



Tariff Review Report of 7.83 MWp DGPC-Distributed Solar for Public Infrastructure Project – Phase I

Electricity Regulatory Authority
Ministry of Energy and Natural Resources

June 2026

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Executive Summary

The Druk Green Power Corporation (DGPC) submitted a Tariff Application for the 7.83 MW Distributed Solar for Public Infrastructure Project Phase-I (DSPIP) for Tariff period of 25 years vide letter no 03/DGPC/ERA/FID/BD&IS/2026/11236 dated 21st May 2026. The project was commissioned on June 12, 2026. Upon request, the DGPC submitted further cost details on June 16, 2026.

ERAS has reviewed the tariff proposal based on the National Energy Policy 2025, Guideline for Determination of Domestic Electricity Tariff (GDDDET) and Tariff Determination Regulation (TDR) 2025. The analysis and approvals on the tariff determination methodology, Weighted Average Cost of Capital, Cost of Equity, Cost of Debt, gearing ratio, return on assets, depreciation, operation and maintenance cost, return on working capital, Capacity Utilization Factor, auxiliary consumption, degradation factor and approved tariff has been reported in the review report below.

1. Background

DGPC has submitted application for domestic generation tariff application for the period from June 2026 to June 2051. The proposed tariff is Nu 5.56 per unit. The review is in line with the National Energy Policy (NEP) 2025, Guideline for Determination of Domestic Electricity Tariff (GDDDET) 2025 and Tariff Determination Regulation (TDR) 2025.

The project was commissioned on June 12, 2026. The project has 129 buildings in Thimphu with an aggregated capacity of 7.03 MWp, 16 buildings in Basochhu Hydropower Plant with aggregated capacity of 260.975 kWp and 45 buildings in Chhukha Hydropower plant with aggregated capacity of 546.26 kWp, adding up to a total capacity of 7.83 MWp.

2. Regulatory Parameters

2.1 Tariff Period

2.1.1 DGPC Proposal

DGPC has proposed the tariff period as 25 years for 7.38 MW Distributed Solar for Public Infrastructure Project Phase-I (DSPIP), which is in line with the Tariff Determination Regulation 2025.

2.1.2 ERA Review

As per the TDR 2025, “*The Tariff Period for all categories of solar power projects of this Regulation shall be 25 years from the date of commissioning.*” The useful life of the project is also 25 years. The approved Tariff Period for the project is 25 years.

2.2 WACC Parameters

The pre-tax weighted average cost of capital (WACC) is calculated in accordance with the Section 96 of TDR 2025 as follows:

$$WACC_g = \frac{CoE_g(1 - Gearing_g)}{1 - Tax} + (CoD_g \times Gearing_g)$$

Where:

1. $WACC_g$ is the weighted average cost of capital for the Generation Licensee “g”, as a percentage;
2. CoE_g is the cost of equity, as a percentage for the Generation Licensee “g”;
3. $Gearing_g$ is the ratio of debt to total net fixed assets,
4. CoD_g is the actual cost of debt for the tariff period for the Generation Licensee “g”, as a percentage, being the weighted average interest rate of the Licensee’s loans with suitable allowance made for currency risk of any loans not made in local currency, provided that the cost of debt should not exceed reasonable benchmarks; and
5. Tax is the prevailing rate of company taxation, as a percentage.

2.2.1 Gearing Ratio

2.2.1.1 DGPC Proposal

According to the proposal submitted, the debt-to-equity ratio proposed is 70:30 by DGPC to ensure competitive and efficient pricing through an optimal capital structure.

2.2.1.2 ERA Review

The Clause 6.4 of GDDDET states, *“To ensure competitive and efficient pricing through an optimal capital structure, the gearing ratio for the computation of WACC shall be higher than actual gearing ratio and up to maximum of 70:30.”*

As per section 77 of TDR 2025, *“If the actual equity deployed is less than 30% of the Capital Cost, the actual equity shall be used for the purpose of tariff determination. Conversely, if the actual equity deployed exceeds 30% of the capital cost, the excess amount shall be considered as debt, and the maximum gearing ratio shall be maintained at 70:30.”* Therefore, the gearing ratio of 70% is approved.

