Guidelines for the Approval of Renewable Energy Self-Generation Projects

Small Commercial and Government

Consultation Document

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1 Introduction

The Utilities Regulation and Competition Authority (URCA), pursuant to Part V of the Electricity Act, 2015 (EA), is empowered to provide guidelines for the approval of Renewable Energy Self-Generation (RESG) projects. In so doing, URCA must have due regard to the Government's National Energy Policy (NEP) and Electricity Sector Policy (ESP) objectives, whilst ensuring that the rules and established processes are consistent with applicable legislation. The legal framework for the EA places upon URCA the responsibility to take such action as it may deem necessary to ensure the availability, security and reliability of Renewable Energy (RE) consistent with the NEP.

This document sets out for consultation with interested stakeholders proposed Guidelines for the approval by URCA of RESG projects advanced by the Government and small-scale business or commercial enterprises, as provided for in s 28 of the EA.

These Guidelines may be amended by URCA as Government policy and the underlying technological environment, and operating conditions change from time to time.

1.1 Objectives of this Consultation

The objectives of this Consultation are to -

- discuss proposed key requirements for RESG projects;
- discuss URCA's proposed Guidelines for approval of RESG projects; and
- invite comments from interested stakeholders on URCA's proposals.

The main goal and objective of the ESP is the supply of safe, least-cost, reliable and environmentally sustainable electricity throughout The Bahamas[1]. The primary role of URCA is the regulation of the Electricity Sector (ES) in accordance with the goals, policy objectives and principles underpinning the NEP and ESP, of which the incorporation of RE sources in the electricity generation mix in The Bahamas is a key objective. URCA is proposing in this document to address the installation and/or operation of generating stations using prescribed RE resources where, as envisaged by section 28 of the EA –

[1] As established under section 6(1) of the EA.

(a) RESG projects are advanced by –

(i) the Government, in any place in The Bahamas, in relation to the supply of energy to premises occupied by a ministry department, statutory body, agency, local government council, or other entity of Government;

(ii) a small-scale business or commercial enterprise within The Bahamas;

(b) such stations meet the requirements of, and are operated in accordance with regulatory or other measures issued by URCA; and

(c) such stations have no adverse impact on the reliability of the electricity supply system.

1.2 How to respond

URCA invites and welcomes comments from licensees, members of the public and interested parties on the matter set out in this consultation document. Such comments must be received by URCA within thirty (30) calendar days from the publication of this consultation document.

The deadline for receiving written comments is 5:00 pm on 28 October 2019.

Such written submissions and comments should be submitted to URCA either:

(i) By hand to: the Director of Utilities and Energy, Utilities Regulation and Competition Authority, Frederick House, Frederick Street, Nassau, Bahamas;

(ii) By email to: info@urcabahamas.bs;

(iii) By mail to: P.O. Box N-4860, Nassau, Bahamas; or

(iv) By facsimile to: (242) 393-0237.

After the period of representation closes, URCA will carefully consider such representations made and shall publish its final decision on the proposed Guidelines.

1.3 Structure of the Remainder of this Document

The remainder of this document is structured in the following way:

Section 2: provides the background to this consultation document;

Section 3: sets out the Regulatory Framework for RE Resources;

Section 4: sets out the proposed Guidelines for URCA's approval of RESG systems;

Section 5: sets out the next steps as it relates to approval of RESG;

Appendix A: contains the Schedules associated with these proposed Guidelines; and

Appendix B: contains the Draft Contract and Standard Conditions for Grid-tied RESG.

2 Background to this Consultation Document

In this section URCA sets out the background and overarching framework within which URCA is seeking to issue the proposed Guidelines.

Part V of the EA (sections 25 through 28) contains the provisions through which the legislative framework seeks to promote the installation and use of RE in The Bahamas, and outlines conditions for the liberalization of the Electricity Sector.

Sections 25 and 26 address the introduction of RE by Public Electricity Suppliers (PES) in The Bahamas. Section 25 outlines the need for PESs to, in the exercise and performance of their obligation to provide electricity to the public in The Bahamas, have regard to the NEP and ESP goals of increasing the proportion of RE in the generation mix. Building upon that section 25 requirement, section 26 seeks to ensure that RE systems are considered whenever a PES seeks to procure generation resources, and provides for regulated procedures for procurement of any utility scale renewable electricity generation that PESs seek to introduce into their electricity supply systems.

Section 27 provides for the introduction of RE through projects installed or operated for residential use and connected to the grid, allowing home owners to produce electricity using renewable sources and to sell any excess electricity produced to the PES. Section 27 allows for a utility run scheme, whereby interested persons apply directly to the PES for approval to install residential RE systems.

Section 28 of the EA completes the structure set out in Part V, by making provision for RESG projects advanced by the Government or small-scale business or commercial enterprises, as follows:

(1) URCA shall approve in writing the installation or operation of generating stations using prescribed renewable energy resources where—

(a) renewable energy self-generation projects are advanced by—

i. the Government, in any place in The Bahamas, in relation to the supply of energy to premises occupied by a ministry, department, statutory body, agency, local government council, or other entity of Government;

ii. a small-scale business or commercial enterprise with The Bahamas

(b) such stations meet the requirements of, and are operated in accordance with regulatory or other measures issued by URCA; and

(c) such stations have no adverse impact on the reliability of the electricity supply system.

(2) URCA shall maintain and publish, in accordance with section 43, a list of the names of the entities granted approval under this section together with the corresponding sizes and aggregate kilowatts of the installed generation stations.

The Small Scale Renewable Generation (SSRG)[2] program established by URCA in 2017 enabled participation by residential and limited small-business customers in RE generation, in furtherance of the provisions of section 27 and partial furtherance of section 28 of the EA. The SSRG Plan is in operation through a Net Billing arrangement between BPL and qualified customer. URCA is now monitoring the progress in terms of capacity uptake and the regulatory guidelines.

Through this document, URCA now proposes guidelines for the approval and encouragement of RESG projects advanced by the Government, and for the expansion of the RESG projects that may be advanced by small-scale business or commercial enterprises in The Bahamas.

[2]https://www.urcabahamas.bs/wp-content/uploads/2018/06/SOR-and-FD_Bahamas-Power-And-Light-Limited%E2%80%99s-Small-Scale-Renewable-Generation-Plan-.pdf

3 Regulatory Framework

As noted previously, the ES is governed by the EA which provides the legal framework for URCA's regulation of the sector. URCA's role is to implement, monitor and enforce this legislation.

Section 6 of the EA sets out the ESP objectives, as follows:

(1) The main goal and objective of the electricity sector policy shall be the creation of a regime for the supply of safe, least cost, reliable and environmentally sustainable electricity throughout The Bahamas.

(2) The principles and objectives governing the sector policy and electricity supply regime, in accordance with the aims and goals of the National Energy Policy, shall be the –

(a) provision of safe, least cost electricity supplies to all consumers;

(c) enhancement of the energy security of The Bahamas;

(e) introduction of a structure for the sector that is overseen by an independent regulator;

(f) employment of practices and technology that are designed to protect the natural environment of The Bahamas;

(g) promotion of energy efficiency in the generation, distribution, and consumption of electricity throughout the economy;

(h) promotion of the use of renewable energy;

(i) promotion of private investment and innovation in the electricity sector;

(j) creation of incentives for the private sector participants in the electricity sector to continuously improve performance in operations and customer service;

(k) provision of investment and job opportunities for citizens of The Bahamas; and

(l) provision of a regulatory structure that balances the interests of and affords opportunities for input from all stakeholders, honours contractual commitments and encourages investment.

Section 7 provides for URCA to issue regulatory processes that are fair, objective, non-discriminatory, transparent, and that seek to implement the NEP and ESP.

Pursuant to section 9, BPL may enter into contracts with consumers in the Island of New Providence and designated Family Islands for the supply and purchase of electricity on terms and conditions approved by URCA. It allows for BPL to support the Government's NEP, including promoting and facilitating the development and use of renewable electricity generation resources and technology.

Section 28 describes the legal framework for renewable energy projects advanced by the Government and small-scale business or commercial enterprises, as follows:

(1) URCA shall approve in writing the installation or operation of generating stations using prescribed renewable energy resources where—

(a) renewable energy self-generation projects are advanced by—

i. the Government, in any place in The Bahamas, in relation to the supply of energy to premises occupied by a ministry, department, statutory body, agency, local government council, or other entity of Government;

ii. a small-scale business or commercial enterprise with The Bahamas

(b) such stations meet the requirements of, and are operated in accordance with regulatory or other measures issued by URCA; and

(c) such stations have no adverse impact on the reliability of the electricity supply system.

(2) URCA shall maintain and publish, in accordance with section 43, a list of the names of the entities granted approval under this section together with the corresponding sizes and aggregate kilowatts of the installed generation stations.

Under section 41 of the EA, URCA has a duty to consult with the public on matters which, in the determination of URCA, are of public significance.

