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Electricity Regulatory Authority
Ministry of Energy and Natural Resources

Tariff Determination Regulation 2025

Electricity Regulatory Authority
Ministry of Energy and Natural Resources

Foreword

The Electricity Regulatory Authority is pleased to present the Tariff Determination Regulation 2025 which aims to provide a comprehensive framework for the determination of electricity prices. This Regulation has been formulated in accordance with the Electricity Act of Bhutan 2001, National Energy Policy 2025, and Guidelines for Determination of Domestic Electricity Tariff 2025.

The Regulation provides clear principles, methodologies and procedures to ensure that electricity tariffs are determined in a transparent, consistent and equitable manner. It seeks to balance the interest of consumers, utilities and investors by ensuring cost recovery and affordability. It also addresses the provisions to promote solar energy integration and ensure that the benefits of Bhutan's energy resources are equitably shared among all the stakeholders.

Through the implementation of this Regulation, the Authority aim to address the critical national objectives such as energy diversification, energy security, energy self-reliance and enhance private sector participation in the energy sector.

The Tariff Determination Regulation 2025 is hereby approved during the 133rd Commission Meeting.

Chairperson

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TARIFF DETERMINATION REGULATION 2025

In exercise of the power vested by Section 11.1(i) (b) of the Electricity Act of Bhutan, 2001 and in order to provide for the determination of electricity prices, the Electricity Regulatory Authority hereby adopts the Tariff Determination Regulation 2025 as follows:

CHAPTER 1
PRELIMINARY

Title

1. This Regulation is called the Tariff Determination Regulation 2025.

Commencement

2. This Regulation comes into force from December 1, 2025.

Scope

3. This Regulation shall apply to all Licensees including:

   (1) Generation Licensee;
   (2) Transmission, Distribution and Supply Licensee; and
   (3) Solar Generation Licensee and Exempt Licensee.

4. Notwithstanding Section 3 of this Regulation, the electricity tariff for sale of electricity does not apply to:

   (1) Import of electricity from other countries; and
   (2) Export of electricity to other countries.

Objective

5. This Regulation aims to provide for the determination of electricity prices in accordance with the Electricity Act of Bhutan 2001, National Energy Policy 2025, and Guidelines for Determination of Domestic Electricity Tariff 2025.

Transitional and Saving

6. The Solar tariff rates for plants established prior to coming into effect of this Regulation will be upheld at their current approved rates. Subsequent to the expiry of the approved Tariff Period, the tariff shall be determined as per this Regulation.

Dispensation

7. The Authority may grant dispensation from this Regulation in specific cases.

Revocation

8. The Tariff Determination Regulation 2022 is hereby revoked.

Amendment

9. The Authority may amend this Regulation and update the Schedules from time to time as it deems fit.

CHAPTER 2
GENERAL CONDITIONS AND TARIFF PRINCIPLES

10. No Licensee shall levy any tariff or charges for Generation, Transmission, Distribution and Supply to any other person or entity without the approval of the Authority.

11. The generation tariff proposed through long-term Power Purchase Agreements between the Hydropower Generation Licensees or Solar Generation Licensees and Transmission, Distribution and Supply Licensees, for domestic sales, shall be endorsed by the Authority as per the Guidelines developed by the Authority. The application for endorsement of long-term Power Purchase Agreement shall be submitted at least two months prior to the signing of the Power Purchase Agreement.

12. The Licensee shall levy tariffs at specific connection points and tariffs shall be independent of distance to the customer.

13. The Authority shall determine tariffs according to the following principles, in accordance with Section 14.1 of the Electricity Act:

    (1) Fairness to both service customers and service providers;
    (2) No unjust discrimination against service providers or those who wish to use the services;
    (3) Reflect the actual cost of efficient business operation;
    (4) Conducive to efficiency improvement in business operation;
    (5) Enhance efficient and adequate supply to satisfy the domestic demand; and
    (6) Transparency in the determination and presentation of tariffs.

14. The Authority shall announce the tariffs publicly and disseminate in such a way that the public can examine the determination of tariffs.

15. Any deviations from the tariff principles set out in Section 13 of this Regulation shall be in accordance with subsidy policies of Government.

CHAPTER 3
TARIFF APPROVAL PROCESS

16. The Licensee except Solar Generation Licensees shall submit their investment plans for the upcoming tariff period to the Authority, at least nine months prior to the expiry of the current tariff period.

17. The Licensee except Solar Generation Licensees shall submit application for a revised Tariff Schedule along with complete set of documents, at least four months prior to the expiry of the current tariff period. The Solar Generation Licensee shall submit a generation tariff application as per the Tariff Filing Guideline issued by the Authority, at least two months prior to the completion of the project construction.

