins, to an extended financial burden and additional technical challenges. Against this background it is essential to

I. improve the awareness and the knowledge of customers on the financial and environmental benefits and the technical requirements for the implementation of energy efficiency measures, accompanied by financial programs to provide the respective capital, and

II. to prepare the regulatory pathway for electric utilities to provide innovative energy services that reduce energy costs for customers and offer new business activities for the utilities.

Such innovative energy services would diversify the utility's business model by providing new revenues from service charges for the implementation of energy efficiency measures on the demand side, while at the same time delivering savings to customers.

For electric utilities to offer these types of services in a cost-efficient manner, the following adjustments of regulatory and implementing frameworks may need to be considered :

- Tariff setting: Tariff methodologies approved by the Regulatory Commissions should include respective provisions for services and other charges related to the financing and implementation of energy efficiency measures and energy efficient equipment on the demand side.

- Updated mandate and role of electric utilities: Applicable frameworks should include the possibility for electric utilities to engage in other commercial activities besides electricity supply. This includes the financing and implementation of energy efficiency measures and energy efficient equipment on the demand side.

- Defined processes: Given the need for scale-effects to be able to provide financial savings to customers and at the same time feasible revenues to the utilities, process standardization of business implementation is a key success factor. This includes the definition of procedures for application, selection, purchase, installation and operation of energy efficiency measures and energy efficient equipment as well as provisions related to the ownership and to the right for the service provider to access the demand side. Electric utilities are willing to contribute to the development of standardized processes for innovative energy services. However, where applicable and required, regulatory frameworks should include respective provisions and stipulations.

- Standardization and Labelling of equipment: To ensure the quality of the installed equipment and the desired reduction of energy consumption, a respective framework should be in place that only allows the installation of certified and labelled equipment with proven energy performance within the scope of the offered energy service.

- Access to capital: Given the need for up-front capital to purchase the equipment to be installed as part of the energy service, electric utilities should have access to capital that allows long-term financing of such equipment under moderate conditions. Regional and national loan programs should therefore be established that allow reduced bureaucratic transactions in line with the developed frameworks for new energy services.

In this regard, CARILEC and its member utilities welcome the ongoing efforts and activities of the CARICOM Secretariat and the Caribbean Development Bank (CDB) to test and introduce the Integrated Utility Service Model[17] (IUS-Model) to the Caribbean region. In the IUS model, the utility would deliver integrated packages of energy efficiency and renewable energy to customers using on-bill repayment and delivered savings from day one. CARILEC and its member utilities offer their support, expertise and technical input for the further market development and expansion of the IUS-Model throughout the region.

17 https://energy.caricom.org/portfolio-items/ius/

4. REGULATORY PRINCIPLES

Best Practice Regulation

There has already been significant experience with the regulation of power sectors in numerous countries in the world. Different studies have been performed on regulatory effectiveness and these form a good starting point in developing regulatory principles for regulators in the Caribbean. Based on the international experience, several main principles can be identified that characterize best practice regulatory behaviour:[18]

1. Independence
2. Communication
3. Consultation
4. Consistency
5. Predictability
6. Flexibility
7. Effectiveness
8. Efficiency
9. Accountability
10. Transparency

The above principles are closely related to each other and some of them will tend to conflict with each other. Good regulatory performance implies a proper degree of balancing between the different principles.
Independence

Regulatory independence is the most important, as well as the most challenging regulatory principle that should be considered in the Caribbean region. Regulatory decisions must be free from undue political or other influences that could compromise regulatory outcomes. The principle of independence is a necessary element in providing stakeholders with confidence in the regulatory system and is linked to achieving the principles of consistency and predictability. Independence also has implications for accountability and facilitates transparency in processes. A confident, independent regulator will not seek to hide the processes used to reach decisions. Independence, when openly exercised, builds trust and confidence in the regulator.