4 Renewable Energy Self Generation Guidelines

In this section URCA proposes a more detailed definition for the term "Renewable Energy Self-Generation" or "RESG", and reviews the legal, economic, technical and policy considerations relevant to the integration of this category into the generation mix in the Bahamas.

4.1 Definition of RESG

URCA proposes the following definition of a RESG project:

"A Renewable Energy Self-Generation (RESG) project is a system for the generation of electricity which:

i. Is installed for the use of [and owned by] the Government or a small-scale business or commercial enterprise, which is itself a consumer of electricity;

ii. Generates electricity using renewable electricity resources[3] [only]; and,

iii. Is designed to produce electricity solely or primarily for the use of its owner."

The term RESG will therefore refer to active energy consumers who install RE systems that are designed to generate electricity solely or primarily for their own use. For URCA's purposes, and to avoid confusion, the term RESG shall be used solely to describe systems approved under these proposed Guidelines in accordance with section 28 of the EA. For the avoidance of doubt, a RESG project shall not include an SSRG installation[4].

RESG systems may be grid-tied or completely off-grid.

Grid-tied RESG is a semi-autonomous electrical generation system which links to the mains to feed capacity and/or energy back to the grid. URCA envisages that grid-tied RESG will allow Government and small-scale business or commercial enterprises to install RE systems to generate energy for their own use, whilst at the same time be connected to the grid to ensure reliable and economical supply of energy to carry on their

[3] "renewable electricity resources" means generation resources that derive electricity from sources that are naturally replenished and includes, but are not limited to, solar energy, wind, hydro-power, geothermal, biomass, wave power, ocean thermal power and waste-energy technologies;

[4]https://www.urcabahamas.bs/wp-content/uploads/2018/06/SOR-and-FD_Bahamas-Power-And-Light-Limited%E2%80%99s-Small-Scale-Renewable-Generation-Plan-.pdf

businesses and day to day activities. All generation exported to BPL's grid is proposed to be converted into "generation credits" which shall be applied to the accounts of the relevant customer. For the avoidance of doubt the small-scale businesses and commercial enterprises with system capacity less than 100 kW are excluded as these systems are already being addressed under the SSRG[5] framework.

Off-grid RESG is a system designed to help RE electricity consumers/customers function without the support of remote infrastructure, such as an electrical grid. Off-grid RESG can be stand-alone power systems or micro-grids providing a smaller community with electricity.

Off-grid RESG encompass all RESG advanced by Government and small-scale business or commercial enterprises within The Bahamas. This includes all systems of capacity up to 1000kW. For the avoidance of doubt and for the purpose of these guidelines this includes all small-scale business and commercial enterprises that choose not to be connected to the grid but have system sizes that are less than 100kW.

URCA notes that RESG projects are an integral step towards a more distributed generation approach, which URCA considers has significant benefits for a country with the social, economic and geographic characteristics of The Bahamas.

4.2 Proposed RESG Compensation Mechanism

4.2.1 General Economic Considerations

While section 28 places the approval of off-grid RESG systems entirely within URCA's jurisdiction, URCA also proposes to permit the installation of grid-tied RESG systems. In proposing approval of grid-tied RESG systems, URCA must also consider and determine the compensation mechanism that will be applied to the electricity which the RESG customer delivers to the grid for use by the PES in its Transmission, Distribution and Supply activities.

In designing a RESG compensation mechanism, URCA has to address two important questions[6]:

[5]https://www.urcabahamas.bs/wp-content/uploads/2018/06/SOR-and-FD_Bahamas-Power-And-Light-Limited%E2%80%99s-Small-Scale-Renewable-Generation-Plan-.pdf

[6] Source: NREL: Grid-Connected Distributed Generation: Compensation Mechanism Basics

- what is the value proposition of RESG to the utility and ratepayers, and how does it change over time? and

- is the average level of RESG compensation greater than, equal to, or less than the value of RESG to the utility?

Installing a Grid-tied RESG system can have financial implications for the Public Electricity Supplier Licensees (PESL) and its other customers, in addition to the RESG system owner. PESLs can experience lost electricity sales under metering and billing arrangements that allow Grid-tied RESG system owners to self-consume electricity prior to export (i.e., net energy metering and net billing).

Self-consumption allows Grid-tied RESG system owners to reduce or eliminate the variable charge portion of their electricity bills (that is, the energy, ¢/kWh charge). In the specific case of PES' in The Bahamas, this may lead to an under-recovery of the PES' fixed costs because PES' in The Bahamas operate an entirely variable rate structure which seeks to recover the costs incurred for maintaining the network from the volumetric energy charge component of the electricity tariff.

Grid-tied RESG systems may also lead to an increase or decrease in grid infrastructure investment required by the PES. If additional investment is warranted, the PES may be allowed to pass these costs on to customers through rate increases. If investments can be deferred or avoided, rates may decrease. The net effect of Grid-tied RESG on non-participating customers therefore depends on the entire set of costs and benefits caused by Grid-tied RESG. If the net effect of Grid-tied RESG is determined to be a cost, then non-participating customers may experience an increase in their bills.

This outcome is sometimes called cross-subsidization or cost shifting because Grid-tied RESG adoption sometimes shifts costs onto non-participating customers. A well-designed compensation mechanism mitigates negative effects, reinforces positive effects, and supports the full and fair value of Grid-tied RESG to the vertically integrated PES, Grid-tied RESG system owners, and non-participating customers.

4.2.2 Considerations for RESG tied to BPL Grid

URCA must, where it proposes a regulatory initiative, consider the economic impact such an initiative may have on the viability of the business of regulated entities. In that context URCA is aware of legitimate concerns of BPL as to the potential impact on financial performance of economically significant existing

consumers reducing their demand on or consumption from BPL, particularly where BPL is required to continue making power available to those consumers.

Conversely, URCA notes that BPL would be able to capitalize on the fuel cost avoided as a result of the RE generation by the consumer, thereby reducing its Generation expense. Having regard to these competing dynamics, URCA is proposing to the extent possible and reasonable, that the regulatory provisions for the introduction of RESG systems, safeguard the tariff in respect of the Transmission, Distribution and Supply costs, while allowing the Grid-tied RESG system owner to obtain reasonable credit for Generation costs avoided by BPL by virtue of the RESG system use.

4.2.3 Compensation Mechanism

URCA is of the view that the appropriate compensation mechanism can help minimize the negative impacts and maximize the value of RE generation to all stakeholders groups, including RESG system owners and other non-RE-system owners. URCA has reviewed and assessed the different compensation mechanisms that have been tested in different countries' contexts and the lessons learnt are used as a basis for the proposals outlined herein.

There are essentially three types of metering & billing arrangements as it relates to renewable energy distributed generation: net energy metering; buy all, sell all; and net billing. Distinctions among the three mechanisms are highlighted in Tables 1, 2, 3 and 4

Table 1. Basic elements of three different metering and billing arrangements

Net Energy Metering	Buy all, sell all	Net billing
• DG system owners can self-consume electricity generated by their system • Excess electricity is exported to the grid and the customer receives kilowatt hour (kWh)	• DG system owners *cannot* self-consume electricity; all DG-generated electricity goes directly onto the grid; a customer uses electricity exclusively from the grid and pays the retail rate.	• DG system owners can self-consume electricity generated by their system, like in NEM. • Excess electricity is exported to the grid and the customer receives a predetermined sell rate credit (may be distinct

Net Energy Metering	Buy all, sell all	Net billing
credits valued at the retail rate. • kWh credits can be applied within the billing cycles (when there is less DG production). • Customer is billed for net energy consumption. • Bidirectional meter or two unidirectional meters required.	• DG system owners receive a predetermined sell rate for the electricity their systems generate. • Two meters are required – one consumption meter, one DG production meter.	from the retail rate) at the moment energy is injected to the grid. • Customers *cannot* bank kWh to use as credit for future billing cycles. • A single smart meter or two separate meters required.

Table 2. Benefits and Challenges of Net Energy Metering, NEM[7]

Benefits	Challenges
• NEM is a relatively simple mechanism for both RESG system owners and utilities to understand and implement. • NEM does not require significant regulatory changes; it can easily be	• NEM is often considered an imprecise instrument for compensating excess generation because the retail rate may not reflect the value of the RESG electricity to the utility. • Because it requires self-consumption of electricity prior to export, NEM leads to reduced utility sales.

[7] Source: https://www.nrel.gov/state-local-tribal/blog/posts/back-to-basics-unraveling-how-distributed-generation-is-compensated-and-why-its-important.html

Benefits	Challenges
incorporated on top of existing retail electricity rates. • NEM can often use existing metering infrastructure, so it does not typically require the purchase of an additional meter	• The PESL may suffer loss of revenue if the retail rate paid to RESG owners for excess generation is higher than the actual RESG value. • Non-RESG-system owners may experience retail rate increases if RESG deployment increases utility costs and/or reduces utility electricity sales.