18. The Authority shall review the tariff in accordance with this Regulation, and shall result in the determination of Average Prices for each Customer Group.

19. The Authority shall determine efficiency and productivity targets to be used in tariff determination at each tariff review.

20. The Licensee shall provide the necessary information to conduct the tariff review.

21. Upon receipt of the complete tariff application, the Authority shall notify the general public in the Authority's website and in such manner as may be required to ensure public knowledge.

22. The Authority may hold a consultation on the tariff applications if deemed necessary.

23. The Tariff Schedule as approved by the Authority shall be consistent with the Average Prices determined in accordance with this Regulation.

24. The Authority shall set the date on which the new Tariff Schedule and Prosumer tariff shall apply, and the duration of its application.

25. If the Authority fails to approve a new Tariff Schedule prior to the expiry of the prevailing Tariff Schedule, the prevailing Tariff Schedule may be adjusted by average twelve months consumer price index and continue to be in force until such time a new Tariff Schedule is approved.

Interim Tariff Applications

26. Notwithstanding Section 24 and Section 31 of this Regulation, a Licensee may apply to the Authority for an interim tariff adjustment prior to the expiry of the prevailing Tariff Schedules, should the business environment of the licensee be substantially and significantly different from that assumed when the preceding tariff application was made.

27. Should the Authority not concur that the business environment has changed in significant and substantial ways, then the interim tariff application shall be declined and the prevailing Tariff Schedule shall remain in force. Otherwise, the Authority shall consult with affected parties and issue a revised Tariff Schedule that shall come into

force on the date determined by the Authority and shall remain in force until the end of the current Tariff Period.

CHAPTER 4
FORM OF ECONOMIC REGULATION

28. The Tariff Period for all categories of solar power projects as per Schedule 1 of this Regulation shall be 25 years from the date of commissioning.

29. The Control Period for all categories of solar power projects under this Regulation shall be of one year and the parameters will be reviewed at the end of each fiscal year.

30. The Authority shall approve a Tariff Schedule for each Licensee that sets the maximum tariffs that shall be charged.

31. The Tariff Schedule so established shall apply for the duration of the Tariff Period, with appropriate indexing or other adjustments over the course of the Tariff Period.

32. Where the cost of supply for a Customer Group not eligible for subsidy are determined by the Authority to be significantly different from prevailing tariffs, the Authority may make suitable transition arrangements in order to ensure tariff stability.

33. Where the cost of supply for a Customer Group eligible for subsidy are determined by the Authority to be significantly different from prevailing tariffs, the Authority shall recommend a subsidy schedule to Government to ensure tariff stability.

34. There shall be no reconciliation of revenues accrued against costs incurred in the preceding Tariff Period in the determination of tariffs for the subsequent Tariff Period except for the System Operator charges.

35. The cost of supply shall provide for an allowance for operating and maintenance costs as per the industries best practices for the recently commissioned projects and as per the actual operating and maintenance costs for generation or transmission or distribution that have been in operation for more than five years.

36. For Hydropower Generation Licensees, the determination of tariffs shall provide for an allowance for auxiliary consumption based on the historical consumption and shall not exceed 1.2% of the generation.

37. For the Solar Generation Licensees, the determination of tariffs shall provide for an allowance for auxiliary consumption of 0% for rooftop projects and 0.5% of gross energy generation for ground-mounted projects.

38. Open Access Consumers shall pay the applicable open access charges as determined by the Authority, to the Transmission, Distribution and Supply Licensee as follows:

$$\text{Open access charges} = \text{EIC Tariff} - \text{Average power purchase price}$$

39. The Authority shall determine the network or wheeling charges applicable to both domestic and cross-border electricity trade.

40. For Transmission, Distribution and Supply Licensees, the costs of supply shall provide for an allowance for technical losses and commercial losses.

41. The Capacity Utilization Factor for the Solar Generation Licensee for the Control Period 2025-2026 shall be as per Schedule 1 of this Regulation.

42. In case a Utility-Scale Solar Project, in a given year, generates energy in excess of the normative Capacity Utilization Factor as specified under this Regulation, the solar project may sell such excess energy to the Transmission, Distribution and Supply Licensee. The tariff for such excess energy shall be equal to the average power purchase price or the project's tariff whichever is less, with the applicable tariff to be adjusted.

43. The project specific tariff, on case-to-case basis, shall be determined by the Authority for the following types of solar projects:

    (1) Hybrid solar power plant including solar project setup with Battery Energy Storage System or new hydropower plant; and
    (2) Any other new solar technologies such as agrivoltaics or projects approved by the Ministry of Energy and Natural Resources.