Communication

Effective communication assists all stakeholders to understand regulatory initiatives and needs. Effective communication is both educative and informative and can help to build commitment to regulatory initiatives through better understanding of the regulatory objectives and rationales. Regulators should always provide an explanation to enable stakeholders to understand the background and rationale for a decision. The aim is to assist participants to understand specific issues and inform them of policy objectives and requirements. In addressing the principle of communication, regulators should assure that communication is relevant, comprehensive, accessible, timely, and inclusive.

Consultation

Effective and early consultation between regulators, customers and utilities is an essential component for ensuring appropriate regulatory systems are established. Consultation assists regulators to understand the implications of their regulations on industry participants and enables stakeholders to discuss the impact of

18 The principles discussed here are primarily based on: ACCC (1999), Best practice utility regulation, Utility Regulators Forum, Australia.

regulation and suggest alternatives and improvements. Proper consultation engenders trust and helps to avoid an adversarial relationship in which the exchange of information is restricted.

Consistency

Consistency of treatment of participants across service sectors, over time and across jurisdictions, is a key principle for providing confidence in the regulatory regime. This principle is linked to the provision of consistent and fair rules that do not adversely affect the business performance of a specific participant.

Predictability

The principle of predictability of regulation is an essential requirement for utilities to be able to confidently plan and be assured that their investments will not be generally threatened by unexpected changes in the regulatory environment. The principle is particularly important in the utility sector, which is characterized by major infrastructure works with long investment time horizons. Regulators need to appreciate the long-term nature of assets and related investment decisions in the utility sector. The implementation schedule of regulations that will affect the cost or price structure of utilities must therefore be considered.

Flexibility

Flexibility involves the use of a mix of regulatory tools and the ability to evolve and amend the regulatory approach over time as the external environment changes. For example, CARILEC member utilities may want to develop Smart Grid implementation for the sake of more efficient use of the grid, two-way communication with customers, optimal integration of small- and large-scale renewables, improved performance, and other objectives. The regulatory framework will need to be able to accommodate such technological innovations.

Capacity

There needs to be a stock of technical knowledge within the regulatory body to ensure that informed decisions can be made. Regulatory authorities should therefore invest in attracting, training and keeping good staff. Given the small scale in the Caribbean it may therefore be preferable to consider regulatory bodies covering multiple services (electricity, water, telecom, etc.) as well as different countries (such as being initiated in the OECS).

Effectiveness

Best practice regulation should include an assessment of the effectiveness of the proposed regulation. Regulatory bodies must have access to information that relates to the operations of the utility. It is important that the information required should be limited to that required for them to carry out their functions. There needs to be a balance between the disclosure of information required for regulation and the resources put in by the utility in making this information available to the regulator. Suitable measurements should be established to allow independent assessments to evaluate the costs and benefits by the regulatory body.

Accountability

Accountability involves regulators taking responsibility for their regulatory actions. This requires regulators to establish clearly defined decision-making processes and provide reasons for decisions. Supporting the decision-making processes should be effective appeal mechanisms and adherence to principles of natural justice and procedural fairness.

Transparency

Transparency requires regulators to be open with stakeholders about their objectives, processes, data and decisions. Regulators should establish visible decision-making processes that are fair to all parties and provide rationales for decisions. Such openness can assist in gaining stakeholders' confidence and acceptance of the regulator's decisions.

There are circumstances in which it is impossible to provide information by reason of its confidentiality. The rules about treatment of information, including rules about what information will be regarded as confidential, or to which access will be restricted for any reason, should be identified early in the decision-making process and explained to stakeholders.

5. CARILEC'S POSITION ON REGULATION IN THE CARIBBEAN

This Position Paper sets out the views of CARILEC's member utilities on the issue of regulatory reform in the Caribbean and in particular in the context of the minimization of barriers and the establishment of incentives for renewable energy technologies (RETs) and energy efficiency measures.

In the ongoing discussion about regulation and energy transition in the Caribbean power sector, CARILEC wishes to express its view through the following position statements:

1. CARILEC welcomes and supports regulation in the Caribbean and believes that it will play a crucial role in further shaping and developing the power sectors in the region. To assure that regulation is effective, the design of the regulatory framework needs to properly incorporate he specific characteristics and realities of the Caribbean region. This includes the limited economies of scale related to energy infrastructure, its specific exposure to natural hazards and disasters and the isolation and lack of interconnection of power markets.