Table 3. Benefits and Challenges of Buy-All, Sell-All Mechanisms[8]

Benefits	Challenges
• Buy-all, sell-all mechanisms provide simple and predictable value propositions to both RESG system owners and utilities over an agreed-upon contract length. • Because buy-all, sell-all mechanisms do not change customer electricity consumption patterns, there is less of an incentive for PESL to attempt to recover costs through additional fixed charges. Cross-subsidization issues are also minimized for this reason.	• If the value of DG is not well understood, buy-all, sell-all mechanisms can potentially over- or undercompensate DG system owners, potentially leading to cost-shifting if buy-all, sell-all program costs are fully passed through to the consumer. • If a buy-all, sell-all mechanism rate is lower than the retail rate (a very common practice), customers may be incentivized to illegally wire their RESG system to self-consume electricity instead of exporting it all to the utility grid, potentially leading to traditional revenue sufficiency and cross-subsidization issues.

[8] Source: https://www.nrel.gov/state-local-tribal/blog/posts/back-to-basics-unraveling-how-distributed-generation-is-compensated-and-why-its-important.html

Benefits	Challenges
• Buy-all, sell-all mechanisms do not require retail rate redesign. • Buy-all, sell-all prices can be adjusted throughout the lifetime of a program for new customers to steer the market toward the desired level of RESG deployment.	

Table 4. Benefits and Challenges of Net Billing[9]

Benefits	Challenges
• Net billing allows for a more precise approach to compensating electricity being injected into the grid relative to NEM because the sell rate for exported electricity can be set to match the value of that electricity to the utility. URCA's estimate is the avoided cost of monthly fuel used for the PESL generation.	• Because net billing requires self-consumption of electricity prior to export, it can lead to lost utility sales. • PESL may suffer loss of revenue if the net export rate paid to RESG system owners for excess generation is higher than the actual RESG value.

[9] Source: https://www.nrel.gov/state-local-tribal/blog/posts/back-to-basics-unraveling-how-distributed-generation-is-compensated-and-why-its-important.html

Benefits	Challenges
• Net billing can encourage self-consumption (particularly by setting sell rates as less than retail rates), if desired by regulators and policymakers.	

4.2.4 Buy-All, Sell-All

Having regard to the foregoing, URCA proposes the following compensation principles for customers who have installed RESG systems which are tied to the BPL electricity grid:

- the customer would be required to pay for all electricity used by the customer (whether self-generated or BPL generated) pursuant to the current billing arrangements; and

- BPL would be required to credit the customer's monthly bills for all electricity produced by the customer's RE system at the applicable monthly fuel charge per kWh during the period when the electricity was produced.

This compensation approach is called **Buy-All, Sell-All**. A buy-all, sell-all arrangement offers a standard sell rate to a Grid-tied RESG owner for all the electricity generated by the owner. The Buy-all, Sell-All compensation method commonly offers a fixed long-term contract price for energy exports.

Buy-all, sell-all customers do not physically consume the electricity their Grid-tied RESG systems produce. A buy-all, sell-all customer continues to be billed for all the electricity they consume at the applicable retail rate, independent of electricity generated by their Grid-tied RESG system. The Grid-tied RESG system exports all electricity directly to the grid, and the system owner is compensated at a dynamic (non-fixed) sell rate, either through utility bill credits or in cash. Buy-all, sell-all arrangements provide benefits to various stakeholders but also pose challenges, as outlined in Table 2 below.

4.2.5 Buy-All, Sell-All Invoicing

Consistent with URCA's position on pricing stated in the preceding sections, URCA reiterates that by the nature of these renewable installations, a **Buy-All, Sell-All** arrangement is proposed where two meters are

typically employed. In a typical buy-all, sell-all arrangement the normal electric bill does not change. Buy-all, sell-all means that RESG customers will buy all of the power that they use from BPL as usual and all of the power that these RE customer's solar panels or wind turbines produce will be sold back to BPL. The RESG customers will be invoiced with an **avoided cost** credit. This **avoided cost credit** is proposed as the **applicable monthly fuel rate charge per kWh** during the period when the electricity was produced.

URCA notes that the fuel charge may not be adequate to actually compensate the RESG customer for all of the avoided costs, as BPL will likely realise additional savings in its Transmission, Distribution and Supply costs, which URCA has not yet been able to quantify. URCA proposes to conduct a full review of the avoided costs to determine a more appropriate avoided cost which should be paid to owners of RE generation systems.

URCA is also mindful that the buy-all, sell-all approach to compensation is premised upon the tariff structure currently operated by BPL (and other PES' in The Bahamas) within which the entire tariff is charged at a variable consumption based rate, which results in all costs (including fixed system costs) are recovered from the variable charge. URCA notes that in the event that BPL or other PES in The Bahamas changes its tariff structure to recover fixed costs separately from variable costs, the buy-all sell-all approach may no longer be appropriate.

4.2.6 Net Excess Generation

URCA notes that section 28 of the EA clearly contemplates that the RESG systems should be for the purpose of self-generation, as opposed to production of electricity for sale to the PES (as in the case of an IPP). Accordingly, URCA considers it appropriate to implement pricing and credit mechanisms which would not incentivize customers to install systems which significantly exceed their own consumption. URCA considers that the buy-all, sell-all approach will partially achieve this objective. In addition, URCA proposes that to the extent that a RESG customer's nettable[10] energy exceeds their kilowatt-hour (kWh) consumption during the billing period, excess nettable energy may be carried forward to the next billing period, for up to 12 months, at which time any remaining net excess generation above 1.5 times the customers consumption is granted to the utility with no compensation for the customer. This URCA believes will further incentivize RESG

[10] **Nettable energy** is now the entire amount of energy generated by the facility, including the amount consumed by a customer "behind-the-meter"

projects to be sized to meet their self-consumption needs whilst at the same time allow room for growth in the customer's consumption and or variances in climate.

Table 5. Buy-All, Sell-All Summary

Buy-All, Sell-All	
Is self-consumption allowed	No
Netting frequency	Consumption and production are not physically netted, so netting frequency is not an applicable design element to consider. However, these quantities are financially netted (typically at distinct values) on customer bills.
Are kilowatt-hours banked within billing periods?	No
Can kWh credits or monetary credits be carried over between billing periods?	Kilowatt-hour credits are not granted under a buy-all, sell-all scheme. If a utility bill credit is granted, it can likely be carried over, depending on the specific crediting terms.
What quantities are being measured and billed/ credited?	1) Gross consumption over the billing cycle is measured. There is no difference in consumption measured and billed between pre-and post-grid-tied self-generation system ownership. 2) Gross Grid-tied self-generation system production over the billing cycle is measured.
Do credits expire?	If a utility credit for exported Grid-tied RESG system is granted rather than a direct cash payment, it may or may not expire based on the specific crediting terms.

How much is Grid-tied RESG system production worth to the customer?	The kilowatt-hours generated by the grid-tied RESG system are compensated at a predetermined sell rate (**avoided cost of fuel**[11])

Question 1: Please provide comments and views on the Buy-All, Sell-All approach proposed by URCA. In particular:

- **Do you agree with URCA's proposal to set a Sell-All feed-in tariff based on the utility's avoided cost of fuel used for generation?**

  Please provide reasons and explanations for your response.

4.3 Proposed RESG System Limit

URCA considers that there may also be concerns related to intermittency and variability of RE generation technologies most likely to be implemented in The Bahamas (primarily solar PV generation) particularly because the RE generation introduced may not be consistent with BPL's peak load curve. URCA acknowledges that these matters may present technical challenges for BPL, however URCA considers that the benefits derived from the integration of RE generation far outweigh any negative concerns. At a high level, perhaps the most significant umbrella benefits are the reduction in the utility's overall operation burden which will result from the implementation of independently operated and maintained distributed capacity, and the positive impact of environmentally friendly generation on climate change issues. At a more granular level, URCA has further reviewed the technical issues and makes the following observations:

- Capacity: At present 10 MW of production is allotted to the SSRG programme in New Providence, which, albeit significantly undersubscribed, represents approximately 4% of BPL's daily maximum demand. URCA considers that at least a further 20 MW can be initially allocated for RE generation by consumers, which would represent a total allotment of 12.5% of BPL's current daily maximum demand if fully subscribed. Research from more mature RE markets with

[11] "**Avoided Cost of Fuel**" is essentially the marginal **cost** of fuel used for a PESL to produce one more unit of power. Because facilities like RESG can reduce the PESL's need to produce this additional power themselves, the **price** PESL will pay for qualifying facilities like RESG generated energy has been set to the **avoided cost of fuel**.

similar characteristics (e.g., Barbados) indicates that this percentage has not posed any system stability issues and can be accommodated within conventional spinning reserve limits. URCA submits that suitable capacity limits can be determined for other networks (i.e., individual Family Island grids) within the utility's territory.