CHAPTER 5
COST OF SUPPLY METHODOLOGY

44. The Authority shall determine the costs of supply for the forthcoming Tariff Period for the Licensee.

45. The scope of costs shall include:

(1) Operation and maintenance costs;
(2) Depreciation;
(3) Cost of Equity and a return on fixed assets, including an allowance for company taxation;
(4) Cost of Debt;
(5) Power purchases and fuel costs for electricity generation, should either of these be applicable;
(6) The cost of losses and non-payment of electricity bills;
(7) The cost of working capital;
(8) System Operator Charges; and
(9) Any regulatory fees, that the Licensee is liable to pay under the Laws of Bhutan.

Determination of Operation and Maintenance Costs

46. The operation and maintenance allowance shall incorporate expenses including but not limited to salaries and wages, transportation expenses, insurance of assets, maintenance expenses, office materials, rentals, consumables and all such expenses that are treated as recurrent costs under standard accounting practices.

47. The operation and maintenance allowance shall not include corporate social responsibility expenses and other cost arising from audit observation and penalty payments.

48. The incomes from rent and hires stemming from activities financed through costs that are included in the historical costs and asset schedule shall be deducted from the allowance.

49. The determination of the operation and maintenance allowance shall take into consideration the historical costs adjusted for inflation for all the Licensees up to a maximum of 2.5% of the assets for hydropower plants older than five years, and 4% of assets for Transmission, Distribution and Supply Licensee.

50. The operation and maintenance allowances for new assets shall be maintained lower than that of older assets up to a maximum of 1.5% of the asset for Hydropower Generation Licensees and as per Schedule 2 of this Regulation for the Transmission, Distribution and Supply Licensee.

51. The operation and maintenance allowances for Solar Generation Licensee shall be up to a maximum of 1.5% of the capital cost.

52. The Authority may include in the operation and maintenance allowance provision for asset write-offs not covered by insurance and may spread such write-offs over two tariff periods should the extent of the write-off significantly influence the objective of tariff stability.

Determination of Asset Values

53. Asset values used to determine depreciation charges, and the return on net fixed assets shall be based on historical asset values for Transmission, Distribution and Supply Licensee.

54. Asset values used to determine depreciation charges, and cost of equity shall be based on historical asset values for Hydropower Generation Licensee.

55. The Authority shall annually update the asset base of Licensee which shall be considered as a Regulatory Asset Base for the purpose for determination of the tariff for the next cycle.

56. For update of the Regulatory Asset Base, each Licensees shall be required to submit the list of investment capitalized that was proposed during the tariff filing at the end of each calendar year along with completion report for generation and transmission assets costing Nu. 50 million and above and distribution assets costing Nu. 10 million and above and same for asset disposals. Non-submission of the required information may result in the Authority considering the asset base from the previous tariff period.

57. Assets owned by the Licensees but not in use shall not be considered for tariff determination. The Licensee shall maintain a register for the assets which fall under the above category and furnish justifications at the time of tariff review.

58. The determination of asset additions shall take into consideration the investment plans of the Licensee. These investment plans shall be submitted to the Authority for scrutiny during the tariff review.

59. Each Licensee except Solar Generation Licensee shall submit a list of proposed investments approved by the Ministry or Licensee's Board to the Authority for scrutiny during tariff review.

60. The Licensee shall submit investment reports for generation and transmission investments of Nu. 50 million and above and distribution investments of Nu. 10 million and above as per the format set by the Authority. For the remaining investments, the Licensees shall submit a brief writeup for the need of the investments. Non-submission of required information may result in the Authority not considering the investment proposals.

61. The cost of investments made as per national plans but not utilized on account of the reasons beyond the control of the Licensees shall be spread out across all Customer Groups as per Schedule 3 of this Regulation. The Licensee shall maintain a register for the assets which fall under the above category and furnish justifications at the time of tariff review.

62. The asset additions with regard to hydropower and associated transmission systems including expansion and up-gradation and the assets additions with regards to rural electrification, small or mini or micro hydro 100 MW and below, non-conventional energy resources including expansion and up-gradation thereof not approved by the Department of Energy or the concerned Agency or Shareholder(s) or Board shall not be considered for tariff determination.

63. In the determination of depreciation, return on net fixed assets and cost of equity, the Authority shall make allowance for asset additions and asset disposals and other asset value adjustments over the course of the Tariff Period.

64. 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.

65. Where a Licensee replaces components of a capital nature, these components shall be treated as asset additions and not maintenance expenses.

