



URCA'S REVIEW AND PROPOSED REVISION TO BAHAMAS POWER AND LIGHT LIMITED'S SMALL-SCALE RENEWABLE GENERATION PLAN

INITIAL DECISION AND PRELIMINARY DETERMINATION

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1 Introduction

This document sets out the Utilities Regulation and Competition Authority's (URCA) review and proposed revision of The Bahamas Power and Light Limited's (BPL) Small-Scale Renewable Generation Plan. URCA is the regulator for the Electricity Sector (ES) in The Bahamas following the passage of the Electricity Act 2015 (EA) on 31 December 2015, and its coming into force on 28 January 2016. URCA has regulatory remit for all persons who generate, transmit, distribute or supply electricity within, into, from or through The Bahamas. URCA's powers and functions are set out in the EA and include the power to issue regulatory and other measures to give effect to the Electricity Sector Policy (ESP) objectives.

1.1 Objective of this Consultation

Broadly, the purpose of this Preliminary Determination is to:

- highlight the key elements of BPL's Small-Scale Renewable Generation Plan;
- discuss URCA's review and proposed changes to the Plan; and
- invite comments from BPL and other stakeholders on URCA's review and proposed changes.

The main goal and objective of the Government's ES policy is the supply of safe, least-cost, reliable and environmentally sustainable electricity throughout The Bahamas. The primary role of URCA is the regulation of the ES in accordance with the goals, policy objectives and principles underpinning the national energy and electricity sector policies. The incorporation of renewable energy sources in the electricity generation mix in The Bahamas is a key objective of the National Energy Policy 2013 – 2033 (NEP) and the Electricity Sector Policy (ESP).

While it continues its full consideration of a detailed framework for the introduction of renewable energy into the generation mix in The Bahamas, URCA is proposing in this document to accelerate the treatment and approval of small-scale, grid-tied, renewable energy generation on BPL's grid, so that:

- Residents and businesses within BPL's service areas that have already installed solar panels and storage equipment can have certainty regarding the legality of and, required inspections and required approvals for their existing activities, and clarity over the potential for future impacts on their investments.

- Suppliers of solar panels and storage equipment, as well as consumers considering installing panels and storage equipment on their properties, can take advantage of changes in the existing legal framework.
- All consumers in BPL’s service area have the opportunity to provide efficient small-scale renewable generation to the grid.

URCA has set out its proposals in this document for comments by BPL and interested persons. Interested persons are advised that URCA has, provisionally, given its permission to BPL to implement the initial parts of BPL’s proposals (Phase 1 as described in Section 5.4) forthwith, while consultation on the remainder of the proposals in this document are ongoing. This approach is based on the objectives set out in the NEP for implementation of residential grid-tied, renewable generation, the efforts already undertaken by BPL and the Government to further the implementation of such systems, and the benefits which URCA considers that expedited implementation will bring to the public in The Bahamas. URCA considers that since Phase 1 is essentially a testing phase, during which BPL and URCA will fine tune the parameters for Small-Scale Renewable Generation, any adjustments to be made based on comments received during the consultation can be implemented while Phase 1 is ongoing.

1.2 How to Respond

URCA invites and welcomes comments from licensees, members of the public and interested parties on the matters set out in this Preliminary Determination. 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 p.m. on 31 March 2017.

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

- (i) by hand to: the Acting Chief Executive Officer, Utilities Regulation and Competition Authority, Frederick House, Frederick Street, Nassau, Bahamas; or
- (ii) by email to: info@urcabahamas.bs; or
- (iii) by mail to: P.O. Box N-4860, Nassau, Bahamas or
- (iv) by facsimile to: (242) 393-0237.

After the period for representations closes, URCA will carefully consider such representations made and shall publish its final determination.

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 Preliminary Determination;
- Section 3: sets out the Regulatory Framework for Renewable Energy Resources;
- Section 4: contains a summary of BPL's Proposal for Small-Scale Renewable Generation;
- Section 5: sets out URCA's Review and Proposed Changes to BPL's Small-Scale Renewable Generation Plan; and
- Section 6: provides the Next Steps in this process

2 Background to this Preliminary Determination

In this Section, URCA sets out the background to the issuance of this Preliminary Determination.

BPL is the largest supplier of electricity to residences and businesses in The Bahamas and by virtue of section 25(2) of the EA is required to develop and submit for URCA's approval "a time-bound plan for the introduction of sustainable renewable energy technologies into the electricity supply system." In 2013, the Government of The Bahamas published the Bahamas National Energy Policy 2013 – 2033 (the "NEP"). The NEP was constructed around the Vision of "A modern, diversified and efficient energy sector, providing Bahamians with affordable energy supplies and long-term energy security towards enhancing international competitiveness and sustainable prosperity", which the Government proposed to achieve through a focus on four broad goals:

Goal 1: Bahamians will become well aware of the importance of energy conservation, use energy wisely and continuously pursue opportunities for improving energy efficiencies, with key economic sectors embracing eco efficiency.

Goal 2: The Bahamas will have a modern energy infrastructure that enhances energy generation capacity and ensures that energy supplies are safely, reliably, and affordably transported to homes, communities, and the productive sectors on a sustainable basis.

Goal 3: The Bahamas will be a world leader in the development and implementation of sustainable energy opportunities and continuously pursue a diverse range of well researched and regulated, environmentally sensitive and sustainable energy programmes, built upon our geographical, climatic, and traditional economic strengths.

Goal 4: The Bahamas will have a dynamic and appropriate governance, institutional, legal and regulatory framework advancing future developments in the energy sector underpinned by high levels of consultation, citizen participation and public-private sector partnerships.

