FAIR TRADING COMMISSION

DECISION

On

Feed-in Tariffs for Renewable Energy Technologies up to and Including 1 MW

Document No.: FTCUR/DECFITMAX1MW/2022-13 **Date of Issue: December 30, 2022**

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ANTECEDENT DOCUMENTS

Document Number	Description	Issue Date
FTC/URD/CONFIT - 2019-03	Consultation Paper on Feed-in Tariffs for Renewable Energy Sources	May 29, 2019
FTCUR/DECFIT/2019-04	Decision on Feed-in Tariffs for Renewable Energy Technologies up to and Including 1MW	September 24, 2019
FTCUR/CONS/ FIT1MW/2022-08	Consultation Paper on a Review of Feed-in Tariffs for Renewable Energy Technologies up to and including 1 MW	November 3, 2022

TABLE OF CONTENTS

LIST OF ABBREVIATIONS

AC	Alternating Current
BLPC	Barbados Light & Power Company Limited
BNEP	Barbados National Energy Policy
COD	Commercial Operation Date
ELPA	Electric Light and Power Act, 2013-21
FCA	Fuel Clause Adjustment
FIT	Feed-in Tariff
FTCA	The Fair Trading Commission Act CAP. 326C of the Laws of Barbados (as amended)
GoB	Government of Barbados
LCOE	Levelised Cost of Energy
NDC	National Determined Contributions
PPA	Power Purchase Agreement
PV	Photovoltaic
RE	Renewable Energy
REC	Renewable Energy Credit
The Commission	The Fair Trading Commission
URA	The Utilities Regulation Act CAP. 282 (as amended)

SECTION 1 DECISION SUMMARY

The GoB through the BNEP has set a course for 100% RE by 2030. The Commission has established FIT programmes as the vehicle through which participants can invest in the local RE sector. The FIT programme that has been applied to the procurement of energy capacity under 1MW is especially beneficial to residential homeowners and small commercial enterprises, facilitating the maximisation of local participation. The FIT programme for RE systems sized up to 1MW, for land-based wind, solar, anerobic digestion and solid biomass expire on December 31, 2022. In order to ensure that the renewable energy sector continues to grow towards its 2030 target of 100% RE set out in the BNEP, a review of these rates is required. The FIT is a stable pricing framework, which continues to give the investors positive signals to encourage investment, while encouraging smaller investors to see the benefit of the sector.

Following is the Commission's determination made for RE systems sized up to 1 MW.

I **The effective start date for the FIT programme shall be January 1, 2023 ("2023 FIT Programme"). The 2023 FIT programme shall continue until December 31, 2025 and thereafter be reviewed annually or on the expiration of existing capacity, whichever comes first. New rates shall be announced three (3) months prior to the expiration of this programme.**

II **The FIT shall be based on a twenty (20) year fixed tariff with no front loading, differentiated by technology and size. The tariff is based on the LCOE, using a multi-criteria approach according to the guidelines espoused in the BNEP.**

FIT Policy Design

FIT Policy Element	RE Systems ≤ 1 MW
Proposed Effective Date	2023-01-01
Rate: Fixed, Tiered or Variable Options	Fixed
Rate: Differentiated by Technology & Size	Yes
Tariff Duration	20 years
Administratively-Determined or Competitively-Bid	Administratively-Determined
Presumed Off-taker	The BLPC
Quantity Covered by FIT	100% of output
Periodic Review of Rates and MW Allocation	36 months initially, thereafter, annually.

FITs Differentiated by Technology and Size (Up to and including 1MW)

Technology Category	Size Category
Solar	up to 10 kW
Solar	>10 kW to 100 kW
Solar	> 100 kW to 250 kW
Solar	>250 kW to 500 kW
Solar	>500 kW to 1 MW
Land-Based Wind	up to 10 kW
Land-Based Wind	>10 kW to 1 MW

III The applicable categories, rates and capacity allocation shall be as outlined below:

Technology, Size Category	FIT (Bb cents/KWh)	Total Allocation (MW)
Solar, Up to 10 kW	34.25	
Solar, >10 to 100 kW	35.75	
Solar, > 100 to 250 kW	34.75	
Solar, >250 kW to 500 kW	39.75	

Technology, Size Category	FIT (Bb cents/KWh)	Total Allocation (MW)
Solar, >500 KW to 1 MW	34.25	
Total Solar Allocation		**27.6**
Land-Based wind, up to 10 KW	36.75	
Land-based Wind, >10 KW to 1 MW	45.75	
Total Wind Allocation		**5**
Total Allocation		**32.6**

IV **Capacity shall be allocated on a first come first served basis**.

V **The total MW to be allocated to the 2023 FIT programme is 32.6 MW.**

VI **Under the 2023 FIT programme, systems of 3kW or less shall utilize the "sale of excess" billing arrangement at the appropriate rate, while those of 3kW and above up to 1MW shall use the "*buy all sell all*" mechanism.**

VII **A multiplier of 10% in the 2023 FIT programme shall apply to all community – shared RE projects. The criteria for community – shared RE projects shall be: 1) a minimum of fifteen (15) residential customer investors, 2) no single entity owning more than 50% of a single project.**

VIII **All terms shall remain constant for the duration of the 20- year contract. New or revised terms, conditions and tariff prices shall only be applicable to new projects entering the market in future programme years.**

IX **The FIT includes the purchase by the BLPC of all present and future commodities and/or environmental attributes generated by the project - including energy capacity, RECs or other commodities that may exist now or in the future. All rights, titles and interests in RECs shall be affirmatively purchased as part of the FIT and retained/retired on behalf of the Commission or other government agency so assigned. All RECs accrued from FIT projects shall be retained/retired and counted toward the 100% by 2030 goal, as is**

deemed appropriate. Further, the resale of RECs by the BLPC to fulfill any other claims or commitments, or for financial gain in international markets is not allowed.