- Zero Emissions: The environmental and sustainability benefits from harnessing energy from renewable sources are well established and speak for themselves. However, the avoided emissions and production byproducts of conventional fossil fuel generation would demonstrate the utility's commitment to environmental stewardship and reduce its carbon footprint and outputs from other inherent waste streams. URCA also notes that this would afford the utility additional "breathing space" within which to implement necessary improvements in its own electricity generation, transmission, distribution and supply (GTDS) operations moving forward, adding to the indirect benefits.

- Distributed Generation: The technical merits of distributed generation, such as reduced transmission and distribution losses as a result of the presence of generation in close proximity to load sources, is yet another potential benefit of introduction of controlled RE generation in the short term. URCA considers that a properly structured distributed generation initiative can also provide additional security of supply for those customers with essential power needs (e.g., airports, hospitals, manufacturers, etc.).

- SCADA, Dispatchability: The available literature indicates that utilities have addressed independent operator control issues by structuring supervisory control and data acquisition (SCADA) access into their interconnection agreements. SCADA access would allow the utility to address matters such as dispatchability[12] and isolations affording a degree of control for operational matters.

- Intermittency/Variability: The issue of the intermittency from RE generation sources has been significantly reduced by improvements in energy storage technology. However, there are other alternatives such as standby generation, and/or demand side management arrangements that

[12] **Dispatch (Power Dispatching/Dispatchable)** Electrical power systems that consist of many power supply units and grids are governed by system operators. They allow generators to supply power to the system for balancing demand and supply in a reliable and economical way. Generation units are fully dispatchable when they can be loaded from zero to their nameplate capacity without significant delay.

could serve to address or seriously reduce any issues resulting from the intermittency or variability of the RE generation source.

On the basis of the foregoing, URCA proposes to approve, pursuant to section 28 of the EA, RESG systems meeting the following criteria:

- The maximum installed capacity for an RESG System shall be 1000kW;
- RESG systems may be installed and/or owned:
    - By business or commercial customers installing RESG capacity solely or primarily for their own use; and
    - By or on behalf of the Government for the supply of electricity solely or primarily to premises occupied by a ministry, department, statutory body, agency, local government council or any other entity of Government, for their own use.
- The aggregate grid tied RESG capacity approved by URCA will be no more than 10 percent of the gross energy generation or capacity of the relevant PESL on the island;
- URCA's approval of grid tied RESG systems shall be subject to coordination between the customer, the PESL and URCA, to ensure grid reliability, safety and stability to URCA's satisfaction;
- BPL shall be required to provide the technical parameters for the RE generation facility, and interconnection to the grid, including terms and conditions for the applicable interconnection agreement;
- BPL shall be required to identify appropriate locations on BPL's grid for interconnection, and any applicable limitations at such locations for the integration of RE generation; and
- The economic parameters of the arrangements (applicable charge or charging methods) may be amended by URCA making appropriate determinations following the process set out in the EA.

Question 2: Do you agree with the proposed grid capacity of 10 percent of the gross energy generation or capacity of the relevant PESL on the island? Please provide reasons and explanations for your response.

4.4 Eligibility

URCA proposes to approve systems using renewable electricity resources including facilities generating electricity using fuel cells, tidal power, solar, wind, geothermal, hydroelectric, biomass, municipal solid waste in conjunction with recycling, and eligible combined heat and power (CHP) systems. CHP systems must meet certain efficiency requirements in order to qualify: micro-CHP systems 30 kW and below must achieve a combined electrical and thermal efficiency of 80% or greater, and micro-CHP systems 31 kW to 660 kW must achieve a combined efficiency of 65% or greater.

4.5 Shared Ownership

URCA proposes to approve RESG systems under shared ownership provided certain key criteria are met. Shared Ownership RESG will allow community operated self-generation facilities, under which several people invest in an eligible system, and are therefore able to benefit from and participate in the RESG program.

Shared ownership customers must maintain a legal and beneficial ownership interest in an eligible facility. These self-generation customers must share the responsibilities and costs of the facility and resulting proportional benefits. The shared ownership customers must designate one contact person to serve as the liaison between the owners and utility. Up to 4 meters can receive credits from a single eligible facility. Credits from nettable energy is allocated to participants according to each customer's ownership interest in the facility.

4.6 Existing Self-Generation Systems

URCA proposes that RESG installations (100kW to 1000kW) in-service prior to these Guidelines coming into force will not be grandfathered, but will also be required to conform to the Guidelines and become regularised.

4.7 Terms and Conditions for Grid-tied RESG

4.7.1 Contract Term

URCA proposes that customers will enter into a contract with the PESL, with a term of fifteen (15) years, which term is renewable on agreement between the parties in the form approved by URCA, as amended from time to time. This time frame is consistent with the avoided cost credit of self-generation construct that is offered under the Grid-tied RESG arrangement.

4.7.2 Permits, Licences and Government Approvals

URCA proposes that all relevant environmental permits and licences to be obtained by the customer in connection with the customer's RESG facility are required to be maintained and complied with by the customer throughout the terms of the contract/agreement.

4.7.3 Maintenance

URCA proposes that customer is required to properly maintain the RESG facility and retain proper maintenance records.

4.7.4 Purchase and Sale of Electricity

URCA proposes that the customer will continue to receive electricity supply from the PES and pay for consumption in accordance with the PES's standard terms and conditions and the prevailing and applicable electricity rates. The PES will receive and purchase all energy generated from the customer's RESG facility whenever it becomes available at the fuel rate avoided cost of generation price as established by URCA from time to time.

4.7.5 Billing Mechanism

URCA proposes that the billing mechanism under the Grid-tied RESG Contract will consist of the following:

- Statements are required to be generated monthly by the PES detailing energy consumed by the customer and energy supplied to the national grid;
- Amounts payable under the Contract should be -
    i. the amounts owed by the customer to the PES for energy consumed from the national grid; and
    ii. the amounts owed by the PES to customer for energy supplied by the customer's facility.
- Net amounts payable by the PES are to be credited to the customer's account monthly.

4.7.6 Pricing

URCA proposes that:

- Customers will continue to pay the applicable rate for electricity consumed from the national grid as approved by URCA from time to time; and
- The PES will pay the avoided cost of generation rate as established by URCA from time to time. At this time, URCA proposes to establish the rate as the system's total monthly fuel cost, (in month "***i***") divided by the net generation (in month "***i***") for energy supplied to the national grid.

4.7.7 Metering:

URCA proposes that revenue class demand meters shall be used to measure the interchange of energy from the national grid and the customer's RESG facility. The meters shall be the property of the PES and purchased at the cost of the customer, except that where the customer already has a PES meter which is to be replaced with a revenue class demand meter, then the customer will only be required to pay the difference between the cost of the revenue class demand meter, and the value of the meter being replaced. Also, in the event that the customer opts to install a production meter on his or her RESG facility to enable auditing and monitoring of the facility's profile, all costs associated with the installation of such a meter shall be borne by that customer.

4.7.8 Discrepancies:

URCA proposes where the meter is found to be inaccurate or malfunctioning, the PES and the customer will use all available information to agree the energy consumed/supplied and amounts payable during the period of inaccuracy or malfunction, failing which the matter may be submitted to URCA for resolution. Customers may, with notice to the PES have the meter tested by the The Bahamas Bureau of Standards and Quality at the customer's cost.

4.7.9 Security Deposit:

URCA proposes that customers who are parties to a RESG Contract are required to continue to maintain the security deposit payable under the PES's Standard Terms and Conditions of electricity supply to its customers.

4.7.10 Insurance

URCA proposes RESG facility owners are required to establish and maintain full insurance coverage for loss and damage resulting from the operation of the RESG facility.

It is recognized that the requirement for insurance coverage is intended to mitigate against personal and property damage which may arise as a result of the operation of the renewable system with the three primary concerns being:

a) Shock hazards for utility line personnel working on a line that may become unexpectedly energized;

b) Damage to the utility's or customer's equipment resulting from a RESG system operating outside of specifications;

c) Interference with automated distribution system protection functions, such as reclosing.

The safeguard against such incidents (which are accepted as rare in properly structured jurisdictions) is the use of equipment that has been approved/certified and having a competent electrical inspector.

4.7.11 Disconnection:

The PES may disconnect the customer's RESG facility from the national grid for non-payment of sums owing by the customer to the PES, in accordance with the PES's standard Conditions of Service, but subject to URCA's prior approval.

4.7.12 Technical Requirements:

URCA proposes that:

- The customer's RESG facility shall be properly tested, commissioned and certified by the Government Electrical Inspector;
- The customer's RESG facility shall be designed, constructed and operated in accordance with all applicable industry standards and the PES technical guidelines; and
- Customers are required to install an interconnection disconnect switch and a generator disconnect switch to facilitate interruption of energy from their generation facilities or disconnection of the generation facilities as contemplated under the Standard Offer Contract[13] (SOC).

[13] PES Licence Condition:- The Licensee shall develop and implement a Standard Offer Contract (SOC), which shall be subject to approval by URCA and which shall reflect the objectives of Government's policy, to facilitate and encourage the development of residential and small commercial renewable energy generation.