A key objective of the NEP is the increasing inclusion of sustainable renewable energy sources into the generation mix in The Bahamas. Indeed, as noted above, Goal 3 of the NEP focuses on the development of indigenous renewable energy resources with the goal of increasing the percentage of renewables in the energy mix to about 30% by 2033. The NEP acknowledges that renewable resources such as wind, solar, waste-to-energy and biomass are indigenous to The

Bahamas, and if developed adequately, can provide cleaner, and in the long term, affordable alternatives to fossil fuels. The NEP also provides for a 10% Residential Energy Self Generation Programme in the short term.

The NEP proposes inclusion of renewable sources in the electricity mix with those generation sources tied into the existing energy grid, thereby enabling the power produced to be efficiently used throughout the grid. However, prior to the coming into force of the EA, small grid-tied generation from solar photovoltaic (PV) panels and other renewable sources was not authorised. In other words until now, the legal and regulatory framework for the electricity sector has not allowed for consumers to generate power and sell any excess to BPL and other Public Electricity Suppliers.

In the absence of a legal and regulatory framework that facilitates small grid-tied renewable generation, some residents and businesses who sought to generate electricity for their own use on their properties—for a combination of environmental and financial reasons—have installed off-grid solar PV panels, plus batteries and inverters. This combination of equipment is necessary to obtain reliable power from the solar PV panels, which is otherwise an intermittent electricity source.

The NEP now calls for residents and businesses to install suitable renewable power generation equipment, and to sell any excess electricity they generate (more than what they use) to the Public Electricity Supplier (PES), currently either Bahamas Power and Light Limited (BPL) or Grand Bahama Power Company Limited (GBPC).

The EA envisions that BPL and other PES will set up a process to buy small-scale generation from renewable sources at a fair and uniform price. This will be within the context of a larger, more comprehensive plan for the incorporation of renewable sources into the generation mix, on a small and large scale, with a view to meeting the NEP's objective of 30% renewable generation by 2033. However, as mentioned above the Public Electricity Suppliers must first plan for the full renewable energy programmes, and URCA must approve their plans, before they can be implemented.

It should also be noted that the electricity sector in The Bahamas is currently characterised by significant challenges in establishment and maintenance of an adequate and efficient supply, and introduction of additional small-scale renewable energy generation resources could have an overall positive impact on the reliability of the supply once implemented in a controlled fashion.

3 Regulatory Framework

As previously noted, the Bahamas' electricity sector is guided by the EA, 2015 which provides the legal framework for URCA's regulation of the electricity sector. URCA's role is to implement, monitor and enforce this legislation. URCA has wide-ranging powers under the EA, especially as it relates to Public Electricity Suppliers.

Section 6 of the EA sets out the electricity sector policy 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;*
 - (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 the Electricity Sector Policy (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 National Energy Policy, including promoting and facilitating the development and use of renewable electricity generation resources and technology.

Section 25(1) provides for the formulation and submission by every public electricity supplier of a time-bound plan for the introduction of sustainable renewable energy technologies into the electricity supply system. The plan must include provisions for facilitating residential renewable energy generation to the grid and renewable energy self-generation projects (subsection 25(3)(e)).

Section 27 provides detailed parameters for the connection of residential renewable energy generation to the grid, as follows:

(1) An owner of property may apply to a public electricity supplier in writing for a permit to install or operate on the property and connect to the grid, for residential purposes only, a generating resource using renewable energy sources of such size and quality as may be prescribed in regulatory or other measures issued by URCA.

...

(3) Where a public electricity supplier grants a permit ..., the renewable energy generating resource shall-

(a) be recorded in a register maintained by the public electricity supplier, in accordance with regulatory and other measure issued by URCA;

(b) have interconnection to the grid in accordance with the terms and conditions of a grid interconnection agreement entered into between the public electricity supplier and the owner or operator of the generation resource.

...

(5) The grid interconnection agreement shall provide for the purchase by the public electricity supplier, or credit to the property owner, of the value and amount, ... of power generated to the grid

Section 28 describes the legal framework for renewable energy projects owned by small-scale businesses or commercial enterprise and Government agencies, 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 the terms of section 41 URCA has a duty to consult with the public on matters which, in the determination of URCA, are of public significance.

4 BPL’s Small-Scale Renewable Generation Plan

In this Section, URCA first provides context for BPL’s Renewable Energy Plan. This is followed by a high-level summary of BPL’s proposal for small-scale renewable generation to interconnect with the grid.

4.1 BPL’s Renewable Energy Plan

In accordance with the provisions of section 25(2) of the EA, on 28 April 2016 BPL submitted a Renewable Energy Plan to URCA for its consideration and approval. The plan submitted by BPL is divided into “small-scale” and “utility-scale” generation. URCA’s review of the plan is ongoing and it is anticipated that completion of the review will require significant further engagement with BPL and other stakeholders prior to URCA’s final approval. URCA anticipates that completion of its review will occur before mid-2017 at the earliest. In view of the above and having regard to the structure of the NEP, which envisages an accelerated start of small grid-tied renewable energy generation programmes, URCA considers that implementation of BPL’s small-scale renewable generation plan is feasible, prior to URCA’s approval of the full proposed Renewable Energy Plan submitted by BPL. URCA is also of the view, having conducted its initial review of the plan, that BPL’s treatment of small-scale generation is more comprehensive and appropriate for regulatory consideration than its treatment of utility-scale generation, on which considerably more work is needed. As such, this consultation focuses on BPL’s small-scale renewable generation plan only. URCA, however, will consult separately on BPL’s “utility-scale” generation plan.