SECTION 2 TRANSITIONING TO RENEWABLE ENERGY

The GoB continues to demonstrate its commitment towards exploiting the applicable indigenous energy resources potential as it envisions a near net-zero carbon neutral economy. The utilisation of FIT programmes has been adopted as a key driver towards the expansion of the RE[1] sector. Consequently, this policy initiative is expected to contribute to the GoB's NDC targets[2], realise energy independence, predominant RE production and consumption, and economic development for Barbados.

On September 24, 2019 the Commission issued its first Decision on FITs for RE technologies up to and including 1 MW (2019 FIT Decision). By this 2019 FIT Decision, FITs became effective October 1, 2019 until December 31, 2021.

The Commission, cognisant of the economic impact of the prevailing COVID -19 pandemic prior to December 2021 on existing and future price movements of RE technologies, issued a proposal to the public on December 21, 2021 to extend the 2019 FIT Decision until June 30, 2022. Having received no objections from the public, the Decision was extended as proposed. This extended period was considered reasonable to observe the stability of prices for RE technologies and their associated logistics costs so that a determination could be made on how future rates should be treated. Notably, price movements associated with RE technologies remained sluggish despite incremental contractions in prices and the instability of these prices continued. In light of this development, the Commission determined it appropriate on July 4, 2022 to further extend the 2019 FIT Decision until December 31, 2022. This additional six (6) months assisted the Commission in conducting the necessary monitoring and evaluation of RE technology prices during this period.

The Commission issued its Consultation Paper on Feed-in-Tariffs for systems under 1 MW and gave the public from November 2, 2022 to December 2, 2022 to respond.

[1] Renewable energy in this paper refers to only the power generation captured by accredited technologies that are germane to this FIT programme.
[2] NDCs are contributions from participating country towards meeting Global climate change targets.

A total of six submissions were received from the following parties by the date of closure:

- Blackstone Megawatt Energy Services Inc.
- Barbados Light and Power Company Limited
- Solar Watt Systems Inc.
- Barbados Renewable Energy Association
- Emera Caribbean Renewables Ltd.
- Blue Circle Energy (Barbados) Inc.

A synopsis of the responses from the aforementioned parties is presented in the attached Appendix 1.

The Commission thanks all respondents for their contributions to the Consultation.

2.1 Economic Regulator's Role In The Energy Transition

A FIT is the rate at which energy generators sell their output at a specified price for a specific duration to an off-taker. The use of FITs as it relates to design and level of rates, allows the Commission to align with the GOB's policy goals and objectives as set out in the BNEP. FITs also allow the Commission to balance its functions as a regulator with the needs of all stakeholders. Specifically, the rates consider the continued incentivisation of private investors, current economic conditions, the continued viability of the utility company and the impact of the rates on the consumer.

The economic regulator also must consider the integration of RE to the grid, ensuring that the electricity service provided is safe and reliable. Under the FTCA and the URA, the Commission is responsible for establishing principles for arriving at rates to be charged by service providers and RE producers as well as determining the maximum rate applicable and set guidelines for any agreements which are entered by RE producers. These tenets are set out in section 4(3) (a) and (b) of the FTCA and section 24B (1)(a) through (d) of the URA.

Following is the Commission's determination on RE systems up to 1 MW. The determination of the capacity allocated to the 2023 FIT programme is under the remit of the agency

that has the responsibility for capacity and its procurement, which is in this case, the Ministry of Energy and Development. The objective of this Decision mirrors the multi-criteria approach expressed in the BNEP.

This component of the FIT programme (RE systems up to and including 1MW) shall commence on January 1, 2023 and conclude on December 31, 2025 or conditional on market response to the allocated capacity of 32.6 MW.

FITs as determined herein were developed based on information from the consultation process and the Commission's own research.

SECTION 3 FIT PROGRAMME OVERVIEW

3.1 Legislative Framework

Power to set rates

The URA and the FTCA together empower the Commission to set and monitor rates for the supply and distribution of electricity in the RE sector of Barbados. More particularly, pursuant to section 4(3) of the FTCA, the Commission has the responsibility to, inter alia:

> *(a) establish principles for arriving at rates to be charged by service providers and renewable energy producers;*
>
> *(b) set the maximum rates to be charged by service providers and renewable energy producers;*
>
> *(c) monitor the rates charged by service providers and renewable energy providers to ensure compliance;*
>
> *(d) …*

The Commission also has these duties under section 3(1) of the URA, which states:

> *"The functions of the Commission under this Act are, in relation to service providers, to*
>
> *(a) Establish principles for arriving at the rates to be charged;*
>
> *(b) Set the maximum rates to be charged;*
>
> *(c) Monitor the rates charged to ensure compliance*
>
> *(d) …."*.

Principles and rates

Section 2 of the FTCA and section 2 of the URA both define "principles" as the "*formula, methodology or framework for determining a rate for a utility service*", and stipulate that "rates" include:

> *(a) every rate, fare, toll, charge, rental or other compensation of a service provider or renewable energy producer;*
>
> *(b) a rule, practice, measurement, classification or contract of a service provider or renewable energy producer relating to a rate; and*
>
> *(c) a schedule or tariff respecting a rate.*

Interconnection Agreements and Agreements to Supply Electricity

Section 24B(1) of the URA sets out the functions of the Commission in relation to a renewable energy producer entering into an interconnection agreement or other agreement to supply electricity to the public grid. These functions are as follows:

(a) *establish principles for arriving at the rates to be charged;*
(b) *set the terms and conditions of the agreements;*
(c) *set the maximum rates to be charged under the agreements; and*
(d) *direct renewable energy producers to submit the proposals for the rates and terms and conditions relating to their agreements.*

The Commission also has rate-setting functions in relation to the RE producers storing energy produced from RE plants. Section 24B(4) of the URA stipulates that the Commission is required to:

(a) *set the maximum rates to be charged; and*
(b) *establish guidelines for interconnection.*

Performance of the Commission's functions

The Commission, in performing the above functions in respect of agreements to supply electricity (section 24B (1) of the URA) is mandated to consult with interested parties and have regard to certain policies and requirements. Section 24B (2) of the URA in particular states that:

"*the Commission shall consult with renewable energy producers, representatives of consumer interest groups and other interested parties and shall have regard to*

(a) *the national energy policy;*
(b) *the national environmental policy;*
(c) *the requirement to promote renewable energy and to enhance the security, affordability, safety and reliability of the supply of electricity.*"

Subsection 24B(3) of the URA further outlines the Commission's functions as it pertains to the establishment of principles for arriving at the rates to be charged under section 24B(1) of the URA. This section states that the Commission shall have regard to:

(a) *the promotion of efficiency on the part of renewable energy producers;*

(b) ensuring that an efficient renewable energy producer will be able to finance its functions by earning a reasonable return on capital;

(c) such other matters as the Commission may consider appropriate.