4.7.13 Responsibility for Upgrades to PES network.

URCA proposes that a Grid-tied RESG customer should be responsible for the total cost of any upgrades such as transformer changeouts or primary/secondary line rebuilds that are required due to the connection of the approved RE facility. Any work that is required to upgrade the PES' system to accommodate the RESG production facility must be completed by PES personnel.

4.7.14 Interconnection

Interconnection represents the last stage in the process before generation begins. URCA proposes that provisions for interconnection will form part of the arrangement established in the Agreement between RESG and PES. Interconnection arrangements will be embodied in the Agreement.

Interconnection Standards establish the interconnection process:

- Customers proposing RESG are required to submit an interconnection application and an application fee;
- The PES assesses impact to its system and establishes a cost for interconnecting with and usage of its distribution system;
- The PES and the customer execute an Interconnection Agreement with Interconnection Standards if customer moves forward;
- RESG Customer demonstrates liability insurance and regulatory compliance - The goal is safe interconnection of any new generation.

4.8 Terms and Conditions for Non Grid-tied RESG

The following guidelines shall apply to all Non Grid-tied (off Grid) RESG systems.

4.8.1 Requirement for Approval

4.8.2 Permits, Licences and Government Approvals

URCA proposes that all relevant environmental permits and licences to be obtained by the customer in connection with the customer's RESG facility are required to be maintained and complied with by the customer throughout the terms of the contract/agreement.

4.8.3 Maintenance

URCA proposes that customer is required to properly maintain the RESG facility and retain proper maintenance records.

Question 3: **Do you agree with the shared ownership participation proposed by URCA? Please provide reasons and explanations for your response.**

Question 4: **Do you agree with URCA's proposed insurance requirements for owners of RESG systems? Please provide reasons and explanations for your response.**

Question 5: **Are there available insurance products which cover general liability available to owners of such systems, and if so, what costs are likely to be incurred? If possible, please provide information to support your response.**

Question 6: **Do you agree with URCA's proposed term and conditions for Grid-tied RESG systems? Please provide reasons and explanations for your response.**

Question 7: **Please provide any comments regarding the proposed Technical Requirements for RESG Systems.**

4.9 Application for RESG System Approval

URCA proposes that Applications for Grid-tied RESG projects shall be made to URCA using the Application Form attached to, and determined by URCA in accordance with the process outlined in, Appendix A.

Question 7: **Do you agree with the proposed approval process for the RESG projects? Please provide reasons in support of your response.**

5 Next Steps

The consultation document represents URCA's preliminary position on the proposed Guidelines for approval of Grid-tied RESG projects.

5.1 Implementation

The RESG approval process is proposed to be implemented forthwith with the issuance of the final Guidelines by URCA.

5.2 Consultation

Interested persons are invited to submit comments on the matters set out in this consultation document by no later than 28 October 2019.

It should be noted that the Grid-tied RESG guidelines form part of this consultation. To aid persons in responding to the consultation, consultation questions have been formulated and included for response by interested persons. The questions are not intended to limit the scope of responses, therefore, persons should feel free to comment on any aspect of the proposed guidelines outlined in this consultation document. URCA will review the comments received as required under this consultation and will formulate its final decision, and issue the Guidelines as appropriate.

Appendix A:

Schedule 1 - Proposed Application Process and Application Form for RESG Projects

This Application Process sets out the procedure for applications for the installation, and operation of Renewable Energy Self-Generation (RESG) Projects which comply with the requirements set out in the Guidelines for Approval of RESG Projects[14]. For any project which falls outside of the current framework interested persons should contact URCA for specific consideration at info@urcabahamas.bs, or see URCA's website for further information.

URCA is responsible for reviewing and approving applications for RESG projects advanced by the Government or small-business and commercial enterprises.

For Grid-tied RESG systems the application process is outlined in STEPS 1 – 6 below.

For non-Grid tied RESG systems, the application process will comprise STEPS 1 – 3 below.

URCA's approval does not, by itself, allow the installation, operation and use of a RESG system. All RESG systems must be approved by the Ministry of Public Works (MOW) as evidenced by an Electrical Inspection Certificate before commissioning. Applicants for Grid-tied systems must also enter into an Interconnection Agreement and interconnect with the applicable Public Electricity Supplier (PES), the technical terms and conditions for which must be negotiated and agreed with the PES.

It should be noted that URCA's approval is not approval to start the project. An applicant commencing a project prior to receiving all necessary (in particular MOPW) approvals, or in the case of a Grid-tied RESG without having agreed the technical interconnection with the PES, does so at their own risk and expense.

The laws governing renewable energy within the sector can be found in Part V of The Electricity Act (EA), 2015. Section 28 of the EA relates specifically to URCA role in the approval of renewable energy self-generation projects.

[14] [Reference to Final Guidelines Document]

RESG Application Process

Applications for RESG Projects may be submitted to URCA at any time.

Application shall be made by submitting the **completed Application form and all supporting documents** electronically in .pdf format together with three printed (3) copies. Electronic copies may be submitted on secure removable USB compatible storage media, or by email to info@urcabahamas.bs. Applications in excess of 8MB must be submitted on removable storage media.

The RESG Application Fee of $250 must be paid at the time of submission. URCA shall not process any application unless the Application Form is fully completed, all required supporting documents (as set out on the form) are submitted, and the Application Fee paid in full. URCA accepts payment by cheque or credit card.

STEP 1

The application shall be submitted on the attached form and must, at a minimum, provide the following information:

- Identification of ownership group
- Size and type of facility
- Description of the technology
- Technical details of proposal
- Projected capacity availability and annual energy supplies to the grid (Grid-tied RESG only)
- Tentative project implementation milestones
- Interconnection details (Grid-tied RESG only)
- Status of site selection or acquisition

STEP 2

URCA will acknowledge the receipt of the Application within 5 working days of receipt, at which time URCA will confirm whether the application is complete for processing. If an application is incomplete, URCA will

provide a list of the missing information, document or fees, and the applicant will have a period of one month within which to complete the Application, failing which the Application will be deemed incomplete, and the Application Fee refunded. Where an application has been deemed incomplete, URCA will destroy any documents received and the applicant will be required to restart the process in full.

STEP 3

Following acknowledgement of a complete Application, URCA will conduct its analysis of the Application. URCA may, as part of the analysis consult with other relevant entities or persons (which may include Government entities and the relevant PES) in relation to the feasibility of the proposed RESG system.

URCA's will evaluate the proposal on the basis of:

- Compliance with URCA RESG Guidelines
- Technical feasibility
- Safety (including Grid Safety and Stability for Grid-tied systems)
- Legal and Financial soundness
- Environmental protection
- Energy efficiency
- Economic robustness

URCA will provide its decision within sixty (60) calendar days of receipt of a completed Application.

URCA's decision will be by way of Certificate of Approval of the RESG System, or a letter advising the applicant of the non-approval, with reasons.

For Grid-tied systems, the Approval process will continue through the remaining steps 4 - 6 set out below.

STEP 4

Where URCA approves a Grid-tied RESG system, URCA in consultation with the applicant and the relevant PES, will specify a time period for the negotiation of the Interconnection Agreement between the applicant

and the PES, which shall commence no later than fourteen (14) calendar days after URCA's approval, and shall be no longer than thirty (30) days.

The Interconnection Agreement (including price, and all other details save for technical interconnection) shall be in the form approved by URCA and appended to the RESG Approval Guidelines. The technical details of the interconnection of the RESG system to the PES grid shall be subject to negotiation and agreement between the RESG applicant and the PES. In the event that agreement cannot be reached between the parties within the timeframe established by URCA for negotiation, URCA shall invite and consider submissions by both parties and determine the terms and conditions of the Interconnection Agreement, which determination shall be final and binding on the parties.

The Interconnection Agreement and all associated documents shall be submitted to URCA for approval.

STEP 5

URCA shall, within seven (7) days of receipt of the Interconnection Agreement provide its decision. URCA may require changes to the Interconnection Agreement where such changes are reasonably necessary to comply with any provision of the EA or to meet the ESP objectives.

STEP 6

The Interconnection Agreement and all other approvals (i.e. environmental and those related to construction) must be obtained by the RESG applicant before clearance will be given by URCA for interconnection to the public electricity supply system.

RENEWABLE ENERGY SELF-GENERATION SYSTEM
APPLICATION FORM

All sections of this Application Form must be completed.

The **completed Application form and all supporting documents** must be submitted electronically in .pdf format together with three printed (3) copies. Electronic copies may be submitted on secure removable USB compatible storage media, or by email to info@urcabahamas.bs. Applications in excess of 8MB must be submitted on removable storage media.