4.2 Summary of BPL’s Small-Scale Renewable Energy Plan

In this Section, URCA summarises BPL’s proposal for connecting small-scale renewables to the grid. We summarise this section of the BPL Renewable Energy Plan not to give URCA’s approval of all aspects of the proposed Small-Scale Renewable Generation Plan, but to establish common understanding of BPL’s proposal.

The Plan seeks to provide a framework for residential and commercial consumers to generate electricity for their own use, and to sell excess generation to BPL. The renewable energy technologies included in the Plan are wind turbines and solar photovoltaic power sources. The Plan contemplates two categories of renewable energy installations:

- **Level 1:** The Level 1 programme would allow residential and small-scale commercial installations to sell excess electricity to the grid. These installations may use, once approved, PV or wind turbine installations to generate electricity for self-consumption. Excess energy would be allowed to be fed into the grid in accordance with the established conditions and guidelines.
- **Level 2:** The Level 2 programme would allow systems at commercial establishments that are larger than the Level 1 small commercial allowance to sell excess electricity to BPL. The Plan does not set out the details of the Level 2 programme. The details would be determined after BPL gains experience implementing Level 1.

4.2.1 BPL proposed System Limits

The Plan envisaged the following limits for integration of Small-Scale Renewable Generation in BPL's system:

Specific to New Providence

- Small-Scale Renewable Generation systems shall not supply greater than 5 kilowatts (kW) to the grid. This means that the system installed must not exceed the customer's average demand by more than 5kW.
- Commercial Small-Scale Renewable Generation systems shall not supply greater than BPL's estimate of the customer's average peak demand or 50 kW, whichever is the lesser, to the grid unless otherwise approved by BPL. This means that the system installed must not exceed twice the customer's average demand, or 100kW, whichever is the greater.
- Up to a total of 10,000 kW of installed Small-Scale Renewable Generation capacity on New Providence.

With respect to Abaco, Eleuthera and Exuma:

- Small-Scale Renewable Generation systems shall not supply greater than 3 kilowatts (kW) to the grid. This means that the system installed must not exceed the customer's average demand by more than 3kW.
- Commercial Small-Scale Renewable Generation systems shall not supply greater than BPL's estimate of the customer's average peak demand or 25 kW, whichever is the lesser, to the grid unless otherwise approved by BPL. This would mean that the

system installed must not exceed twice the customer's average demand, or 50kW, whichever is the greater.

- Up to 500 kW of installed Small-Scale Renewable Generation capacity on each of Abaco, Eleuthera and Exuma.

In the case of Long Island, Bimini, San Salvador, North, Central and South Andros, Inagua, Cat Island, Great Harbour Cay, Black Point and Staniel Cay (Exuma):

- Small-Scale Renewable Generation systems shall not supply greater than 2 kilowatts (kW) to the grid. This means that the system installed must not exceed the customer's average demand by more than 2kW.
- Commercial Small-Scale Renewable Generation systems shall not supply greater than BPL's estimate of the customer's average peak demand or 15 kW, whichever is the lesser, to the grid unless otherwise approved by BPL.
- Maximum of 250 kW of installed Small-Scale Renewable Generation capacity per island.

All other Family Islands:

- i) Small-Scale Renewable Generation systems shall not supply greater than 1 kilowatt (kW) to the grid. This means that the system installed must not exceed the customer's average demand by more than 1kW.
- ii) Commercial Small-Scale Renewable Generation systems shall not supply greater than BPL's estimate of the customer's average peak demand or 5 kW, whichever is the lesser, to the grid unless otherwise approved by BPL.
- iii) Maximum of 25 kW of installed Small-Scale Renewable Generation capacity per island.

4.2.2 Implementation of BPL's Small-Scale Renewable Generation Plan

BPL's proposal would be implemented in the following four phases (though other parts of the BPL plan refer to five phases):

Phase 1 (3 months): BPL, in cooperation with the Ministry of the Environment and the Inter-American Development Bank (IADB) would devise and conduct a PV pilot project for the funded implementation of solar generation facilities at test properties. The goal of the project would be to test the processes and procedures which BPL has developed for Level 1, using systems installed as part of this programme.

Under this pilot project, the IADB funded the acquisition of approximately 40 grid-tied PV systems, which were given to members of the public through a random drawing. The consumers, once selected, had to contribute towards the cost of the installation of the system; the Ministry of the Environment had the systems installed. The intention of the grid-tied systems is to serve as the test bench for the programme. BPL's priority at the outset will be to work with these systems to test them and validate all the processes and procedures developed to support the programme.

BPL proposes that its electricity sold under the proposed Small-Scale Renewable Generation Plan will be 'net billed'. That is participating consumers would sell excess generation to BPL at the prevailing Fuel Charge, pursuant to the terms of an interconnection agreement between each enrolled customer and BPL.

BPL's plan makes provision for customer installations to be inspected and tested, internally (i.e., behind the meter) by the electrical inspection section of the Ministry of Works, and for pre-activation functional testing to be conducted by representatives of BPL.

BPL proposes to assist in the development of training programmes, where needed, of key personnel. These programmes will include building and electrical code awareness and enforcement, and will emphasize safety compliance and expand communication processes within and between departments to ensure that inspections are performed efficiently and consistently.

BPL will be responsible for appropriate marketing and communications to both consumers and installers, emphasizing the process, procedures, guidelines, electrical codes and safety standards of the programme. Forms required for enrolment in the programme will be made available electronically and will provide clear, concise instructions to navigate the programme as well as BPL contact information and frequently asked questions.