In performing its rate-setting functions under 24B(1) (agreements to supply electricity) and 24B(4) (storage of energy) of the URA, the Commission shall request a renewable energy producer to provide the Commission with information relating to its operations, finances or such other information as the Commission may consider necessary to perform its functions.

The Electric Light & Power Act

The ELPA elaborates on the Commission's functions with respect to interconnection, particularly where agreements are concerned. Section 13(2) (a) (ii) and (iii) of the ELPA stipulates that:

"Interconnection services referred to in subsection (1) shall be

(a) offered at points along the public grid subject to

(ii) such agreement between the parties as may be approved by the Commission for the purpose; and

(iii) the payment of such fee as may be specified by the public utility and approved by the Commission in respect of interconnection; "

Further, section 13(3) of the ELPA states that:

"The public utility shall purchase electricity from a licensee or other person referred to in subsection (1) at such rate as may be agreed by the parties and approved by the Commission."

Additionally, subsection (4) states that:

"Where parties fail to agree on the terms and conditions of an agreement referred to in this section or a dispute arises in respect of such an agreement, any party may, in writing, refer the matter to the Commission for determination."

SECTION 4 FEED-IN-TARIFF DESIGN AND ASSUMPTIONS

4.1 Development of Tariffs

Ratemaking for RE based technologies under this FIT programme was developed from modelling resource based input assumptions in the FTC FIT Model 2019 software. The conceptualisation of tariffs derived for project categories up to and including 1 MW relied on a LCOE methodology. Outputs from the FTC Model 2019 were assessed to ensure that investment in RE remains an economically viable one for all participants in the sector. This section outlines the methodology and rationale underpinning the most appropriate design and assumptions for a resource cost-based FIT in Barbados.

The ratemaking process continues to consider the policy objectives and multi-criteria approach as outlined in the BNEP. This allows for the achievement of balanced rates for each capacity category of the programme. The following were explored during the ratemaking process:

- Technology, size and application diversity;
- Maximising local participation;
- Affordable energy for consumers;
- Sufficient deployment to meet the 100% RE by 2030 goal; and
- Facilitating effective competition in the market.

Price movements on RE technologies are periodically monitored. In addition, the Commission tracks the licence application process that is managed by the Ministry of Energy and Business Development. This process of monitoring provides information and helps the Commission to monitor the installation price volatility, a key input in the determination of rates. COVID-19 and the war in Ukraine have both had an impact on transit times and costs, as well as material costs. These geopolitical developments have influenced the development of FITs.

The role of the Commission in the energy transition towards a 100% RE goal remains a crucial one in balancing the interests of all key actors (customers, investors, Government policy, fuel suppliers, technology suppliers, installers, and the utility) in the evolving RE

economy and the attainment of cost effective rates. Having considered the aforementioned inputs and objectives applicable to the ratemaking process, the rates depicted in Table 1 are as follows:

Table 1: FITs By Technology and Size Category

Technology, Size Category	FIT (Bb cents/kWh)	Allocation (MW)
Solar, Up to 10 kW	34.25	27.6
Solar, > 10 to 100 kW	35.75	
Solar, >100 to 250 kW	34.75	
Solar, >250 to 500 kW	39.75	
Solar, >500 kW to 1 MW	34.25	
Total Solar Allocation		27.6
Land-Based Wind, up to 10 kW	36.75	5
Land-Based Wind, >10 kW to 1 MW	45.75	
Total Wind Allocation		5
Total Allocation		**32.6**

FIT Policy Design Features

The following section outlines the specific characteristics of the FIT design.

Official Commencement and Duration

The effective date of commencement for FITs prescribed for project categories up to and including 1 MW shall be January 1, 2023. The projects eligible for new rates shall be:

- Solar PV and land-based wind projects sized up to an including 1 MW throughout an initial programme period of 36 months until December 31, 2025. The Commission will monitor the operation of the programme on a quarterly basis to collect appropriate data. Six (6) months prior to the December 31, 2025 termination date, a full review of the programme will be undertaken. If the level of RE uptake results in depletion of the allocated capacity (32.6 MW) sooner than the initial 30 months, a review of rates will be conducted by the Commission.

Eligibility Parameters

For RE systems sized over 10 kW, the acquisition of a licence from the Ministry with responsibility for energy qualifies a project to participate under the FIT programme. This is achieved when a potential candidate submits a complete licence application form via the said Ministry's online portal facility provided for such purposes. Once the submission is accredited, capacity will be allocated to projects on a first come, first served basis until the total allocated capacity (32.6 MW) has been exhausted.

The determination of the period required from the time of licence to the specific project's COD and extension of licence shall be the stipulated by the said Ministry.

RE systems sized under 10kW are not required to submit an application for a licence.

Contract Tenure and Price Structure

All RE projects under this FIT programme shall be eligible for a contract period of 20 years. The propose price of the energy generated from the RE project shall remain fixed for the duration of the contract period. The significance of the long term fixed price aims to ensure market certainty and investor confidence in the RE sector in the energy transition process.

Counterparty and Obligation to Purchase

RE systems are expected to be connected to the utility's power system. The BLPC is expected to purchase 100% of all energy that is exported to the national grid i.e. the full amount of the RE generator's output over the life of the 20-year contract.