1. Customer Information

Name:_____ P. O. Box:_____
Street Address:_____
Directions:_____
_____
Island:_____ PES Account #:_____PES Meter #_____
Telephone: Work:_____ Mobile:_____ Home:_____
Email address (REQUIRED):_____
Account Type Commercial ☐ Government ☐

2. System Installer Information

	RE Contractor	Electrical Contractor
Contact Person		
Company Name		
P.O. Box		
Telephone (Work)		
Telephone (Mobile)		
Email Address		
License Number		Mandatory

3. Facility Information

☐ Photovoltaic (Solar)_____kW (nom) _____kW (peak) ☐ Wind Turbine _____kW

PV Module Mfr._____ Model # _____ Power_____ Qty. ____

Wind Module Mfr._____ Model # _____ Power_____ Qty. ____

Total Installed Generation: _____kW AC

Installation Type: Off Grid ☐ Split Circuits ☐ Transfer Switch ☐ Grid Tied ☐
Other (please specify): ☐

Inverter utilized: Yes ☐ No ☐
Inverter Mfr. _____ Model # _____ Qty. ____
Inverter: Power Rating ____ kW Rated AC Voltage ____V Rated Frequency ____ Hz
Listing Standard (e.g., UL1741) _____

Battery storage installed: Yes ☐ No ☐ Capacity (Ah) _____
Off-Grid output capable (Backup Power Capable): Yes ☐ No ☐
Is there any existing Electric Generating Equipment at this location? Yes ☐ No ☐
If "Yes", please provide details (i.e., A description and any particular characteristic of the equipment which the customer/installer believes may impact the functionality of the system that is the subject of this application)

It is required that the following be attached to this application

FOR OFFICAL USE ONLY

- An electrical schematic diagram of the proposed installation arrangement
- Copies of the technical specifications, operation and installation manuals of the proposed equipment.
- Proof Non Refundable Application Fee of $250 has been paid *(Please keep a copy of your reciept for your records)*

Failure to attach these documents will result in the application being denied.

Signature _____ Date _____

Application, documents and proof of payment must be submitted in an envelope marked:

Renewable Energy Self-Generation Program Application – (Applicants Name)
For Delivery to URCA, Utilities & Energy Sector Division

and must be delivered to

Director of Utilities & Energy
Utilities Regulation & Competition Authority
Frederick House, Frederick St.
P.O. Box N-4860
Nassau, Bahamas

info@urcabahamas.bs

Application Form Help

In order to efficently process applications it is critical that all the information be accurately filled in on the form. It is recommended that you have your system installer/electrical contractor assist you in completing this document if you are not familiar with all of the technical elements of your system, as incomplete or incorrect sumissions will delay processing.

Section 1 Customer Information

In this section information pertaining to the customer should be filled in. For Grid-tied RESG the Public Electricity Supplier Account information must be supplied, the customer name must be the same as the name on the account, and the application must be signed by a duly authorised person. Future agreements will be done in this name so it is critical that that correct information be provided.

All contact information should be filled in, especially the email address as this will be the primary method of contact with respect to the application.

Section 2 – System Installer information

In this section you are required to provide information on the system installer that erected your systems and the locally (Bahamas) licenced electrical contractor that is responsible for the electrical components of the installation. It must be noted that it is a requirement for all system installations to have an associated licensed electrical contractor associated who is required to submit an electrical permit for the installation to the Ministry of Works and receive an approved Electrical Inspection Certificate as prerequisites to a system being allowed to be approved for activation. This applies to both Grid Tied and Off Grid installations.

It is vital that this information be provided so that contact can be made with these individuals if necessary.

Section 3 – Facility Information

In this section you are to provide technical details on the system to be installed.

Name Plate Rating of each Customer – Generator System: _____ kW AC

This should be the normal AC output rating of each installed system. So if multiple inverters are used then this would be an indication of the output of each inverter.

Example 1	1 x 2000W (solar), 1 x 1 x 500W (wind)
Example 2	10 x 200W (solar, micro inverters)

Total Installed Generation: _____kW AC

This is the total nominal AC output of the system

Example 1	2000W + 500W = 2500W
Example 2	10 x 200W = 2000W

Type:

☐ Photovoltaic (Solar)_____kW (nom) _____kW (peak) ☐ Wind Turbine _____kW

Here you indicate the type of system installed. If both wind and solar are installed select and complete both accordingly.

Installation Type: Off Grid ☐ Split Circuits Transfer Switch Grid Tied

Other (please specify):

Here select the grid connection type to be employed.

- Off Grid: The building/property is totally disconnected from the grid, that is, no utility service wire or cable connected to the building.
- Split Circuits: Some circuits in the building supplied by renewables and some supplied by the grid. The two electrical systems are in no way electrically or mechanically connected to each other.
- Transfer Switch: The building/property can be fed by either the grid or the RG, but the two sources are separated via a transfer switch. That is, the two sources are never tied to the load at the same time.
- Grid Tied: The building/ property is connected to the grid and the RG in parallel at the same time. That is, energy can flow in either direction.

Inverter utilized: Yes ☐ No ☐

Here you are to indicate if inverters are being used as a part of the installation configuration

Inverter Mfr. _____ Model # _____ Qty. ____

Inverter: Power Rating ____ kW Rated AC Voltage ____V Rated Frequency ____ Hz

Listing Standard (e.g., UL1741) _____

If inverters are being used indicate their make (manufacturer) and model number. This is required in the event more research beyond what is provided in your submitted technical documents is needed. This includes information on micro inverters that might be integrated with the solar panels in some cases.

Battery storage installed: Yes ☐ No ☐ Capacity (Ah) _____

In this area you must indicate if your system has battery storage and the total amp hour (Ah) capacity of the battery storage system.

Off-Grid output capable (Backup Power Capable): Yes ☐ No ☐

Here you indicate if your system is capable of supplying power to the home when the utility supply is not available. This is not the usual mode of operation for a grid tied system and generally requires a more sophisticated inverter arrangement.

Is there any existing Electric Generating Equipment at this location? Yes ☐ No ☐

Indicate Yes if there is any other source of electricity (other than the utility) supplying the property. This includes but is not limited to emergency generators and other renewable energy sources.

If “Yes”, please provide details:

Provide brief details of the existing generating equipment if you answered yes to the previous question.

N.B.: Applicants for Grid Tied systems are hereby advised of the need to execute an interconnection agreement with the Public Electricity Supplier, and of the possibility of further commissioning requirements implemented in order ensure grid stability and safety.

SCHEDULE 2 - FEES

1. Processing Fee: All applications for RESG Approval will require the payment of a processing fee of $250.[15] This fee is payable to URCA and must be made at the same time the proposal/application is submitted.

2. Regulatory Fee: not applicable.

[15] https://www.urcabahamas.bs/wp-content/uploads/2018/11/ES-032017-Regulatory-Fees-for-the-Electricity-Sector-in-The-Bahamas.pdf

Appendix B: Form of Interconnection Agreement

INTERCONNECTION AGREEMENT

FOR

GRID-TIED RENEWABLE ENERGY SELF-GENERATION SYSTEM

Between

_____

[SYSTEM OWNER]

AND

[PUBLIC ELECTRICITY SUPPLIER]

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THIS AGREEMENT is made on the _____ day of _____Two Thousand and _____ (hereinafter referred to as the "Agreement Date") **BETWEEN THE [PUBLIC ELECTRICITY SUPPLIER]** a Company duly incorporated under the Laws of The Bahamas and having its registered office at …… (hereinafter referred to as the "**PES**" which expression, where the context so admits includes its successors and assigns) on the ONE PART AND _____ in the district of _____ (hereinafter referred to as the RESG Customer) on the OTHER PART. Both the PES and the RESG Customer are herein referred to individually as a "Party" and collectively as "the Parties".

WHEREAS:

I. The PES is a company licensed under the Electricity Act 2015 (EA) to generate, transmit and distribute electricity in The Bahamas;

II. The RESG Customer is a customer of the PES and has received approval from the Utilities Regulation and Competition Authority (URCA) to generate electricity using a Renewable Energy Self-Generation System (RESG) (the Approved RESG System or "ARS");

III. The RESG Customer desires to interconnect the ARS to the PES' Electricity Network system, to sell all of the renewable energy generated by the ARS to the PES, by delivery to the grid operated by the PES. All electricity consumed by the RESG Customer will be purchased from the grid operated by the PES; and

IV. The PES wishes to purchase such energy from the RESG Customer on the terms and conditions set forth herein.

NOW THEREFORE, in consideration of the mutual benefits to be derived and the representations and warranties, conditions and promises set out herein, and intending to be legally bound hereby, the Parties hereby agree as follows:

1 Interpretation

1.1 Definitions

The following terms used herein shall have the meanings set forth below:

"Approved RESG System" or "ARS" means a Grid-tied RESG System for which a Certificate of Approval has been issued by URCA in accordance with the RESG Guidelines.

"Force Majeure Event" means:

i. hurricane, earthquake, flood, tidal wave, or other act of God;
ii. fire, strike, malicious damage, labor disturbances;
iii. war, terrorism, civil war, rebellion, riot; or
iv. any other cause beyond the control of a Party which was not reasonably foreseeable or if foreseeable could not have been prevented.