Phase 2 (six months): This phase seeks to add more small-scale generation from renewables to the grid by implementing appropriate changes based on learning from Phase 1. BPL's goal for

Phase 2 is to evaluate the electric system (following implementation of Phase 1) and develop comprehensive interconnection criteria for an expanded programme. The approach taken during Phase 2 will be as follows:

General

As part of this Phase, BPL proposes to develop comprehensive Interconnection Standards and a Standard Interconnection Agreement to accommodate larger (Level 2) renewable systems. BPL's intent is for interconnections to be standardized for all installations across its system and to be able to accommodate projects beyond those contemplated in the Level 1 programme. BPL will separately prepare programme rider or power purchase agreement templates for future use. Those templates will specify unique provisions such as aggregate capacity limits, individual project size limits, and net billing credit structure. This methodology would allow all installed generation to be governed by the same underlying interconnection requirements, but afford BPL the flexibility to offer varying net billing or power purchase structures. BPL considers that a standard interconnection process and agreements should apply to interconnection for New Providence and all Family Islands.

Due to scalability, economics, and available solar irradiance, it is anticipated that solar PV will be the most common renewable source of small-scale generation in The Bahamas. BPL notes in its plan that there is not an extensive network of experienced installers in The Bahamas. BPL expresses its concern that technically competent, ethical and customer focused installers would be an important component of BPL's commitment to renewable energy. To that end, BPL has proposed that all installations carried out must be signed off on by a suitably (single or three phase) licensed Bahamian electrical contractor. Installer qualifications or certification should be required to verify that installers understand, at minimum, electrical safety requirements, electricity and power basics, components of solar installations, customer requirements, familiarity with the BPL plan or other programme requirements, and understanding of BPL interconnection procedures. BPL may coordinate with a local third-party resource such as Bahamas Technical and Vocational Institute ("BTVI") which would ultimately design course content and issue certificates.

New Providence

During Phase 2, BPL proposes to perform an engineering evaluation of its system in New Providence to refine technical thresholds that must be met for generation interconnection. This would include but is not limited to circuit loading, voltage, and frequency criteria.

BPL proposes to minimise independent system study costs by determining optimal regions to interconnect renewables based on system capacity and condition, load centers, land availability, zoning, and other necessary considerations. To the extent possible, BPL will use this information to designate “renewable energy zones” which will be characterised by identified individual and aggregate generation capacity thresholds that can be supported.

Family Islands

BPL proposes to monitor the progress of renewable generation installations on key Family Islands, and ensure that projects meet interconnection criteria and BPL technical specifications. BPL will also coordinate with the Carbon War Room¹ to refine system studies that address unique conditions of each island, considering changes in generation location and resource type. As renewable generation projects advance, BPL will identify areas of islands that may benefit from additional renewable energy projects and designate “renewable energy zones”.

Phase 3 (6 months): Using the programme results and system studies during Phases 1 and 2, BPL proposes to focus during Phase 3 on the following:

- Development of renewable energy targets.
- Exploring the technical feasibility of various renewable resources combined with engineering data from system studies.
- Identification of system limitations, land constraints, or other factors that prevent economic expansion in specific areas.
- Determining achievable capacity thresholds in “renewable energy zones”.
- Evaluation of the long-term benefit of renewables compared to BPL generation forecasts.

¹ The Carbon War Room is a US registered non-profit organization, which promotes the reduction of carbon emissions, and works to advance the low-carbon economy.

- Evaluation of customer appetite for renewable investment.

BPL's considerations will be guided by the NEP target of 30% renewables in the energy mix by 2033, and other Bahamas Government policy positions.

Phase 4 (6 months): During Phase 4, BPL proposes to continue to design and implement customer renewable programmes aimed at meeting renewable energy targets. BPL indicates that it will aggressively pursue projects interconnected in designated "renewable energy zones". BPL proposes to prepare and implement programme riders and purchase agreements to accompany Interconnection Standards and the Interconnection Agreement. BPL will transition the existing participants to its new programme.

BPL indicates that during this phase it would consider various options for expansion of the programme, including:

- Solicitations for power supply (Independent Power Producers (IPP) under defined capacity limits).
- BPL incentives (rooftop, low income, "sell-all" installations etc.) BPL leased property to IPPs.

4.2.3 BPL Proposed Feed-in Tariff

Under the BPL Level 1 plan, BPL proposes a net billing arrangement with a feed-in tariff equal to the prevailing Fuel Charge for the billed month. BPL argues that this approach is appropriate to ensure that consumers without small generating facilities are not disadvantaged by paying a higher cost for the electricity provided by small-scale generators, compared to the cost of electricity generated by BPL.

BPL will install a meter to register any surplus electricity sent to the grid. BPL will credit the customer's account for this electricity at the Fuel Charge rate in effect for the month that the electricity is reflected on the customer's bill.

4.2.4 Grid Interconnection Requirements

For small grid-tied systems, interconnection requirements will be as defined by BPL in an interconnection requirements document. BPL proposes that each approved Level 1 customer will be required to execute an interconnection agreement that defines the relationship between BPL and the customer with respect to the system, be it grid-tied or off-grid.

5 URCA’s Review and Proposed Changes to BPL’s Small-Scale Renewable Generation Plan

In this Section, URCA reviews and set forth its proposed changes to BPL’s small-scale renewable generation Plan. Overall URCA considers that the Plan as presented by BPL represents a good starting point for the inclusion of renewable energy from small grid-tied sources. However, based on the matters stated in this document, URCA proposes that BPL submit a revised Plan to URCA, setting out all relevant terms and conditions for participation in the Small-Scale Renewable Generation Programme, including copies of all forms and agreements.