When RE generators export power to the grid, this produces RECs. These credits represent the environmental and non-power attributes of RE generation for each Megawatt-hour of RE generation delivered to the grid. The GoB as a signatory to the Paris Accord, utilises these RECs in fulfilment of its National Determined Contributions under this international treaty. As such, the RECs associated with RE production are therefore the property of the Republic of Barbados and cannot be claimed by any other entity.

Billing and Compensation Scheme for RE Projects

All revenue metering configurations shall comply with prudent industry practice and standards and where practicable the mode of billing applied shall be in accordance with the specificity of the RE project. Systems under 3 kW are billed under Sale of Excess modality. RE systems sized over 3 kW are billed using *"Buy All Sell All"*.

Interconnection Agreement

Parties (BLPC and IPP) to the FIT Agreement shall comply with the terms and conditions set out by an interconnection agreement. This shall include the responsibilities, access to and ownership of connection facilities.

Cost Recovery

All prudent costs to be incurred by the BLPC or the incumbent utility of interconnection equipment shall be recovered through an approved appropriate recovery mechanism.

Capacity Caps

Over the duration of the programme, precise monitoring of allocated capacity is important in order to address issues of grid stability, the application of appropriate mitigation measures and the cost recovery and cost controls for the consumer. This is particularly necessary when there are unsolicited modifications to existing RE projects that do not require a licence.

Gaming

This is where investors site multiple smaller projects on one parcel of land potentially to obtain rates applicable to the smaller projects. The FTC imposes no restrictions on the number of projects that can be built on a single parcel of land. This is applicable to any projects benefitting from rates under the FIT 2019 Decision.

Community Shared Projects

Community – Shared Projects are projects sited at any location owned by at least 15 residential customers with no one residential customer owning more than 50% of the project.

Additional conditions for eligibility to participate in the community shared project are:

- Individuals are not restricted to the same geographical area;
- Projects may include micro and small businesses as defined by the Small Business Association of Barbados;
- Each project is required to be under one (1) umbrella company;
- Participants must demonstrate ownership and percentage share; and
- Individual participants must be eighteen (18) years or older.

The Commission acknowledges the need for more information on community-shared projects to be disseminated as this part of the programme is important for achieving the objective of democratizing the sector. It is also important that all parties involved have a better understanding of how these types of projects will work in practice. The inclusion of community shared projects continue to be an appropriate mechanism for enabling democratization, as it facilitates large groups of small investors to benefit from investments in RE.

The multiplier for these types of projects is 10%. That is, the applicable FIT will increase by 10% for projects that meet the criteria to qualify as a Community – Shared RE Project. The multiplier enables recovery of the cost associated with assembling the number of investors required to own the project.

Project Bands

Based on the analysis of the applications for licences currently awaiting approval, an assessment of project bands has been done. Following this assessment, the bands by technology and size will remain as in the 2019 FIT Programme.

Table 2: FITs Differentiated by Technology and Size (Up to and including 1MW)

Technology Category	Size Category
Solar	up to 10 kW
Solar	>10 kW to 100 kW
Solar	> 100 kW to 250 kW
Solar	>250 kW to 500 kW
Solar	>500 kW to 1 MW
Land-Based Wind	up to 10 kW
Land-Based Wind	>10 kW to 1 MW

FIT Modelling Assumptions

The principal cost inputs and related factors such as performance, operation and financial assumptions have been assessed and analysed to determine the necessary changes to the assumptions for the 2023 FIT Programme.

Installed Cost

Table 3 – Installed Cost and Performance Input Assumptions

Technology Size Category	Installed Cost[1] (BDS $/KW)	Net Capacity Factor (%)	Annual Degradation (%)	Analysis Term (Years)
Solar				
Up to 10 KW	$4,302	18%	0.5%	20
Above 10 KW and up to 100 KW	$3,591	18%	0.5%	20
Above 100 KW and up to 250 KW	$3,290	19%	0.5%	20
Above 250 KW and up to 500 KW	$3,841	19%	0.5%	20
Above 500 KW and up to 1000 KW	$3,246	20%	0.5%	20
Land-based Wind				
Up to 10 KW	$7,574	25%	0.5	20
Above 10 KW and up to 1000 KW	$7,739	30%	0.5	20

1. *Including funding of reserve accounts and other financial-related costs, and including $80/KW for all projects above 500 KW (see also 'Interconnection Cost' note below).*

Operating Input Assumptions

This refers to expenses incurred by the IPP – operating and maintenance, site lease, insurance, project management cost, land tax.

Table 4 – Operating Cost Input Assumptions

Technology Size Category	**Fixed O&M** (BDS $/KW-yr)	**Site Lease** (BDS $/KW-yr)	**Insurance** (BDS$/mille)	**Project Mgmt** (BDS$/KW-yr)	**Land Tax[3]** (% of rev.)
Solar					
Up to 10 KW	$100	N/A	BDS$4/mille	Incl. in O&M	0%
Above 10 KW and up to 100 KW	$35	N/A	BDS$4/mille[2]	$40	0.95%
Above 100 KW and up to 250 KW	$35	N/A	BDS$4/mille[2]	$76	0.95%
Above 250 KW and up to 500 KW	$35	$25	BDS$4/mille[2]	$64	0.95%
Above 500 KW and up to 1000 KW	$32	$25	BDS$10/mille[2]	$60	0.95%
Land-based Wind					
Up to 10 KW	$70	$25	BDS$4/mille	Incl. in O&M	0%
Above 10 KW and up to 1000 KW	$70	$25	BDS$10/mille[2]	$73	0.95%
Offshore	$240	$25[1]	0.4 % of cost	Incl. in O&M	N/A

1. *Proxy for comparable benefits assumed paid in lieu of a site lease*
2. *$4/mille for equipment replacement and $6/mille for business interruption insurance. Mille = Thousand*
3. *Rate of BDS 30¢/kWh used as proxy for value of electricity sold to calculate tax.*

Financial Input Assumptions

The model solves for a FIT that meets the equity return after tax, based on the assumptions used.