2. A stable, competent, and independent regulatory framework is important to assure a financially healthy sector in which investments into a clean energy transition can be undertaken to enhance energy affordability, security of supply and thus sustain economic development of the Caribbean countries.

3. Incentives relating to tariff setting and quality standards should be fair and symmetric. Utilities should not only be punished for low performance but should also be rewarded in case of good performance.

4. The electric utility should be actively involved in the planning process of the power system upporting governmental institutions and regulatory authorities in the definition and set-up of respective policies and expansion strategies. Support could encompass the provision of information and recommendations on existing network capacities, power plants as well as the identification and tendering of new capacities, including those based on renewable technologies. However, the provision of specific data should be subject to confidentiality, where required. Open communications and discussions between policy decision-makers and all stakeholders, such as electric utilities should ensure the consideration of relevant opinions in the planning procedures for energy transition.

5. Where competition is introduced in electricity generation, the Single Buyer Model can be considered as the most suitable option to enable energy transition in comparatively small power markets as is the case in most Caribbean countries. This applies to additions of both conventional and large-scale renewable capacity. The utility should also be in the position to bid for new capacity, in instances where it has not been involved in the prior bid preparation.

6. The expansion of renewable technologies, especially those with a fluctuating electricity generation such as large-scale solar and wind energy, should be accompanied by respective support measures and regulations. Support measures include, among others, reliable generation forecast mechanisms, allocation of balancing responsibilities and im-balancing costs, improved grid infrastructure, installation of storage capacities and increased requirements on grid management, resiliency, flexible generation and dispatch. These measures

should be supported through respective regulations. Increased costs for the implementation and operation of such measures are to be considered and accordingly allocated when setting respective tariffs for electricity consumption and injection into the power network.

7. Governments, with the help of the utility, should actively promote the use of renewable technologies. Where applicable and required, Governments may need to provide cost-efficient incentives, financed by taxes or levies and without affecting the utility financially. Regulatory authorities will be required to accordingly develop and adopt rules and regulation for the setting, allocation and financing of such incentives. Where incentives are to be financed by separate levies or charges on electricity prices, energy affordability and thus the society`s acceptance and willingness to support energy transition should be considered. To ensure cost-efficient support allocation for RE expansion, competitive bidding procedures (RE auctions) should be introduced awarding the support to the bidders with the lowest price for future electricity sale.

8. For small-scale renewable energy, regulation should be in place that allows customers to use and interconnect these systems to the main grid accounting for technical conditions. Households, citizens, and enterprises should be able to generate part of their electricity needs from their own small scale RE based power plant while using the distribution grid to inject excess production and to withdraw electricity when self-production is not sufficient to meet their own needs. The compensation for injected electricity should not exceed the avoided costs per kWh – typically the energy component of the retail price without levies, taxes and additional charges on grid use and measurement. A viable grid services fee should be allocated that reflects the utility cost of providing grid services to such customers. Tariff regulation will need to properly reflect this requirement, i.e. through the introduction of a net billing mechanism.

9. Regulatory frameworks should allow electric utilities to offer innovative energy services to its customers that include the financing and implementation of energy efficiency measures on the demand side. Such frameworks should consider respective provisions related to the commercial mandate of utilities and network licensees, standardization and labelling of equipment, respective tariff methodologies and, if required, access to capital. This will help to lift the potential for decarbonization through energy conservation while at the same time allowing energy utilities to diversify their business models, becoming more resilient to changes in the electricity demand and to economic crises.

10. Regulation in the Caribbean should be in line with the principles of best-practice regulation namely independence, communication, consultation, consistency, predictability, flexibility, capacity, effectiveness, accountability, and transparency.

11. CARILEC and its member utilities will continue to play a constructive role as subject matter experts in advancing the regulatory landscape in the Caribbean in order to move towards an effective regulatory framework for the Caribbean power sector.

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