5.1 Naming the Plan

As a first step, URCA proposes that BPL refer to the plan as the ‘Small-Scale Renewable Generation Plan’. The purpose of the Plan is to allow electricity consumers to install small-scale renewable generators which will primarily be used for their own requirements, to interconnect those generators to the BPL grid, and to allow the small renewable generators to sell excess electricity to BPL. Consistent with the EA and the envisioned licensing categories, this activity fits into small-scale grid-tied generation.

URCA notes that the proposed BPL document uses other terms that are related to small-scale grid-tied generation, but does not clearly define those terms (e.g., distributed generation and self-generation). URCA further notes that Distributed generation is not mentioned in the EA. URCA does not envision using the term in the electricity sector licensing categories. Therefore, for clarity, URCA proposes that BPL delete the term from revised Plan. Self-generation in the EA also refers to small consumer-owned generators, but for consistency URCA proposes the term small-scale generation.

Question 1: Do you agree with the proposed naming conventions proposed by URCA?

Please provide reasons and explanations for your response.

5.2 Compensating Small-Scale Renewable Generators for Electricity Provided to BPL

There are two main options to compensate small-scale renewable generators for the electricity that they provide to the grid: **net metering** and **net billing**. URCA notes that BPL has proposed net billing, and proposed a charge equivalent to the prevailing Fuel Charge during the billing period when the electricity was supplied to the grid.

As discussed below, both approaches have advantages and disadvantages.

5.2.1 Net Metering

Net metering gives the consumer a credit on their electricity bills for the flow of any excess of electricity generated to the grid. At the end of the billing period, the customer's retail rate is multiplied by net consumption to determine the bill. In essence, BPL compensates consumers for electricity provided to the grid at the retail rate (including fuel and electricity charge).

Advantages

Net metering encourages the uptake of renewable energy, a key goal of the EA. Net metering does so by giving a very attractive price for small-scale generation: the full retail tariff. This is a subsidy for small-scale generation, since the full retail tariff is designed to cover the cost of transmitting and distributing electricity, as well as generating it. Compensating small-scale generators at the full retail price gives them more than the value of the electricity they generate (since they are only generating electricity and not distributing, transmitting or retailing it).

A net metering arrangement is administratively simple in that it does not require time or resources from the utility or regulator to set compensation levels.

Disadvantages

Net metering may be inefficient. Paying more than the value of the electricity generated encourages uptake of forms of generation that are not least-cost. As a result, the overall costs of electricity tend to rise where net metering is implemented, which is contrary to the goals in the NEP and EA to reduce electricity costs.

Net metering typically causes low-income consumers to subsidise high-income consumers. This is because upfront costs for small-scale generation are high, so high-income consumers and businesses are the most likely to be able to afford (or finance) the investments and reap the benefits of being paid more for electricity they generate than its actual value. This subsidy to small-scale generators must come from either other consumers (those who cannot afford the upfront costs, so typically disproportionately lower-income households), or from taxpayers via the Government. This cross-subsidy would run contrary to the EA's goal to protect vulnerable consumers.

The subsidy for net metering may incentivise more small-scale generation than the utility can reliably incorporate, forcing the utility to stop allowing new small-scale generators to sell electricity. To ensure that only renewable generators take advantage of the subsidy to small-scale generators, BPL and URCA would have to set up and administer a more complex framework for small-scale generators that distinguishes between renewable and conventional sources.

5.2.2 Net Billing

Net billing allows consumers to generate electricity for personal use and sell any excess energy produced to the utility, but at a price that is lower than the retail tariff. Often the price is set at the utility's avoided cost of generation, which is the amount the utility saves by not having to generate electricity when it is provided by consumers.

Advantages

The cross-subsidy from lower-income households to higher-income households is reduced or eliminated in a net billing arrangement. If the net billing price is set at the utility's avoided cost of generation, there is no cross-subsidy.

Overall system costs do not rise, and, over time, can decrease as small-scale generators bring cost-effective generation onto the grid. At the same time, efficient small-scale renewables are encouraged, since small-scale generators are compensated for the fair value of the electricity they produce.

Disadvantages

Uptake of small-scale renewables will be slower than with net metering. However, this may be needed to allow the utility to incorporate small-scale generation without compromising reliability of supply.

Setting the rate for net billing is more time-consuming and expensive than net metering.

5.2.3 URCA's Proposal

URCA recognises that there are variations to both net metering and net billing that can compensate for some of the disadvantages. One example is for net metering to include an additional fixed monthly charge for distributor generators. Through the fixed charge, BPL recovers some or all of the cost of maintaining the grid to consumers with small-scale generation.

URCA is in general agreement with BPL that a net billing arrangement would be preferable. URCA, however, considers that the Fuel Charge, while a suitable starting point, does not actually comprise all of BPL's avoided cost of generation. Small-scale renewable generation may also create additional value, such as reducing transmission and distribution losses. Therefore, the Fuel Charge *undervalues* the electricity provided to the grid by small-scale generators. URCA also notes that some subsidy for renewable sources may be justified to meet the government's goals of increasing renewable generation.

While URCA is in favour of a more accurate assessment of the value of small-scale generation, it notes that such an assessment will require a significant costing exercise. As an interim measure, URCA therefore proposes to allow BPL to implement the small-scale generation programme based on a net billing arrangement at the Fuel Charge. However, URCA proposes to commence a review of BPL's avoided cost of generation, and once completed (including necessary consultation) URCA will determine the net billing tariff based on the outcome of that review. URCA will aim to complete the net-billing study by the beginning of Phase 2 in the Small-Scale Renewable Generation Programme. Requested revisions to the Phases are described in Section 5.4.