Table 5 – Financial Input Assumptions

Technology Size Category	**% Debt**	**Debt Term (Years)**	**Interest Rate (%)**	**Cost of Equity (%)[1]**
Up to 10 KW	50%	7	6.00%	6.00%
Above 10 KW and up to 100 KW	80%	7	6.00%	14.00%
Above 100 KW and up to 250 KW	75%	7	6.00%	14.00%
Above 250 KW and up to 500 KW	70%	10	6.25%	14.00%
Above 500 KW and up to 1000 KW	70%	10	6.25%	14.00%
Land-based Wind				
Up to 10 KW	50%	7	6.00%	6.00%
Above 10 KW and up to 1000 KW	65%	10	6.25%	14.00%

1. *Model solves for FIT rate that meets this equity return target after-tax.*

Interconnection Costs

Interconnection costs do not apply to RE projects that are below 500 KW. However, where a project may incur interconnection costs due to its location, the IPP is to pay 25% of the full cost and the BLPC shall pay the remainder.

For projects sized above 500 kW and up to and including 1 MW, an estimate of $80/kW was assumed in the FIT to cover the interconnection costs up to the transformer terminals. All other costs beyond this point are to be shared between the IPP and the BLPC in a 25/75 ratio of the full external cost.

The rationale for the shared allocation of interconnection costs is to avoid the issue of free ridership and to apply a balanced approach to support RE project deployment. The BLPC is to submit details of interconnection costs on a quarterly basis as part of the regulatory reporting to the Commission.

Impact Analysis on Customer Rates

Based on the results of the short term analysis 2023 – 2028 of the impact of FITs for solar PV and land-based wind technologies on customers' electricity rate, the average IPP cost expected is $0.4018/kWh. The average FCA expected during the analysis period is $0.2788/kWh within the range of $0.2760/kWh to $0.2799/kWh. It is anticipated that these estimates will hold true provided that global crude oil benchmarks, West Texas Intermediate and Brent remain consistent with 2021 values, $136.42 per barrel and $141.78 per barrel, respectively.

Official Commencement and Review Period

The new FITs shall take effect from January 1, 2023. These rates will be applicable to all eligible projects receiving licences subsequent to this date. Moreover, the FITs shall be subject to review after 30 months. It is intended that the third tranche of the FIT programme would commence on January 1, 2026.

The Commission continues to reserve the right to revise rates prior to the end of this recommended period in the instances where it is clear that conditions dictate that should be the course of action.

SECTION 5 THE DETERMINATION

In view of the foregoing, the Commission has determined the following:

I **The effective start date for the FIT programme shall be Jan 1, 2023 ("2023 FIT programme). The 2023 FIT programme shall continue until December 31, 2025 and thereafter be reviewed annually or on the expiration of existing capacity, whichever comes first. New rates shall be announced three (3) months prior to the expiration of this programme.**

II **The FIT shall be based on a twenty (20) year fixed tariff with no front loading, differentiated by technology and size. The tariff is based on the LCOE, using a multi-criteria approach according to the guidelines espoused in the BNEP.**

FIT Policy Design

FIT Policy Element	RE Systems ≤ 1 MW
Proposed Effective Date	2023-01-01
Rate: Fixed, Tiered or Variable Options	Fixed
Rate: Differentiated by Technology & Size	Yes
Tariff Duration	20 years
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Presumed Off-taker	The BLPC
Quantity Covered by FIT	100% of output
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Land-Based Wind	up to 10 kW
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III The applicable categories, rates and capacity allocation shall be as outlined below:

Technology, Size Category	Year FIT (Bb cents/kWh)	Year Allocation (MW)
Solar, Up to 10 kW	34.25	27.6
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Solar, >500 kW to 1 MW	34.25	
Land-Based Wind, up to 10 kW	36.75	5
Land-Based Wind, >10 kW to 1 MW	45.75	
Total Allocation		32.6

IV Capacity shall be allocated on a first come first served basis.

V The total MW to be allocated to the 2023 FIT programme is 32.6 MW.

VI Under this 2023 FIT programme, systems of 3kW or less shall utilise the "sale of excess" billing arrangement at the appropriate rate, while those of 3kW and above up to 1MW shall use the "*buy all sell all*" mechanism.

VII A multiplier of 10% in the 2023 FIT programme shall apply to all community – shared RE projects. The criteria for community – shared RE projects shall be: 1) a minimum of fifteen (15) residential customer investors, 2) no single entity owning more than 50% of a single project.

IX All terms shall remain constant for the duration of the 20- year contract. New or revised terms, conditions and tariff prices shall only be applicable to new projects entering the market in future programme years.

X The FIT includes the purchase by the BLPC of all present and future commodities and/or environmental attributes generated by the project - including energy capacity, RECs or other commodities that may exist now

or in the future. All rights, titles and interests in RECs shall be affirmatively purchased as part of the FIT and retained/retired on behalf of the Commission or other government agency so assigned. All RECs accrued from FIT projects shall be retained/retired and counted toward the 100% by 2030 goal, as is deemed appropriate. Further, the resale of RECs by the BLPC to fulfill any other claims or commitments, or for financial gain in international markets is not allowed.

Dated this 30th day of December, 2022

Original signed by
……..……..
Tammy Bryan
Chairman

Original signed by
……..……..
John Griffith
Commissioner

Original signed by
……..……..
Ruan Martinez
Commissioner

Original signed by
……..……..
Ankie Scott-Joseph
Commissioner

Original signed by
……..……..
Samuel Wallerson
Commissioner

APPENDIX 1

Summary of Responses to Questions

1. **Do you consider that with improved access to RE project information, a 24 month period would be reasonable for the duration of the FIT programme? Please provide a reason for your response.**

Respondents' Comments

The majority of the respondents indicated that a 24 month period is appropriate as it allows adequate time for evaluation of the programme and reinforces the rate certainty that the FIT is known to provide and in doing so, enhances investor confidence. However, two (2) respondents suggested that for larger and more commercially oriented systems, a shorter review period may be preferable, with a 12 month period being recommended as more appropriate due to the current environment of rising prices.