66. Any asset received free of cost by the Licensee from a Government or Government-owned agency shall be treated as an equity injection of the Government.

67. Any assets received from the consumers by the Licensee shall be included in Regulatory Asset Base upon assets transfer.

68. The Licensees except Solar Generation Licensees shall maintain a register for assets financed with consumer contribution. Any capital contributions from consumers to create assets of the Licensees shall not be included in the regulatory asset base.

69. Any assets handed over by the Licensees to other Agency shall be deducted from Regulatory Asset Base.

70. 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.

71. The benchmark Capital Cost for Solar Generation Licensee for the Control Period 2025-2026 shall be as per Schedule 1 of this Regulation.

Determination of Depreciation

72. The allowance for depreciation shall be based on the Economic Life of the assets, in accordance with Schedule 4 of this Regulation.

73. The allowance for depreciation shall take into consideration asset additions and retirements over the Tariff Period.

74. Where a Licensee purchases replacement components of a capital nature, including replacement of turbine or generator at hydropower generating stations, these components shall be depreciated over the expected Economic Life of the asset under the specific circumstances of the Licensee.

75. Under circumstances when the Licensees are in difficulty in meeting the debt service obligation, accelerated depreciation may be allowed during the initial debt servicing period. This allowance will only be made where it is necessary to ensure the financial viability of the Licensee.

Determination of Cost of Equity and Return on Assets

76. To ensure competitive and efficient pricing through an optimal capital structure, the Gearing Ratio shall be higher than the actual Gearing Ratio and up to a maximum of 70:30.

77. 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.

78. The value of equity at the time of commissioning of a Renewable Energy Project shall be maintained throughout the project concession period for determination of cost of equity.

79. The cost of equity shall be as provided below:

    (1) 13% to 15% for Hydropower Generation Licensee and Transmission, Distribution and Supply Licensee; and
    (2) 13% to 16% for Solar Generation Licensee.

80. For Transmission, Distribution and Supply Licensee the return on assets shall be determined as the product of the Weighted Average Cost of Capital and the net asset values at the start of any year.

Cost of Debt

81. For the Hydropower Generation Licensee and Transmission, Distribution and Supply Licensee, the actual cost of debt for the Tariff Period shall be considered.

82. For Solar Generation Licensee, the actual cost of debt for the Tariff Period shall be considered provided that it shall not exceed 9.45%.

Determination of the Cost of Working Capital

83. The amount of working capital shall include a reasonable allowance for inventories and arrears and shall be allocated across Customer Groups.

84. 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.

85. The allowance for arrears shall be based on the efficient duration of average energy consumption, bill preparation, delivery and payment.

86. The Authority shall determine the interest on working capital based on the prevailing lowest short-term lending rate of financial institutions in Bhutan at the time of the tariff review.

87. The cost of working capital shall be determined as the product of the interest on working capital and the amount of working capital.

Determination of the Cost of Losses

88. The Authority shall determine the losses by taking into consideration both technical and commercial losses, in accordance with Schedule 5 of this Regulation, and it shall be expressed as a loss factor being the combination of technical and commercial losses.

89. Technical losses and commercial losses shall be differentiated for each Customer Group as a function of the tariff structure.

90. The cost of losses shall be determined as the product of the loss factor, differentiated for each Customer Group, and the marginal cost of power purchases.

91. The Average Price determined for each Customer Group shall take account of a Collection Rate, common for all Customer Groups, which shall reflect the targeted rate of collections set by the Authority over the Tariff Period.

Determination of Allocation Factors

92. The Authority shall determine the allocation factors for the assets and associated costs like operation and maintenance costs, inventories, fees and levies and system operation shall be allocated to the Customer Group based on the following guidelines:

    (1) Where assets and associated costs are exclusively used by a particular Customer Group, the same shall be allocated fully to this Customer Group;
    (2) Where assets and associated costs are for export purposes, the entire cost shall be allocated to that Customer Group;
    (3) Where generation, transmission and distribution assets and their associated costs are meant for joint usage by different Customer Groups, the allocation factor shall be based on capacity demand; and
    (4) From the above Sections 92 (1), 92 (2) and 92 (3) of this Regulation, weighted

average allocation factors for all the Customer Groups shall be determined for allocating assets and associated costs that do not fall under the above three items including fees and levies of the Authority.

CHAPTER 6
APPLICATION OF SUBSIDY

93. Upon determination of the Average Price for each Customer Group, where the costs of supply for Customer Group eligible for subsidy are determined by the Authority to be significantly different from prevailing tariffs, the Authority shall recommend a subsidy schedule to the Ministry.