Question 2: Please provide comments and views on the net metering approach proposed by BPL and endorsed by URCA. In particular:

- **Do you agree with a Phase 1 net billing feed-in tariff equal to the fuel charge?**
- **Do you agree with URCA’s proposal to set a net billing feed-in tariff for future phases based on the utility’s avoided cost of generation?**

Please provide reasons and explanations for your response.

5.3 Renewable Generation Limits

The Plan put forward by BPL proposes to limit residential systems to supplying 5kW and commercial systems to 50kW to the grid on New Providence, with decreasing caps for the Family Islands depending on size. For Phase 1 (as redefined in Section 5.4 below), the limits proposed by BPL are acceptable. However, for subsequent phases URCA proposes that a higher cap on the overall size of residential systems should be implemented if feasible, perhaps this could be the 50kW cap applied to commercial systems.

URCA stresses that all small-scale generators should be offered the same Standard Offer Contract, and subject to the same net billing arrangement. URCA does not envision approving the option for BPL to solicit small-scale generation in competitive tenders, or to make alternative financial arrangements for electricity purchases. By maintaining a single Standard Offer Contract, BPL can ensure non-discrimination between consumer and consumer classes.

URCA encourages BPL to solicit renewable energy in competitive tenders, but to do so at utility scale. Utility-scale renewable energy is generally cheaper than small-scale renewable energy. Adding utility-scale capacity will also allow BPL to add renewable capacity more quickly.

The sections below outline the Phase 1 limits for residential and commercial systems which will be implemented by BPL. In each case the limit is based on the Average Customer Demand (“ACD”). ACD is calculated by taking the customer’s total consumption in kilowatt hours (kWh) during the preceding 12 months, and dividing by 8760. Where an installation is being applied for in respect of a new property, BPL will estimate the ACD upon application by the customer.

The maximum permissible system size (for residential and commercial) under Phase 1 of the Small Scale Renewable Generation Plan is 100kW AC output.

5.3.1 Residential Systems

For residential system, the limits to be implemented are based on the ACD plus a specific output in kW, which ranges from 5kW in New Providence, decreasing to 1kW in the least populated family islands.

The total system size which will be allowed is the ACD plus the appropriate increment set out in Table 1, relative to the island on which the system will be installed. This will provide an indication of the size system the customer should acquire, though BPL may further limit the allowable system size for technical reasons subject to URCA’s prior approval in writing.

Therefore, the limits set out in Table 1 below will apply to residential systems during Phase 1, unless otherwise agreed by BPL and approved by URCA:

Table 1 - Phase 1 Residential System Size Limited

Island	System Size Limit
New Providence	ACD + 5kW
Abaco, Eleuthera, Exuma	ACD + 3kW
Long, Island, Bimini, San Salvador, Andros, Inagua, Cat Island, Great Harbour Cay, Staniel Cay and Black Point	ACD + 2kW
All other islands	ACD + 1kW

5.3.2 Commercial Systems

For commercial system, the limits to be implemented in Phase 1 are also based on the ACD however, the maximum allowable system size is twice the customer’s ACD subject to the maximum sizes set out in Table 2 below.

Table 2 - Phase 1 Commercial System Limits

Island	System Size Limit
New Providence	ACD x 2 (Up to a maximum of 100kW)
Abaco, Eleuthera, Exuma	ACD x 2 (Up to a maximum of 50kW)
Long Island, Bimini, San Salvador, Andros, Inagua, Cat Island, Great Harbour Cay, Staniel Cay and Black Point	ACD x 2 Up to a maximum of 30kW)
All other islands	ACD x 2 (Up to a maximum of 10kW)

Subject to URCA’s prior approval exercising its sole discretion, BPL may further limit the allowable system size for technical reasons, or permit system sizes above those set out in the table (subject to the limit of 100kW) where special circumstances apply.

5.3.3 Overall Limits

BPL has proposed the following overall limits for total Small-Scale Renewable Generation, which will be implemented for Phase 1 in the relevant islands:

New Providence:

- Up to a total of 10,000 kW of installed Small-Scale Renewable Generation capacity on New Providence.

Abaco, Eleuthera and Exuma:

- Up to 500 kW of installed Small-Scale Renewable Generation capacity on each of Abaco, Eleuthera and Exuma.

Long Island, Bimini, San Salvador, North, Central and South Andros, Inagua, Cat Island, Great Harbour Cay, Black Point and Staniel Cay (Exuma):

- Maximum of 250 kW of installed Small-Scale Renewable Generation capacity per island.

All other Family Islands:

- Maximum of 25 kW of installed Small-Scale Renewable Generation capacity per island.

Decisions on the limits to be adopted for future Phases will be made by URCA based on BPL's reports on Phase 1, and the overall progress of the programme.

Question 3: Do you agree with the proposed limits for implementation in Phase 1, and should any adjustments be made to the limits for future phases?

Please provide reasons and explanations for your response.

5.4 Reducing the Phases to Three

URCA proposes that BPL should reduce the programme for interconnecting small generation from consumers to three phases, rather than the four or five phases set out in BPL's proposal:

- **Phase 1-** This phase covers the period January to September 2017 and is designed to allow BPL to test processes and operations for integrating small-scale renewables onto the grid, and to evaluate those processes and operations. URCA proposes that Phase 1 should combine Phases 1 and 2 of BPL's proposed Plan, so it should last for 9 months. As previously discussed, in Phase 1, BPL would operationalise the 40 2kW solar PV systems funded by the IADB and would sign on residential small-scale customers using specifications on system requirements consistent with the levels proposed in the BPL plan.