"Grid" means the power system, inclusive of transmission and distribution, by which electric energy is distributed by the PES to its customers.

"Grid-tied" refers to a RESG System which is connected to the Grid operated by the PES.

"Metering System" means all meters and metering devices or equipment owned by the PES and used to measure the delivery and receipt of electricity to and by its customers.

"Parties" means the PES and the RESG Customer together, and **"Party"** means either one of them.

"Point of Delivery" means the physical point where the RESG system and the Grid are electrically connected for metering purposes.

"RESG System" means a generation system using renewable energy sources designed and installed for the purpose of supplying energy solely or predominantly for the use of its owner, and which complies with URCA's Guidelines for RESG Approval [REF].

"RESG Customer" means the person or entity who is a customer of BPL and who has entered into a contract with BPL for the electricity account associated with the Renewable Generation System.

"RESG Feed-in Tariff" means the rate, determined by URCA under section 28(b) of the EA, payable by PES's for electricity generated by RESG Systems in The Bahamas. URCA will set and revise this rate from time to time.

"Service" means energy and power supplied to the RESG Customer by BPL.

1.2 Entire Agreement

This Agreement and the accompanying appendices together with the other documents to be delivered under this Agreement represent the entire contract between the Parties with respect to the subject matter of this Agreement, and supersedes all previous agreements, arrangements, understandings, negotiations, and discussions, whether oral or written, between the Parties in relation thereto.

1.3 Headings

Clause headings contained in this Agreement are included solely for convenience and are not intended to be a full accurate description of the content of any clause and shall not be part of this Agreement.

1.4 Statutory Instruments

Any reference in this Agreement to any law, regulation, order, act or statute of any governmental body or other regulatory body shall be construed as a reference to those as amended or re-enacted from time to time or as a reference to any successor to those.

1.5 Words

Unless the context otherwise requires, words denoting the singular shall include the plural and vice versa.

2 Duration of this Agreement

This Term of this Agreement shall be [fifteen (15) years] from the Agreement Date, unless earlier terminated or extended in accordance with its provisions.

3 Sale and Purchase of Electricity

3.1 Delivery of Electricity to PES

For the duration of this Agreement, the RESG Customer shall deliver to the PES all electrical energy that the RESG Customer generates using the ARS, as described in Appendix A.

3.2 RESG Feed-in Tariff

The price payable by the PES for the electricity produced will be the RESG Feed-in Tariff as established by URCA, subject to the Annual Maximum Feed-in Limit as set out in Appendix A.

4 RESG System Interconnection Requirements

4.1 Installation, Design, and Maintenance

The RESG Customer shall design, install, operate, and maintain the RESG system, and all ancillary facilities on the RESG Customer's side of the Point of Delivery, specified in Appendix B, in accordance with the Requirements for Grid Interconnection of Renewable Generation Systems and all governmental laws and regulations which may be applicable from time to time.

4.2 Insurance, Licenses, and Permits

The RESG Customer shall obtain and maintain all required insurance coverage, governmental authorizations, permits, licenses and approvals from all governmental authorities, local agencies, commissions and authorizes required for the installation and operation of the RESG System.

4.3 Safety and Performance

The RESG System shall meet all applicable safety and performance standards, including the codes and standards described in the Requirements for Grid Interconnection of Renewable Generation Systems. BPL may, from time to time, reasonably prescribe additional requirements, to be implemented at the Customer- Generator's sole expense, which in the PES's judgment are necessary for ensuring the safety of the grid and/or the public. The PES shall provide the RESG Customer with written notice of any additional requirements to be implemented pursuant to this clause and the RESG Customer shall have fourteen (14) days from the date of the notice to implement the change to the satisfaction of the PES. If not possible within 14 days the customer may request in writing an additional 14-day extension. Failure to carry out the required changes in the prescribed period will result in:-

i. The RESG Customer having to isolate their RESG System from the grid and have the isolation point locked off by BPL until the corrections are made;

ii. Having their RESG System's electrical supply disconnected from the grid until the correction is made;

iii. Be subject to penalties under the regulations until the corrections are made; or

iv. any combination of the above.

4.4 Requirement for Initial Inspections

The RESG Customer shall not commence any interconnection to BPL's grid or parallel operation of the RESG System until all required inspections have been passed and written approval to do so has been given by the PES.

Approval of a RESG System only applies directly to the system itself, indicated in the application, to be acquired by the applicant. Approval of a RESG Customer application does not in any way supersede or negate the need for the installation to pass the relevant inspections by the PES and other Governmental agencies prior to Grid connection. Acquisition of a system other than that detailed in the application automatically rescinds the initial application approval.

5 RESG Customer's Obligations

The RESG Customer shall:

(a) upon receipt of approval from the PES to interconnect the RESG System described in Appendix B and installed at the address specified in Appendix B (the "Service Address"), and on execution of the Agreement, immediately connect the RESG System to the PES's Grid, unless the RESG Customer obtains the PES's written approval to postpone the interconnection;

(b) at all times operate and maintain (or engage services of qualified technician and/or engineer as may be required to operate and/or maintain) the RESG System in accordance with all applicable Governmental standards and requirements and the instructions of the manufacturers of the equipment used to construct the various components of the RESG System;

(c) at all times comply with the PES's standards and requirements relating to the parallel operation of the RESG System which may be in effect from time to time;

(d) promptly notify the PES of any malfunction or breakdown of any component of the RESG System that could constitute a foreseeable safety hazard or which could reasonably be expected to cause disturbance or damage to the Grid;

(e) not operate or allow the RESG System to be operated so as to generate electricity at a rate greater than 110% of the RESG System Nameplate Gross Power Rating specified in Appendix B;

(f) not add to or modify or allow any addition or modification to the RESG System without the prior written consent of the PES;

(g) not alter, modify or tamper or allow any alteration, modification or tampering with the RESG System connection to the PES's Grid without the PES's prior written consent;

(h) not relocate or interconnect or allow any relocation or interconnection of the RESG System to the PES' Grid at any location other than the Service Address without the PES's prior written consent;

(i) promptly comply or ensure compliance with all requests from the PES to interrupt the service of RESG System, reduce the output from the RESG System and disconnect the RESG System from the Grid;

(j) Not to impede but at all times allow the PES reasonable access to the RESG System; and

(k) make all payments required to be made by it to the PES on or before the due date for payment

6 The PES's Obligations

6.1 Duty to Interconnect

Subject to the terms and conditions of the Agreement the PES will interconnect with the RESG System located at the Service Address and supply electricity to and accept delivery of electricity from the RESG Customer (if applicable) at the Point of Delivery specified in Appendix B.

6.2 Duty to Act with Promptness

The PES will act with reasonable promptness to perform any inspections and give any approvals that it is authorized or required to give under the Agreement. The PES will not unreasonably withhold or delay the giving of its consent in any case where its consent is required.

7 The PES's Rights

7.1 Right to Require RESG Customer to Interrupt Supply

The PES shall have the right to require the RESG Customer to interrupt (including, if so specified by the PES, by means of physical disconnection or lockout) or reduce the RESG System whenever:

I. The PES in its sole judgment deems such action necessary to permit the PES to construct, install, maintain, repair, replace, remove, investigate, or inspect any of its equipment, any

part of the Grid, any of the RESG Customer's installation and/or equipment; or

II. The PES in its sole judgment determines that curtailment, interruption, or reduction of the Customer- Generator's electrical generation is otherwise necessary due to emergencies, forced outages, a Force Majeure Event, safety hazards, possible damage to or disturbance of the Grid, or compliance with prudent electrical practices.

7.2 Right to Interrupt Supply from the RESG System

Notwithstanding the provisions on Clause 7.1 or any other provision of the Agreement, the PES shall have the right to:

III. require the RESG Customer to immediately disconnect the RESG System from the PES's Grid; and

IV. immediately by itself to effect the disconnection of the RESG System from the PES's Grid if the Customer- Generator is either, in the PES's reasonable belief, not available to make the disconnection or if the RESG Customer is available but refuses to act and the disconnection is deemed necessary by the PES.

7.3 Advance Notice

Whenever feasible the PES will give the RESG Customer reasonable advance notice that an interruption or reduction in output from the RESG System may be required or that disconnection of the RESG System from the PES's Grid may be required. However, the failure of the PES to give such notice shall not invalidate any action taken by the PES under Clauses 7.1 or 7.2 of the Agreement or cause or account for any breach of the Agreement between the parties.

7.4 Indemnity

If any of the following scenarios occurs:

V. The PES, using its sole discretion, requires the RESG Customer to interrupt or disconnect the RESG System from the PES's Grid;

VI. The PES, using its sole discretion, decides to effect the interruption or disconnection of the RESG System from its Grid (as provided in Clause 7.1 and 7.2 respectively of the Agreement);

VII. Such interruption occurs as a result of suspension or termination of service to the Customer-Generator in accordance with the provisions of the Electricity Act, Rules and Regulations in force at that time or the Requirements for Grid Interconnection.