94. In recommending the subsidy schedule to the Ministry, the Authority shall be guided by the subsidy allocation principles of the Government.

95. The Authority shall implement subsidies as approved by the Government.

CHAPTER 7
DETERMINATION OF GENERATION PRICES

Determination of the Average Cost of Supply

96. The Weighted Average Cost of Capital shall be used for the discounting for the determination of generation tariff which shall be calculated as follows:

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

Where,

(1) $\mathrm{WACC_g}$ is the weighted average cost of capital for the Generation Licensee "g", as a percentage;
(2) $\mathrm{CoE_g}$ is the cost of equity, as set out in Sections 79 of this Regulation, as a percentage for the Generation Licensee "g";
(3) $\mathrm{Gearing_g}$ is the ratio of debt to total net fixed assets, as set out in Section 76 of this Regulation for the Generation Licensee "g";
(4) $\mathrm{CoD_g}$ 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.

97. The total cost of supply for a Hydropower Generation Licensee in any year shall be determined as:

$$\mathrm{TC_{hg}} = \mathrm{OM_{hg}} + \mathrm{DEP_{hg}} + \mathrm{CoE_{hg}} + \mathrm{CoD_{hg}} + \mathrm{CoWC_{hg}} + \mathrm{SO_{hg}} + \mathrm{Fees_{hg}} - \mathrm{NTR_{hg}}$$

Where,

(1) $\mathrm{TC_{hg}}$ is the total cost of supply of the Hydropower Generation Licensee "hg", in million Ngultrum;
(2) $\mathrm{OM_{hg}}$ is the allowance for operating and maintenance costs of the Hydropower Generation Licensee "hg", in million Ngultrum;
(3) $\mathrm{DEP_{hg}}$ is the allowance for depreciation of assets for the Hydropower Generation Licensee "hg", in million Ngultrum;
(4) $\mathrm{CoE_{hg}}$ is the cost of equity as set out in Section 79 (1) of this Regulation for Hydropower Generation Licensee "hg" in million Ngultrum;
(5) $\mathrm{CoD_{hg}}$ is the actual cost of debt as set out in Section 81 of this Regulation for the Hydropower Generation Licensee "hg" in million Ngultrum;
(6) $\mathrm{CoWC_{hg}}$ is the Cost of Working Capital for the Hydropower Generation Licensee "hg", in million Ngultrum. The cost of working capital shall cover the allowance for arrears and inventories, and shall be calculated as follows:

$$\mathrm{CoWC_{hg}} = \mathrm{I} \times \left[\left((\mathrm{REV_{hg}}) \times \frac{\mathrm{Arrears_{hg}}}{365}\right) + \mathrm{Inventories_{hg}}\right]$$

Where,

a) I is the interest rate for working capital as determined in Section 86 of this Regulation;
b) REV_{hg} =OM_{hg}+DEP_{hg}+CoE_{hg}+CoD_{hg};
c) $Arrears_{hg}$ is the allowed days' receivables for the Hydropower Generation Licensee "hg", in days; and
d) $Inventories_{hg}$ is the allowance for inventories for the Hydropower Generation Licensee "hg", in million Ngultrum.

(7) SO_{hg} is the System Operator charges payable by the Hydropower Generation Licensee "hg", in million Ngultrum;

(8) $Fees_{hg}$ is the allowance for regulatory fees and levies of the Hydropower Generation Licensee "hg", in million Ngultrum; and

(9) NTR_{hg} is the estimated Non-Tariff Revenue of the Hydropower Generation Licensee "hg", in million Ngultrum.

98. The total cost of supply for a Solar Generation Licensee in any year shall be determined as:

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

Where;

(1) $\mathrm{TC_{sg}}$ is the total cost of supply of the Solar Generation Licensee "sg", in million Ngultrum;

(2) $\mathrm{OM_{sg}}$ is the allowance for operating and maintenance costs of the solar Generation Licensee "sg", in million Ngultrum;

(3) $\mathrm{DEP_{sg}}$ is the allowance for depreciation of assets for the Solar Generation Licensee "sg", in million Ngultrum;

(4) $\mathrm{CoE_{sg}}$ 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) $\mathrm{CoD_{sg}}$ 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) $\mathrm{CoWC_{sg}}$ is the Cost of Working Capital for the Solar Generation Licensee "sg", in million Ngultrum. The cost of working capital shall cover the allowance for arrears and inventories, and shall be calculated as follows:

$$\mathrm{CoWC_{sg}} = \mathrm{I} \times \left[\left((\mathrm{REV_{sg}}) \times \frac{\mathrm{Arrears_{sg}}}{365}\right) + \mathrm{Inventories_{sg}}\right]$$

Where,

a) I is the interest rate for working capital as determined in Section 86 of this Regulation;
b) $REVsg = OM_{sg} + DEP_{sg} + CoD_{sg} + CoE_{sg}$;
c) $Arrears_{sg}$ is the allowed days' receivables for the Solar Generation Licensee "sg", in million Ngultrum; and
d) $Inventories_{sg}$ is the allowance for inventories for the Solar Generation Licensee "sg", in million Ngultrum.