2.2.2 Cost of Equity

2.2.2.1 DGPC Proposal

According to the proposal, post-tax Cost of Equity proposed is 16% during the tax holiday and 20.51% for the remaining period has been proposed.

2.2.2.2 ERA Review

In line with clause 6.2 of GDDDET, *“The Rate of Return on Equity should be comparable to that of regional power market and industrial benchmark to attract and sustain investments. The value of equity at the time of commissioning of the renewable project shall be maintained throughout the project concession period for the determination of the Return on Equity.”* According to section 79 of TDR 2025, *“The cost of equity shall be 13% to 16% for Solar Generation Licensee.”*

DGPC has proposed a COD of 16%. ERAS reviewed project parameters and observed that considering the cost during the disbursement time, the capital cost is within the benchmark as per the TDR 2025 for the rooftops, as well as the cost of debt, and O&M cost, indicating that the plant is efficient. Therefore, COE of 16% is approved.

2.2.3 Cost of Debt

2.2.3.1 DGPC Proposal

DGPC has submitted that, as per the loan agreement for the DSPIP, the interest rate of 1% and 1.5% for the loan during grace period (8 years) and loan repayment period (24 years) respectively was considered. The depreciation of Ngultrum against Dollar (foreign exchange fluctuation) based on average 10 years was considered. Growth rate of 3.18% was also added to the effective interest rate calculated by determining the internal rate of return based on the projected cash outflows after

the commissioning of the project and the outstanding loan balance as of commercial operation date. Therefore, a COD of 4.55% has been proposed.

2.2.3.2 ERA Review

As per the TDR 2025, “*For Solar Generation Licensee, the actual cost of debt for the Tariff Period shall be considered provided that it shall not exceed 9.45%.*”

The ERAS reviewed the loan agreement of Ordinary Operations [Concessional] for Distributed Solar for Public Infrastructure Project signed between Kingdom of Bhutan and Asian Development Bank (ADB) dated 24 September 2024. Furthermore, Subsidiary loan agreement between Ministry of Finance and DGPC was also referred. As per the loan agreement, it has a grace period of 8 years and the payback will commence from 2033 onwards till 2056. During the grace period an interest of 1% is applied and an interest of 1.5% is levied during the loan term on the project. The ERAS also reviewed the effective interest rate on the updated capital cost and added the growth rate of 3.15% (average growth rate for last 10 years). The COD approved is 4.38%.

2.2.4 Tax

2.2.4.1 ERA Review

As per the TDR 2025, “*Tax is the prevailing rate of company taxation, as a percentage.*” Moreover, as per the Section 8 of Fiscal Incentive Act of Bhutan 2021, “*The qualifying income derived by an Approved Business (regardless of its date of commencement of commercial operation) from any qualifying activity in the following High Priority Sectors carried out in Bhutan shall, subject to any conditions prescribed in the Rules and any conditions specified in the certificate of approval of the Approved Business, be exempt from tax for a qualifying period not exceeding 10 years: (6) energy, excluding hydroelectric projects;*”

Based on the review, payment of tax for a period of ten years from the date of commercial operation of the projects is considered to be exempted and for rest of the useful life, 22% corporate tax is approved.

2.3 Inflation

As per Clause 6.5 of GDDT, inflation for O&M expenses should be based on historical average inflation rates published by the National Statistics Bureau (NSB).

2.3.1 DGPC Proposed

DGPC proposed an average inflation rate of 2.02% based on the average inflation rate for the past three years. The historical average figures are based from the Consumer Price Index bulletin of the NSB for non-food items and calculated as the arithmetic average of the year-on-year inflation rates.