Then, except to the extent caused by the willful misconduct or gross negligence of the PES, its directors, employees, and/or agents, the PES and its agents shall not be liable to the RESG Customer for any loss or damage whatsoever resulting from the exercise of such rights by the PES.

7.5 Right to Enter Premises

The PES shall have the right to enter the RESG Customer's premises at the Service Address at all reasonable hours, without notice to the RESG Customer, to inspect the protection devices installed at the RESG System and to read, inspect and test meters, or to effect disconnection of the RESG System as provided in section 7.2 of the Agreement. Nothing in the Agreement shall limit or otherwise affect any rights of entry to the RESG Customer's premises that the PES may have under the Electricity Act, Rules and Regulations or the Requirements in force at that time for Grid Interconnection or any other agreement with the Customer- Generator.

7.6 Right to Disconnect Service

The PES reserves the right to disconnect the electricity supply to the Service Address without notice and without incurring any liability whatsoever if the RESG Customer fails to comply with the requirements of the Agreement or for any other reason relating to safety and/or reliability of the Grid.

7.7 Right to Collect Data

The PES shall have the right to demand, promptly obtain, review and copy the RESG System operations and maintenance records, logs, or any information considered necessary by the PES such as unit availability, maintenance outages, circuit breaker operation requiring manual reset, relay targets and any unusual events pertaining to the RESG System and/or its interconnection with the PES's Grid.

7.8 PES Property

All equipment owned by the PES which is affixed to the RESG Customer's premises for the purpose of facilitating the interconnection of the RESG Customer's RESG System with the PES's Grid, including all equipment installed by the PES which is required for the purpose of metering and billing, shall remain the property of the PES.

8 Billing

8.1 Metering

The PES shall install two meters, one to measure the energy flow from RESG System to the PES, and the other to measure the flow from the PES to the RESG Customer.

The PES will bill the RESG Customer at the Standard Electricity Tariff for all electricity the RESG Customer uses (all of which must be supplied by the PES). The RESG Customer will receive a credit for all electricity that the RESG Customer delivers to the grid (which shall be all electricity generated from the RESG System), up to the Maximum Annual Feed-in Limit set out in Appendix A.

8.2 Account Credit

The PES shall credit the RESG Customer's account for all energy (kWh) supplied to the Grid at the RESG Feed-in Tariff, subject to the Annual Maximum Feed-in Limit set out in Appendix A. If the amount of electricity produced by the RESG Customer exceeds Annual Maximum Feed-in Limit during the billing period, the excess shall be carried forward to the next billing period, for up to 12 months, at which time any remaining excess generation is granted to the PES with no compensation for the RESG Customer.

8.3 Tariff for Service to the RESG Customer

Service (energy and power) supplied to the RESG Customer by the PES will be billed in accordance with the PES's applicable tariff for the type of service provided the RESG Customer.

8.4 Billing

At the end of each billing period, if the Customer- Generator's account is in debit after the renewable charges have been applied, the balance due will be billed and payable. If the account is in credit, the amount will be carried forward to the next billing period. Upon request, the PES will promptly refund the Customer Generator on a quarterly basis, if the RESG Customer's account is $100.00 or more in credit. Any account credit available at the time of account finalizing would be paid to the customer. Should the customer finalize the account the PES will refund any credit remaining on the customer's account.

9 Representations and Warranties

9.1 Representations and Warranties

The RESG Customer represents and warrants that:

I. it has complied with and will continue to comply with the terms, conditions and obligations under the Agreement and all applicable laws of the said Commonwealth of The Bahamas;

II. it has obtained and will maintain all required insurance policies and those policies have been duly endorsed in accordance with the requirements of the Agreements;

III. it has obtained all required permits, licenses and approvals required by all Government authorities, local agencies, commissions and Service (energy and power) supplied to the RESG Customer by the PES authorities with jurisdiction over the RESG Customer and the RESG System to allow it to enter into the Agreement;

IV. its RESG System meets and will continue to meet all applicable safety and performance standards that now exists and which the PES may from time to time prescribe and/or any amendment laws, rules and regulations which the Government may from time to time enact;

V. it is the owner of, or authorized tenant of the premises located at the Service Address; and

VI. it is the owner of the RESG System and is duly authorized to enter into the Agreement and operate the RESG System.

10 Indemnity

The RESG Customer shall fully and effectually indemnify and hold harmless the PES, its affiliates, directors, officers, agents and employees from and against any and all losses, liabilities, costs, claims, charges, actions, proceedings or investigations which the PES may incur or which may be made against it in connection with the interconnection of the RESG System and with the PES's Grid or any breach or alleged breach of any of the representations and warranties of the Agreement by the RESG Customer or in respect of the PES's exercise of its rights, discretions, authorities and obligations under the Agreement. The PES will not honor any damage claims submitted with respect to the RESG System itself or any electrical or electronic equipment connected at the premises.

11 Termination

11.1 Termination by the RESG Customer

The RESG Customer shall have the right to terminate the Agreement by giving the PES thirty (30) days prior written notice of its intention to terminate the Agreement.

11.2 Termination by the PES

The PES shall have the right to terminate the Agreement:

I. where the RESG Customer is in default of any of its obligations under the Agreement and such default, is not corrected within thirty (30) days after written notice of the default has been given to the RESG Customer by the PES. The PES shall exercise its right to terminate the Agreement for such default by giving ten (10) days written notice of termination to the RESG Customer. The foregoing shall not affect any rights of suspension, interruption or disconnection that the PES may have under the Agreement or the Standard Electricity Tariff under which the RESG Customer is currently receiving electric service;

II. immediately and concurrently with the termination of electric service to the RESG Customer under any of the rate schedules identified under paragraph 1 of the Electricity Act, Rules and Regulations; and

III. immediately and concurrently on termination of the Agreement.

12 Resolution of Disputes

12.1 Settlement by Mutual Discussions

If any dispute or difference of any kind whatsoever arises between the Parties in connection with, or arising out of, the Agreement, the Parties shall within thirty (30) days after the date that the dispute arose attempt to settle such dispute in the first instance by mutual discussions between the Parties.

12.2 Settlement by Arbitration

If a dispute between the Parties is not settled within thirty (30) days as provided in Clause 12.1 of the Agreement the Parties shall attempt to settle the dispute by alternative means of submission of the same

to a mutually agreed arbitrator, for resolution by binding arbitration according to Commonwealth of The Bahamas's Arbitration Act 2009 and Rules of Arbitration. In so agreeing the Parties expressly consent and agree to waive their right to a jury trial, if any, on these issues and further agree that the award of the arbitrator shall be final and binding upon them as though rendered by a court of law and shall be enforceable in any court having jurisdiction over the same.

13 Extension of Term

13.1 RESG Customer May Apply to Extend the Term of the Agreement

The RESG Customer may apply to the PES in writing for an extension of the term at least three (3) months before the ending date.

13.2 The PES Has Discretion to Extend the Agreement

The PES may in its sole discretion extend the term of the Agreement under the same terms and conditions outlined in the Agreement or as modified by the PES and for such period as the PES deems fit.

14 Miscellaneous

14.1 Variations in Writing

Save and except for an extension of the term provided for under Clause 13 of the Agreement, any additions, amendments or variations to the Agreement shall be binding only if in writing and signed by a duly authorized representative of the PES and the RESG Customer.

15 Prohibition against Assignment

The RESG Customer shall not assign the Agreement or any of its rights or duties hereunder without the prior written consent of the PES. Any such assignment or delegation made without the PES's written consent shall be null and void.

15.1 Waivers

No waiver by the PES of any default by the RESG Customer in the performance of any of the provisions of the Agreement shall:

IV. operate or be construed as a waiver of any other or further default whether of a like or different character; or

V. be effective unless in writing duly executed by an authorized representative of the PES.

The failure by the PES to insist on any occasion upon the performance of the terms, conditions or provisions of the Agreement or time other indulgence granted by the PES to the RESG Customer shall not thereby act as a waiver of such breach or acceptance of any variation.

15.2 No Third-Party Beneficiaries

The Agreement is intended solely for the benefit of the Parties. Nothing in the Agreement shall be construed to create any duty to, standard of care with reference to, any liability to or any right of suit or action in, any person who is not a Party to the Agreement.

IN WITNESS WHEREOF the undersigned have executed the Agreement on the year and day hereinbefore mentioned.

RESG Customer, RESG	The Bahamas Power & Light Company, Ltd.
Signed By: _____	Signed By:_____
Title:_____	Title:_____
Print Name:_____	Print Name:_____
Witness: _____	Witness: _____

APPENDIX A - Particulars

1. RESG Customer: _____ _____

   Address of RESG Customer_____

2. Account Name:_____

   Account Number:_____

   Service Address:_____

RESG System Technology (solar PV, wind, etc.)	
RESG System Nameplate Gross Power Rating (kW)	
Approved Gross Power Output to Grid (kW)	
Annual Maximum Feed-in Limit (kW/h)	
Point of Delivery	