2. **What do you consider to be a reasonable solution to address un-solicited modifications to RE projects not requiring a licence?**

Respondents' Comments

Generally, submissions indicated concern surrounding the issue of grid capacity management as it was seen as a problem which could negatively impact grid stability and erode capacity that would otherwise be available to other projects. One (1) respondent indicated that as a deterrent, customers who are found to have engaged in this practice face disconnection or reversal of credits earned. Others suggested greater monitoring of installations, understanding the true limitations of the grid and the tracking and public disclosure of available capacity.

3. **What action should be taken with respect to the programme cap when grid stability issues develop during the FIT programme schedule?**

Respondents' Comments

Most respondents acknowledged this as an issue that requires careful consideration. Two (2) of them urged the development of appropriate cost recovery measures that would

cover mitigation by the utility while three (3) respondents indicated the possible need to suspend or pause the programme until any and all grid stability issues are resolved. Respondents also suggested that information on grid stability and the amount of remaining capacity at any point in time should be continuously monitored and made available to the public. One (1) respondent in particular recommended the following measures: (1) management of localised instabilities by establishing per-feeder caps, which would not restrict the progress of the programme elsewhere on the grid; (2) targeted caps on projects connected at the transmission level until appropriate mitigation is in place; (3) integration of SCADA systems for projects above 100kW AC to allow the utility to monitor their generation in real time. Projects over 500kW AC would be equipped with special equipment to allow for remote dispatch, disconnection or curtailment to maintain grid safety and stability.

4. **What are your views on removing or retaining the allocated capacity for the RE technology deployment caps? Please provide a reason for your response**

   Respondents' Comments

   Two submissions contended that any deployment caps ought to be broadly technology based and otherwise congruent with sectoral plans outlined in the IRRP while one (1) agreed with the Commission's perspective as outlined in the consultation paper. Another respondent stated that any caps included in the next FIT iteration must have clarity in how they are administered and how much of the cap remains at regular intervals as the programme progresses. This respondent also recommended maintaining only high level caps, based on grid level constraints i.e. (1) Small projects that do not require licensing (2) Mid-sized projects connected at the 11kV feeder and (3) Large projects connected at the transmission level. One (1) other submission contended that if caps could be removed without negative repercussions then that would be preferable.

5. **How does information on projects caps impact your investment decisions for RE projects? Please explain your response.**

Respondents' Comments

Two (2) respondents suggested that where capacity is reaching the cap for any technology, investors would likely not proceed. There were quite varied responses in general, citing issues such as the importance of information on licensing, feeder penetration and grid stability to investors, the lack of a clear storage policy as a deterrent to investment and investment decisions being based on capacity allocations, costs and rates known only at the start of the programme period, rather than information gleaned in real time. Additionally, one (1) respondent intimated that wise investment decisions are based on assessments of the risk/return ratios of the various technology categories.

6. **Should any of the capacity ranges be adjusted or removed? State a reason for your response.**

Respondents' Comments

In response to this question, a number of the respondents reiterated their stances from question 4 above, suggesting broader technology based capacity ranges in line with the IRRP. Two (2) submissions stated that the capacity ranges were reasonable as presented. However, one of these urges caution with solid biomass and anaerobic digestion due to known operational issues. Another party believes capacity ranges and categories should be adjusted in the following manner: (1) residential (2) commercial/industrial with a self-consumption function (3) commercial/industrial with intent to supply others. Prioritisation in terms of rates and capacity ranges ought to be given to the first and second of these recommendations.

7. **How should this specific situation be addressed under the FIT programme? Give a reason for your response.**

Respondents' Comments

Generally, the respondents held the view that if an investor received licensing approval within a particular programme period, their project should be affording the applicable FIT for the period. They pointed out that one of the main hallmarks of a FIT, one which tends to incentivise investment, is stable, predictable and transparent rates. Moreover,

technology prices near the end of a programme period can either be higher or lower so essentially, it is not correct to assume that investors who seek to come online close to the end of the period would benefit from lower technology prices. One (1) respondent indicated that a fair solution would be to apply the rate at the stage of conditional licence approval. This would allow some level of certainty and facilitate the start of the financing process. Another commented that it is customary for some developers to simply be more profitable than others for any number of reasons.

8. **What approaches do you consider would be reasonable to mitigate against these types of gaming issues? Please provide a reason for your response.**

Respondents' Comments

Two of the respondents cautioned against ascribing the term gaming to the activities of some licensed investors under a legitimate tariff too loosely, indicating that there may be several instances where there are smaller projects spread across different parcels of land in the same location for quite legitimate reasons e.g. a landlord simply may not want one contiguous facility on their land but may be more willing to allow several smaller ones. Additionally a large tract of land may be owned severally by different landlords, each having a specific parcel. These and other instances ought not to be prejudiced by being labelled as gaming. However, the respondents generally acknowledged gaming as a significant issue, offering potential measures to address the problem.

One (1) respondent suggested gaming should be addressed at the licensing and rate design stage. The more rate categories exist, the greater the incentive and opportunities for gaming. Two (2) respondents suggested that the regulator ought to enforce the tariff for the cumulative capacity of the system instead of allowing the smaller individual systems to each qualify as standalone projects. Another two (2) recommended solutions based on licensing with respect to the size and configuration of the land, e.g. (1) Stipulating a certain number of licences per so many acres of undivided land. This way owners of large parcels of undivided land may host multiple projects; (2) Parcels of land that have been subdivided within 24 months of licence application be considered as a whole undivided parcel; (3) the refusal of licences to applicants with recently subdivided

land. Another submission suggested that since the utility and the planning authority must review and record all applications, these two entities ought to be able to investigate suspected instances of gaming. If these investigations uncover instances of gaming, the parties involved should be subject to fines.