(8) $Fees_{sg}$ is the allowance for regulatory fees and levies of the Generation Licensee "sg", in million Ngultrum.

99. The annual energy volumes shall be determined as the mean annual energy generation of the past three years based on a 98% water utilization factor to the extent of generation capacity less free power adjusted for auxiliary consumption, determined as follows:

$$\text{ENERGY} = \Sigma_i \text{ENERGY}_i \times (1 - \text{AUX}_i) \times (1 - \text{FREE POWER}_i)$$

Where,

(1) ENERGY is the annual energy volume in any year, in GWh;
(2) $ENERGY_i$ is the average historical mean annual energy generation of the past three years for the plant "i", in GWh;
(3) AUX_i is the allowance for auxiliary consumption at the plant "i", as set out in Section 36 of this Regulation, as a percentage; and
(4) FREE $POWER_i$ is the free energy that is made available to Royal Government of Bhutan by plant "i", as a percentage.

100. The net annual energy volumes for Solar Generation Licensee shall be determined as follows:

$$\text{Net Energy} = \text{Gross Energy} \times (1 - \text{Deration factor}) \times (1 - \text{AUX})$$

Where;

(1) Gross Energy = Power plant capacity * 8760 * CUF;
(2) The annual deration factor of 0.5% per annum shall be factored in for the purpose of Tariff determination; and
(3) AUX is the allowance for auxiliary consumption at power plants as per Section 37 of this Regulation.

101. The average cost of supply shall be taken as the ratio of the discounted annual costs of supply to the discounted energy volumes, with discounting applied over the Tariff Period using the $WACC_g$, as follows:

$$AC_g = \frac{\Sigma_{n=1}^{TP} TC_{g,n}/(1 + WACC_g)^n}{\Sigma_{n=1}^{TP} ENERGY_n/(1 + WACC_g)^n}$$

Where,

(1) AC_g is the average cost of supply for the Generation Licensee "g", in Ngultrum per kWh;
(2) TP is the number of years in the Tariff Period;
(3) $TC_{g,n}$ is the total cost of supply of Generation Licensee "g" in the year "n" in million Ngultrum, as determined under Section 97 and Section 98 of this Regulation;
(4) $ENERGY_n$ is the energy volume in year "n" in GWh, as determined under Section 99 and Section 100 of this Regulation; and
(5) $WACC_g$ is the Weighted Average Cost of Capital for the Generation Licensee "g", as determined in Section 96 of this Regulation.

CHAPTER 8
DETERMINATION OF END-USER PRICES

102. The Authority, in its tariff review undertaken in accordance with Tariff Approval Process from Section 16 to 25 of this Regulation, shall determine an Average Price for each Customer Group applicable for the Tariff Period.

103. Customers based on the individual tariff structure specified in Section 123 of this Regulation shall comprise one Customer Group to determine Average Prices. Within each Customer Group, different tariff structures for different customer categories may be created by the Licensee to implement the subsidy policies of Government.

104. The Weighted Average Cost of Capital for each Customer Group shall be calculated as follows:

$$\mathrm{WACC_C} = \frac{\mathrm{COE}(1 - \mathrm{Gearing_C})}{1 - \mathrm{Tax}} + (\mathrm{CoD_C} \times \mathrm{Gearing_C})$$

Where,

(1) $\mathrm{WACC_C}$ is the Weighted Average Cost of Capital for the Customer Group "C", as a percentage;
(2) CoE is the cost of equity, as set out in Section 79 (1) of this Regulation, as a percentage for the Licensee;
(3) $\mathrm{Gearing_C}$ is the ratio of debt to total net fixed assets, as set out in Section 76 of this Regulation for the Customer Group "C";
(4) $\mathrm{CoD_C}$ is the actual cost of debt related to assets utilized by the Customer Group "C", 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.

Allocation of Network Costs

105. The total annual network costs of the Licensee shall comprise the sum of the allowance for return on assets, the allowance for depreciation, the operating and maintenance allowance and any allowances for fees and levies.