Registration and migration of existing renewable self-generation installations to the new programme should commence within Phase 1, subject to BPL's developing an appropriate programme for registration and migration of those persons. At a minimum,

installations that meet the same essential technical parameters as the new Phase 1 installations should be eligible for migration during Phase 1.

URCA clarifies in Section 5.8 below, that persons who have existing installations will be required to comply with the registration and migration process formulated by BPL. Where such persons have systems which are technically able to migrate, they will be mandated to do so. Other installations which are not technically able to be migrated into the new programme, will be required to ensure that their systems are isolated from the grid.

URCA's proposed actions for Phase 1 do not go beyond actions that BPL has proposed. So, BPL should begin Phase 1 immediately.

- **Phase 2** – This phase would run from October 2017 to March 2019. During this phase BPL would offer a uniform Standard Contract and standard interconnection criteria to all customers, subject to individual and overall caps, and in accordance with parameters established by URCA. The largest cap will be set for New Providence, with smaller caps for the Family Islands based on size. The Standard Offer Contract should also be guaranteed for some period – 10 to 15 years is common. Allow anyone to subscribe to up to that cap (subject to limits on individual system sizes).
- **Phase 3** – This phase would begin April 2019 and would set a higher overall cap and make any necessary revisions to the Standard Offer Contract and other interconnection requirements based on experience with Phase 2. URCA envisions that Phase 3 will be the final, on-going, phase of the programme, subject only to adjustments to the various caps or to documentation from time to time as circumstances require.

These three proposed phases are all BPL actions. There would be an URCA review between each phase and BPL would report on progress in the previous phase and recommend details for the next phase. For the avoidance of doubt, URCA would need to approve the proposed next phase.

Ideally, there would be a single Standard Offer Contract that would apply to all consumers equally. In practice, differences in infrastructure may make some areas better able to take on small-scale generation than others. So, some areas may be limited to a lower level of small-scale generation than the Standard Offer Contract generally gives. Even in this case, the default assumption would be what is offered in the Standard Offer Contract. Rather than identifying specific areas where small-scale generation is encouraged, small-scale generation should be

encouraged in all areas where it is technically viable, with special caps on small-scale capacity only in areas with infrastructure limitations.

URCA consider that the term of the Standard Offer should be adequate to afford the customer opportunity to recoup their investment in the asset and therefore ideally the term would match the useful life of a solar photovoltaic (PV) panel in the case of solar PV installation, generally 15 years. URCA invites BPL to propose a suitable contract duration in its revised plan, and for Phase 1 to implement contract terms of no less than ten (10) years.

Question 4: Do you agree with URCA’s proposed phases for BPL’s Small-Scale Renewable Generation programme?

Please provide reasons and explanations for your response.

5.5 Requiring Insurance for Small-Scale Renewable Generation

URCA envisages that from the commencement of Phase 2, owners of small-scale renewable energy generation systems will be required to have General Liability Insurance. This is because small-scale generators could be held liable if the anti-islanding protections on their renewable energy systems fail to operate, harming BPL personnel or private citizens. This would also protect small-scale generators against equipment damage or loss.

URCA is seeking input from the insurance industry to ensure that appropriate products are available which are not cost prohibitive.

Question 5: Do you agree with URCA’s proposed insurance requirements for owners of Small-Scale Renewable Generation systems?

Please provide reasons and explanations for your response.

Question 6: 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.

5.6 Technical Aspects of the Small-Scale Renewable Generation Programme

URCA has reviewed the proposed Applications and Interconnection Requirements and considers that it presents a workable starting point for determining the technical requirements for small grid-tied sources. URCA requests that BPL submit revised documents consistent with the changes set out in this document by the commencement of Phase 1, which will be published on URCA's website for stakeholder comments.

Question 7: Please provide any feedback on the proposed technical parameters for the Small Scale Renewable Generation Programme, once published.

If possible, please provide information to support your response.

5.7 Application Process

In keeping with the EA, BPL has responsibility for the process for application for permits. BPL shall maintain a register of all installations approved, including the status of the implementation (i.e., whether the capacity has been installed or not, whether it is active or not, and the amount of energy that has been supplied to BPL by the installation monthly). BPL shall supply to URCA biannual reports on the number of permits granted, generating sources, locations, sizes and aggregate kilowatts of the installed generating resources. Persons whose proposed installations are not approved by BPL may write to URCA to appeal BPL's decision.

The application process for residential systems, together with all forms shall be published by BPL on its website, prior to the commencement of Phase 1.

URCA, acting upon the advice and recommendation of BPL, shall be responsible for the process for application for permits for commercial small-scale grid-tied generation resources. The

application process shall be formulated and implemented within ninety (90) days of the commencement of Phase 1.

The Sections below outline the process that will be followed with respect to the acquisition and approval of small-scale renewable generation systems.

5.7.1 Residential

- Customer applies to BPL using the appropriate forms (which will be published on BPL's website prior to the commencement of Phase 1).
- BPL reviews and approves application if acceptable.
- Customer acquires system, and procures installation by a licensed electrical contractor.
- Licensed electrical contractor applies to the Ministry of Works for system inspection.
- Ministry of Works inspects and approves installation, and issues inspection certificate, if system passes inspection.
- Customer provides inspection certificate to BPL.
- BPL visits system and does final inspection and function test, if necessary.
- Customer signs Interconnection agreement.
- BPL issues small-scale renewable generation system certificate.
- BPL advises customer they can now activate and operate their system.