9. **Do you agree or disagree with the proposal to replace the FCA component charge under the "*buy all sell all*" billing mechanism with a monthly grid-use charge? Please support your response with a reason.**

Respondents' Comments

Three (3) respondents indicated that the "*buy all sell all*" mechanism is the best and most cost effective method for the remuneration of RE producers. Neither of them agreed with the proposal to remove the FCA component charge in favour of a monthly grid use charge, simply stating that a replacement billing system would require knowledge of both the fuel and non-fuel real time cost of energy used by connected RE producers. It is felt that currently, the cost of implementing such a billing system would not be advantageous for customers, as RE producers would avoid paying the FCA charge despite perhaps using the grid, and BLPC would be passing the rate paid to them through to the customer. This creates undue pressure on ratepayers. The remaining respondents generally indicated their agreement with the removal of the FCA component in favour of a fixed monthly grid usage charge. The view here is that RE producers would self-consume emission free energy and therefore should not be tied to the FCA.

10. **What other alternatives can be considered to address the treatment of self-consumed RE under this billing arrangement? Please explain your response.**

Respondents' Comments

The majority of respondents reiterated their answers to Question 9 above. One (1) suggested the establishment of a charge for off grid and grid standby services based on the use or non-use of electricity. Another suggested defining self-consumption as the amount of energy produced that is coincident with the amount consumed and then

levying a fixed charge on the non-coincident portion. A further suggestion was to have residential systems up to 25kW benefit from net billing as opposed to "*buy all sell all*".

11. **Should grid use charges apply to customers on 'sale of excess' billing mechanism to ensure fair allocation of cost? Please explain your response.**

    Respondents' Comments

    Two (2) of the respondents indicated that grid use charges at this time were not appropriate for systems under 1MW, stating instead a preference for the "*buy all sell all*" mechanism. One (1) other party contended that all customers should pay grid use charges, but recommended that all RE customers going forward be placed in the "*buy all sell all*" method while grandfathering all current sale of excess customers. There was a view that some form of grid use charge should only apply to the portion of RE production that does not coincide with the customers' self-consumption. The respondents all shared the view that customers should pay their fair share for grid use but, while some saw "*buy all sell all*" as the safest and most cost effective method, others found merit in the idea of a grid use charge.

12. **What is your perspective on the provision of a standard FIT Agreement for participants under this FIT programme? Please indicate a reason for your view.**

    Respondents' Comments

    The general consensus among the respondents was that a standardised, bankable PPA is essential as it would greatly enhance the process of financing projects within the sector and this would in turn lead to overall sector growth as investor confidence increases. Some suggested for smaller investors that it could be optional.

13. **Should the FIT Agreement apply to all RE technology categories? Which RE technology size categories should be included in the agreement? Please support your response with a reason.**

Respondents' Comments

Again there was general consensus amongst the respondents that a FIT agreement or PPA should be available for all technology and size categories. One (1) respondent indicated that a standard form contract is appropriate for intermittent resources but for solid biomass and anaerobic digestion, a separate template should be developed. Another opined that the use of the FIT agreement should depend on the level of risk involved, with the implication being that higher risk projects would require greater commercial details. Overall, the prevailing view was that a standardised FIT agreement ought to be available for all projects above 100kW and up to 1MW.

14. **Do you agree that if a financing agency requires a FIT PPA for specific RE projects under this programme that this can be developed by the negotiating parties for efficiency?**

Respondents' Comments

All but one (1) of the respondents insisted that individually negotiated PPAs are undesirable and if any specific adjustments need to be made, they ought to be based on a standardised FIT agreement. The view held was that standardised agreements can eliminate or minimise the time and resources needed by individual negotiations, provide comfort to lenders and mitigate against the imbalance in resources and information between the utility and RE producers.

15. **Did you have any challenges with the initiation or implementation of your community-shared project? What were these challenges and how were these addressed? Please explain your response.**

Respondents' Comments

None of the respondents had the opportunity or need to engage in any community-shared projects thus far and as such could not provide any information in this regard.

16. **What other considerations should be addressed to assist the development and implementation of community-shared projects? Please give a reason for your response.**

Respondents' Comments

In general, the respondents indicated the need for a more specific and well thought out framework to govern community-shared projects. This would explain explicitly how shareholders would be paid and set out other necessary rules. They also noted that more information on this matter needs to be made available publicly.

17. How has the total installed cost for RE projects changed in the Barbados RE market to date? Please provide specific details to support your response.

Respondents' Comments

There was consensus that total installed costs for RE projects have increased significantly due to the economic fallout of the COVID-19 pandemic and the effects of the Russia – Ukraine war. Upward inflationary pressures and increasing interest rates have driven up material costs, construction costs, shipping costs and labour costs across the board. One (1) respondent has provided a report that shows similar pressures projected to last into 2024.

18. Which other performance input assumptions in Table 2 in your opinion should be adjusted based on our current RE market conditions? Please provide a reason for your response.

Respondents' Comments

One (1) respondent reported that the assumptions for installed costs may need to be reviewed due to general and significant increases in this industry wide. Further they and one other respondent concur with the degradation rate of 0.5% but note that this does not account for differences in climatic conditions. Tropical climates tend to introduce greater degradation and a rate of 0.8% is sometimes observed. Moreover, it may be appropriate to consider light induced degradation suffered by modules upon initial use. The industry standard assumption for this is 2%. Two (2) of the respondents took issue with the term assumptions, indicating that the generating licence states a term of 20 years from date of issuance. However, in reality, a prudent investor will not proceed with construction or procurement until the licence is received and thereafter, the processes of

permitting, financing, construction etc., can last for a year or more, especially given the recent extended lead times for the receipt of equipment and materials. A suitable course of action here would be to recommend that the Ministry clarifies the term of the licence as commencing from the date of commissioning instead. One (1) other respondent indicated that if the installed cost assumptions are stated in an AC basis, then the capacity factor is reasonable but the installed costs are low and another suggests separate cost treatment for rooftop solar and ground mounted solar as there is a significant cost differential.