Table 1: Proposed Inflation

Inflation	2023	2024	2025	Average
Overall inflation	3.96%	-0.60%	2.70%	2.02%

2.3.1 ERA Review

In line with the Guideline, the average historical inflation rate works out to 2.02% for the years 2022 to 2024 is as shown below:

Table 2: Reviewed Inflation

Inflation	2023	2024	2025	Average
Overall inflation	3.96%	-0.6%	2.7%	2.02%

Based on the review, an inflation rate of 2.02% is approved for determining tariff for the solar projects.

2.4 Other Regulatory Parameters

The O&M benchmark and O&M efficiency gain parameters are discussed below in this review report.

3 Allowances, Cost of Supply and Energy Volumes

As per TDR 2025, The total cost of supply for a Solar Generation Licensee in any year shall be determined as:

$$TC_{sg} = OM_{sg} + DEP_{sg} + CoE_{sg} + CoD_{sg} + CoWC_{sg} + Fees_{sg} + SO_{sg}$$

Where;

- 1) TC_{sg} is the total cost of supply of the Solar Generation Licensee “sg”, in million Ngultrum;
- 2) OM_{sg} is the allowance for operating and maintenance costs of the solar Generation Licensee “sg”, in million Ngultrum;
- 3) DEP_{sg} is the allowance for depreciation of assets for the Solar Generation Licensee “sg”, in million Ngultrum;
- 4) CoE_{sg} is the cost of equity as set out in Section 79 (2) of this Regulation for the Solar Generation Licensee “sg” in million Ngultrum;
- 5) CoD_{sg} is the actual interest of the loan as set out in Section 82 of this Regulation for the Solar Generation Licensee “hg” in million Ngultrum;
- 6) SO_{sg} is the System Operator charges payable by the Solar Generation Licensee “hg”, in million Ngultrum;
- 7) $CoWC_{sg}$ is the Cost of Working Capital for the Solar Generation Licensee “sg”, in million Ngultrum

3.1 Allowances

As per section TDR 2025, “*The Capital Cost of solar projects shall be inclusive of land cost, pre-development expenses, all capital works including plant and machinery, civil works, erection and commissioning, financing cost, interest during construction, and evacuation infrastructure up to the interconnection point.*”

3.1.1 Assets

3.1.1.1 DGPC Proposed

DGPC proposed a total completion cost of Nu 454.84 million as per table below:

Table 3: Proposed Asset

s.n	Particulars	Values
1	Generation Hard Cost (M.Nu)	436.7
2	Interest During Construction (IDC) (M.Nu)	12.59
3	Foreign Exchange Losses (M.Nu)	5.55
4	Total Project Cost Including IDC (M.Nu)	454.84

3.1.1.2 ERA Review

The ERAS reviewed the detailed breakdown of the asset and the contracted amount is provided in the table below:

Table 4: Hard Cost of the Project (Contracted Project Cost)

Terms of Payment	EPC Contract	Contract value	
		BTN	USD
Schedule 1	Plant and Mandatory Spare Parts Supplied from Abroad		2,514,188.70
Schedule 3	Design Services	7,044,300	1,521,568.80
Schedule 4	Installation and Other Service	7,044,300	169,063.20
Total		14,088,600	4,204,820.70
Total Asset with conversion rate Nu 83.93 (disbursement time)		366,999,201.35	

As per the Section 64 TDR 2025, “*In the determination of asset values, the Authority shall allow interest accrued during construction and associated labour costs to be capitalized, in accordance with standard accounting practices*” the IDC and foreign exchange losses is allowed in the capital cost.

Table 5: ERA Review

Parameter	Proposed	ERA approved
Hard Cost (Nu mill)	436.70	367.00
IDC (Nu mill)	12.59	12.59
Total Cost (Nu mill)	449.29	379.57
(Nu Mil / MW)	57.38	48.48

3.2 O&M Allowance

3.2.1 DGPC Proposal

DGPC submitted the O&M charge of 0.5% of asset value which works out to Nu 2.27 million, which is maximum of allowed allowance according to the TDR 2025.