106. Annual network costs allocated to each Customer Group shall comprise a share of each element of the total annual network costs, where the sum of allocations across all Customer Groups shall equal the total annual network costs referred to Section 105 of this Regulation, in accordance with the following:

$$\mathrm{NETWORK_C} = \mathrm{WACC_C} \times \sum_{\mathrm{i}} [\mathrm{ASSET_i} \times \mathrm{AALLOC_{i,c}}] + \sum_{\mathrm{i}} [\mathrm{DEP_i} \times \mathrm{ALLOC_{i,c}}] + \sum_{\mathrm{i}} [\mathrm{OM_i} \times \mathrm{ALLOC_{i,c}}] + \mathrm{FEES} \times \mathrm{FALLOC_C}$$

Where,

(1) $NETWORK_C$ is the network cost allocated to Customer Group "C", in million Ngultrum;
(2) $WACC_C$ is the Weighted Average Cost of Capital for Customer Group "C" for the Licensee, as a percentage;
(3) $ASSET_i$ is the net historical value of assets in asset category "i", in million Ngultrum;
(4) DEP_i is the depreciation allowance for assets in asset category "i", in million Ngultrum;
(5) OM_i is operating and maintenance allowance for cost category "i", in million Ngultrum;
(6) FEES is the allowance for regulatory fees and levies, in million Ngultrum;
(7) $AALLOC_{i,C}$ is the allocation factor to Customer Category "C" for asset-related costs in asset category "i", as a percentage, where $\sum_c AALLOC_{i,c}=1$;
(8) $OMALLOC_{i,C}$ is the allocation factor to Customer Category "C" for operating and maintenance costs in cost category "i", as a percentage, where $\sum_c OMALLOC_{i,c}=1$; and
(9) $FALLOC_C$ is the allocation factor for fees, as a percentage, where $\sum_c FALLOC_{i,c}=1$.

Determination of Cost of Working Capital

107. The allowance for the cost of working capital shall be determined as the interest on an allowance for working capital, where the allowance for working capital shall consist of an allowance for arrears and inventories.

108. The cost of working capital allocated to each Customer Group "C" shall comprise a share of the total cost of working capital, where the sum of allocations across all Customer Groups "C" shall equal the total cost of working capital referred to in Section 107 of this Regulation, in accordance with the following:

$$CoWC_C = I \times [REV_C \times \frac{ARREARS_C}{365} + INVENTORIES_C \times IALLOC_C]$$

Where,

(1) $CoWC_C$ is the cost of working capital allocated to Customer Group "C" in million Ngultrum;
(2) I is the interest rate for working capital as determined in Section 86 of this Regulation;
(3) $REV_C = OM_C + DEP_C + RoA_c$.

Where,

a) OM_C is the allowance for operating and maintenance costs for the Customer Group "C", in million Ngultrum;
b) DEP_C is the allowance for depreciation of assets for the Customer Group "C", in million Ngultrum; and

c) RoA_C is the return on fixed assets for the Customer Group "C", in million Ngultrum, determined as:

$$RoA_C = WACC_C \times NA_C$$

Where,

i) $WACC_C$ is the weighted average cost of capital for the Customer Group "C", as determined in accordance with Section 104 of this Regulation, as a percentage; and

ii) NA_C is the net value of all fixed assets at the start of the year for the Customer Group "C", in million Ngultrum.

(4) $ARREARS_C$ is the allowed days' receivables for the Customer Group "C", in days;

(5) $INVENTORIES_C$ is the allowance for the value of inventories, in million Ngultrum; and

(6) $IALLOC_C$ is the allocation factor to Customer Group "C" for inventories, as a percentage, where $\sum_c IALLOC_{i,c}=1$.

Determination Cost of System Operator

109. The System Operator Cost shall be determined and allocated to the Generation Licensee and Transmission, Distribution and Supply Licensee as per System Operator Charges Regulation 2022.

CHAPTER 9
DETERMINATION OF DOMESTIC POWER PURCHASE PRICE

110. Upon determination of the domestic energy demand for the Tariff Period, the solar energy generation and generation from hydropower plants under Druk Green Power Corporation shall be first allocated for Domestic Supply.

111. In the event the generation plants under Section 110 of this Regulation are not able to meet the domestic demand, the plants with the lowest cost of generations shall be selected to supplement the energy.

112. For the determination of the power purchase price from the generation plants the weighted average generation cost shall be utilized.