While not directly related to the question, one of the respondents indicated that the FIT rate may need to be adjusted due to the following: (1) the reality of curtailment and the need for storage, if not addressed, may render the FIT insufficient if RE producers are not compensated for either; (2) the need for clarity on customs duties and VAT, as in practice, these costs are often being applied whereas they are excluded in the Commission's assumptions.

19. Which of the operating cost assumptions in Table 3[3] have exhibited a major shift in costs and should be adjusted based on our current RE market conditions? Please explain your response.

Respondents' Comments

One (1) respondent indicated that insurance costs are now $6/mille or 0.6% of replacement costs for all solar systems and is expected to rise. For wind the cost is $7/mille or 0.7% of replacement costs. Fixed O&M costs for solar have more recently been recorded at $40/kW/Year. They also note that with the likelihood of increasing inflationary pressures, the FIT rate available currently may become insufficient over time as operating costs rise in line with inflation. Another submission suggests that insurance for solar is $11.25/mille for capacities 500kW to 1MW while another reiterates the need to consider the cost differential between rooftop and ground mounted solar. The suggestion is to either show a price range or an average price. Another submission

[3] See Table in Consultation Review of Feed-in-Tariffs for Renewable Energy Technologies up to and Including 1 MW Document No. FTCUR/CONS/FIT1MW/2022-08 Date of Issue: 3 November, 2022

suggests that insurance premiums are expected to increase 10 – 15% in 2023. One respondent reports actual costs for site leases in the 100 – 250kW range at $34 – 41/kW per year. Additionally, in the 250 – 500kW range the cost is $30 – 35/kW per year. This same respondent also states that the rates for construction and operating insurance are as high as $28/mille.

20. What changes have you observed in the value of percentage debt for the RE technology categories? Explain your response.

Respondents' Comments

Few of the respondents provided significant answers to this question. One (1) submission claimed there was evidence to suggest that some customers were receiving 100% financing from some financial institutions and interest rates as low as 5%. Another indicated that percentage debt varies according to the type of lending i.e. whether there is security or not, while yet another reports seeing 70% debt offered for the 100 – 500kW range.

21. What other changes do you consider are required to the other input assumptions in Table 4? Please explain your response.

Respondents' Comments

One (1) respondent saw the 14% return as reasonable though they intimated that investors tend to expect closer to 15% but another suggested this rate should be 3.5% higher due to the global surge in the cost of borrowing, driven by the efforts of central banks to curb rising inflation.

22. What is your opinion on the treatment of interconnection costs proposals for existing generators below 500 kW-AC and above 500 kW-AC to 1 MW-AC? Provide your reasoning.

Respondents' Comments

Three (3) respondents indicated no opposition to the treatment of interconnection costs as outlined as long as there is an appropriate cost recovery mechanism in place.

Additionally, one of them indicated that $300/kW seems quite high and suggests that since the capacity range is large, a price range or average price may be appropriate. Another still cautioned that line extensions were not the only likely driver of interconnection costs, indicating a number of other factors including the lack of available 11kV lines, forcing even smaller projects to connect at 24kV, which requires a substation and other highly costly considerations. Another submission held the view that all costs incorporated into the FIT should be for the account of the RE producer and all other costs related to the functioning of the system should be shared. Consequently, these alternatives were proposed: (1) Existing RE producers up to 500kW should recover all costs endogenous to their plant (construction, equipment, land, etc.,) through the FIT while exogenous or external costs (BLPC's costs to facilitate connection) should be shared with 20% from the RE producer and 80% coming from the BLPC; (2) Existing RE producers above 500kW and up to 1MW should pay BLPC's costs to facilitate connection up to the amount provided for in the FIT. Any excess above this amount should be shared with 20% from the RE producer and 80% from BLPC. One (1) respondent bemoans the cost structure currently in place, stating BLPC should have a standard rate for connections. One (1) respondent does not agree with the proposals outlined, claiming to see no justifiable reason why RE producers of projects below 500kW should not have to pay for interconnection. Moreover, they stated that a more efficient producer should not be made to pay simply because they were able to save on costs.

23. Do you agree with the proposed treatment of interconnection cost associated with new RE generators below 500 kW-AC and above 500 kW-AC to 1 MW-AC? Please support your view with a reason.

Respondents' Comments

One (1) respondent provided the following alternatives: (1) RE producers up to 500kW should recover internal or endogenous costs through the FIT while external costs should be shared with BLPC, with 20% coming from the RE producer; (2) RE producers above 500kW and up to 1MW should recover all internal costs inclusive of the transformer via the FIT while all external costs should be shared with BLPC, with 20% coming from the RE producer. In each case a flexible cost recovery mechanism for the utility should be

implemented. Another only partially agreed with the proposal as outlined, indicating that appropriate interconnection costs should be borne by the RE producer regardless of size and that costs beyond the point of interconnection should be borne and recovered by the utility for all size categories. Another submission indicated general agreement with the proposals while noting that projects should not be allowed to be sited unreasonably far from the grid connection points owning to the costs of the extension lines. A potential solution suggested was to cap the cost of line extensions the utility would be required to pay. The submission also cautioned that the estimated interconnection costs may be insufficient. One (1) respondent expressed disagreement with the proposals, stating that all RE producers regardless of size should pay interconnection costs and that the seemingly arbitrary 500kW cutoff point could encourage gaming.

24. For RE projects sized above 500 KW-AC to 1 MW-AC in capacity, what changes in related interconnection cost have you observed?

Respondents' Comments

The majority of the respondents indicated observing increased costs. One (1) respondent stated that not only were costs increasing, the application of those costs by the BLPC was reportedly inconsistent. Another indicated not seeing many cost increases but was concerned over lengthening timelines with respect to having projects interconnected.