5.7.2 Small Commercial

- Customer applies to URCA.
- URCA reviews application and provides URCA Commercial small-scale renewable generation system approval letter if approved.
- URCA provides notification of system approval to BPL.
- Customer acquires system, and procures installation by a licensed electrical contractor.
- Licensed electrical contractor applies to the Ministry of Works for system inspection.

- Ministry of Works inspects and approves installation, and issues inspection certificate, if system passes inspection.
- Customer provides inspection certificate to BPL.
- BPL visits system and does final inspection and function test, if necessary.
- Customer signs Interconnection agreement.
- BPL issues small-scale renewable generation system certificate.
- BPL advises customer they can now activate and operate their system.

Question 6: Do you agree with the proposed licensing processes for Small Scale Renewable Generation systems?

Please provide reasons in support of your response.

5.8 Treatment of Existing Small-Scale Renewable Installations

A key issue identified in Section 1 above is that there are already a significant number of resident-owned and commercial-owned renewable (particularly solar PV) installations in The Bahamas. As noted earlier, in the absence of a framework for supply of energy to the grid, these tend to be generators that use all the electricity they produce. Broadly, there are two types of existing small-scale generators:

1. Some depend on the BPL grid for electricity supply for periods when they do not produce enough power to meet their own needs.
2. Others are off-grid—they supply all their own electricity needs and are not connected to the grid.

It is critical that all existing systems are regularised under the new programme, to ensure that they comply with the technical requirements being established, and also to ensure fairness. It is also anticipated that the new programme will provide financial benefits to existing system owners, which will incentivise participation.

Therefore, existing system owners in the first category will either be required to migrate to the new programme, or to ensure that their systems are disconnected and isolated from the grid.

All persons owning existing systems will be required to comply with a registration and migration programme designed and implemented by BPL within timelines to be established by BPL and subject to URCA's approval. The programme details will be published by URCA and BPL by no later than 28 February 2017, and will at a minimum provide the following details:

- Application forms to be used by existing system owners;
- Details of whether applications should be made to BPL and/or URCA for migration – it is anticipated that residential system owners will be required to apply to BPL, while commercial owners will be required to apply to URCA;
- Timelines within which applications must be made, and within which they will be considered;
- Parameters for approval of existing systems – at a minimum these will be consistent with the technical parameters established for Phase 1, although it is expected that efforts will be made to accommodate any technically feasible systems;
- The process for inspections and assessments by BPL and/or URCA of existing systems;
- Timelines within which any technical changes will need to be made to migrate existing systems to the new programme or to isolate systems from the grid where migration is not possible for technical reasons; and,
- Specifications and parameters for the isolation of systems from the grid, where integration is not possible for technical reasons.

Failure to comply with this requirement within the established timelines will result in the system being determined as illegal, and may subject the owner to penalties levied by URCA under the EA.

Persons in the second category above will be permitted to continue operating their systems, subject to complying with the registration process to be established by BPL.

Question 9: Do you agree with the proposed treatment of existing systems?

If possible, please provide reasons in support of your response.

6 Next Steps

6.1 Submission of revised Small-Scale Renewable Generation Plan

URCA requests that BPL prepare and submit to URCA, by no later than 6 January 2017, a revised Small-Scale Renewable Generation, based on URCA's proposals in Section 5 above. Broadly, the revised plan must include:

- Revised Requirements Document.
- Draft Interconnection Agreement.
- Draft Standard Offer Contract that will be offered to all prospective small-scale renewable generators.
- Application Forms.
- Plan for migration of existing small-scale renewable generators onto the Small-Scale Renewable Generation Programme.
- Public Education Plan detailing the steps that will be taken by BPL to educate members of the public about the programme.

URCA will review the revised plan, make any necessary changes, and provide a final approved plan to BPL within fourteen (14) days of receiving all relevant information, including responses to any URCA queries. The approved plan will be published on URCA's website.

6.2 Implementation of Phase 1

Phase 1 of the revised plan, once approved, is to be implemented immediately by BPL. Interested persons should note that Phase 1 is to be implemented as a test bed, to ensure that all assumptions and approaches set out in Phase 1 are achievable and appropriate for the ES in The Bahamas. Therefore, URCA's consultation commenced by this document will invite comments on all aspects of URCA's proposals set out in Section 5, and in its Final Determination, URCA will decide on any changes to the programme that should be implemented in Phase 2 onwards. **URCA stresses that no changes will be made which require persons who participate in Phase 1 to make any substantive modification to their existing system, save where such is necessary to ensure safety of the grid or the system.**

BPL should report to URCA by 1 September 2017 on the progress of Phase 1, and with a detailed proposal for Phase 2, which is anticipated to commence on 1 November 2017.

6.3 Consultation on Small-Scale Renewable Generation Plan

Interested persons are invited to submit comments on the matters set out in this Preliminary Determination by no later than 31 March 2017. It should be noted that BPL's revised Small Scale Renewable Generation Plan will be published once approved by URCA and will form part of this consultation. To aid persons in responding to the consultation, consultation questions have been formulated and included in Section 5 for response by interested persons. The questions are not intended to limit the scope of responses, however, so persons should feel free to comment on any aspect of the programme outlined in this document.

URCA will review the comments received and will formulate a Final Determination on the matters under consultation. The Final Determination will guide BPL's implementation of the programme during Phases 2 and 3.