3.2.2 ERA Review

DGPC has proposed an O&M cost of 0.5% of capital cost, equivalent to Nu. 2.27 million. This is

consistent with Section 51 of the Tariff Determination Regulations (TDR) 2025, which states that the O&M allowance for a Solar Generation Licensee shall not exceed 1.5% of capital cost.

Having reviewed the proposed O&M cost against the applicable regulatory ceiling, the Authority approves an O&M allowance of 0.6% of capital cost amounting to Nu 2.27 million.

3.3 Cost of Working Capital

3.3.1 DGPC Proposal

3.3.1.1 Inventories

DGPC has proposed 15% of O&M cost as the inventories of the project.

3.3.1.2 Arrears

DGPC has proposed arrears of 40 days which is in line with approved arrears for DGPC hydropower plants.

3.3.1.3 Interest on Working Capital

DGPC has proposed 9.23% as the interest on working capital.

3.3.2 ERA Review

3.3.2.1 Inventories

As per the section 84 of TDR 2025, “*The allowance for inventories shall be as a percentage of operation and maintenance expenses or Capital Costs based on best industry practice or applicable benchmarks*”. As practiced for the hydro generation plants and the regional markets, 15% of the O&M annual expense as an inventory is approved.

3.3.2.2 Arrears

Arrears of 40 days is approved at par with other solar plants and DGPC is approved.

3.3.2.3 Interest on Working Capital

The GDDDET, “*The interest on working capital shall be determined based on the prevailing lowest short-term lending rate of financial institution of Bhutan*”.

The interest on working capital of 9.23 % which is currently the lowest short term lending rate was approved in line with the Guideline.

3.3.2.4 Regulatory Fees

The annual license fee was exempted. The Tariff application fee of Nu 2500 per MW has been included in the Tariff determination.

4 Energy Volumes

4.1 DGPC Proposal

DGPC has submitted the annual mean generation projected for Sub-project I as 10.30 GWh with the assumption of CUF of 15% which is in line with the DPR.

4.2 ERA Review

DGPC has proposed the CUF of 15%. In accordance with the benchmark CUF published in TDR 2025, the CUF of 15% is approved with auxiliary loss of 0%.

5 Tariff Determination

As per TDR 2025, the average cost of supply is to be taken as the ratio of the annual costs of supply to the net energy volumes, with discounting applied over the Tariff Period.

The summary of parameter consideration for the tariff computation is provided in the Table below:

Table 6: Approved Parameter Summary

Parameters	ERA REVIEW
Capital cost (Nu mill/MW)	48.48
O&M Cost (% of asset)	0.6%
Depreciation	Straight line Depreciation
Capacity Utilization Factor (%)	15%
Auxiliary consumption (%)	0%
Degradation Factor (% p.a)	0.5%
Inflation Rate (%)	2.02%
Interest on Working Capital	9.23%
Inventories (% of O&M)	15%
Arrears (Days)	40
Gearing	70%
Cost of Equity	15%
Cost of Debt	4.38%
Tax	0% for first 10 years and 22% thereafter
LCOE (Nu per unit)	4.56

Conclusion

The tariff review for the 7.83 MWp Distributed Solar Sub-project I has been thoroughly evaluated using relevant frameworks, including the National Energy Policy 2025, Guideline for Determination of Domestic Electricity Tariff, and Tariff Determination Regulation 2025. The review considered the financial viability of the project, accounting for various economic, technical, and regulatory parameters to ensure an optimal balance between sustainability and cost efficiency. The project aligns with Bhutan's broader goal of promoting renewable energy sources, particularly solar, to diversify its energy mix and enhance energy security.

Considering the parameters approved, the weighted average Levelized Cost of Energy (LCOE) for project stands at **Nu 4.56 per unit** over the 25-year tariff period with gross metering scheme. The tariff was approved during 140th commission meeting held on 23rd July 2026. These figures reflect a competitive pricing structure that balances the need for affordability, financial sustainability, and the promotion of renewable energy in Bhutan. The project is set to contribute significantly to Bhutan's renewable energy targets while promoting private-sector participation in the energy sector.