113. The domestic power purchase price, for determination of Average Costs, shall comprise the weighted average of purchases from domestic generation plants at their Average Cost, as follows:

$$PPP = \frac{AC_{e,g} \times DOMESTIC_{e,g} + \sum_i [AC_{n,g} \times DOMESTIC_{n,g}]}{DOMESTIC_{e,g} + \sum_i DOMESTIC_{n,g}}$$

Where,

(1) PPP is the domestic Power Purchase Price in Ngultrum per kWh;
(2) $AC_{e,g}$ is the weighted average cost of generation for the existing plants "e,g", calculated in accordance with Section 101 of this Regulation;
(3) $AC_{n,g}$ is the average cost for each new generation plant "n,g" in Ngultrum per kWh;
(4) $DOMESTIC_{e,g}$ is the volume of electricity supplied to the Licensee by the existing generation plants "e,g" in GWh; and
(5) $DOMESTIC_{n,g}$ is the volume of electricity supplied to the Licensee by each new generation plant "n,g", in GWh.

114. The hydropower plants shall supply the forecasted energy quantum as approved by the Authority. In the event, the hydropower plant is unable to supply the forecasted energy, it should source from alternative domestic generation and supply at the same tariff.

115. In the event, a generating plant having obligation under a Power Purchase Agreement or those participating in the regional power market are unable to export energy, the tariff applicable to the corresponding energy supplied for domestic consumption shall be treated at the lowest approved domestic generation tariff.

116. The Authority shall true-up variation in the power purchase price on a quarterly basis. Any gain or loss due to the variation in the approved domestic power purchase price shall be passed on to the Energy Intensive Consumers. The Transmission, Distribution and Supply Licensee shall submit the true-up application to the Authority by the 10th day of the following quarter.

117. The Prosumer tariff for the surplus energy injected into the grid shall be determined by the Authority considering of the following:

    (1) Applicable retail tariff;
    (2) Domestic power purchase price; or
    (3) Levelized cost of electricity of the roof top system.

118. The energy between the Prosumers and the Distribution and Supply Licensee shall be netted off every month and carried forward until the end of the 12th month, with the final settlement to be made at the end of each year.

CHAPTER 10
DETERMINATION OF AVERAGE COSTS

119. The cost of supply for a Customer Group in a particular year shall be determined as the sum of energy purchase costs, valued at the domestic power purchase price determined under Section 113 of this Regulation, network costs allocated to that Customer Group, the cost of Working Capital allocated to that Customer Group, System Operator cost less any Non-Tariff Revenue from that Customer Group, as follows:

$$COST_C = (1 + Loss_c) \times PPP \times SALES_c + NETWORK_c + CoWC_c + SOC_C - NTR_C$$

Where,

(1) $COST_C$ is the cost of supply for Customer Group "C", in million Ngultrum;
(2) $LOSS_C$ is the sum of technical and commercial losses allocated to Customer Group "C" as set out in Schedule 5 of this Regulation, as a percentage;
(3) PPP is the domestic Power Purchase Price, determined under Section 113 of this Regulation, in Ngultrum per kWh;
(4) $SALES_C$ is the sales for the year attributed to Customer Group "C", in GWh;
(5) $NETWORK_C$ is the network costs allocated to Customer Group "C", determined under Section 106 of this Regulation, in million Ngultrum;
(6) $CoWC_C$ is the Cost of Working Capital allocated to Customer Group "C", determined under Section 108 of this Regulation, in million Ngultrum;
(7) SO_C is the cost of System Operator allocated to Customer Group "C", in accordance with Section 109 of this Regulation, in million Ngultrum; and
(8) NTR_C is the estimated Non-Tariff Revenue for the year arising from Customer Group "C", in million Ngultrum.

120. The Average Price for a Customer Group shall be determined as the ratio of the discounted costs of supply for that Customer Group to the discounted electricity sales to that Customer Group, where sales are adjusted for an allowed collection rate, and where discounting occurs over the Tariff Period at the WACC applicable to the Customers, as follows:

$$AC_c = \frac{\Sigma_{n=1}^{TP} COST_{c,n}/(1 + WACC_c)^n}{\Sigma_{n=1}^{TP}(SALES_{C,n} \times COLL)/(1 + WACC_c)^n}$$

Where,

(1) AP_C is the Average Price for Customer Group "C", in Ngultrum per kWh;
(2) TP is the number of years in the Tariff Period;
(3) $COST_{C,n}$ is the cost of supply allocated to Customer Group "C" in year "n", as determined in accordance with Section 119 of this Regulation in million Ngultrum;
(4) $SALES_{C,n}$ is the volumes of electricity sales expected from Customer Group "C" in year "n", in GWh;
(5) COLL is the target collection rate set by the Authority for the Licensee, as a percentage; and
(6) $WACC_C$ is the Weighted Average Cost of Capital for the Customer Group "C",

as determined in accordance with Section 104 of this Regulation, as a percentage.

Allocation of Net Import Cost for Import through Generation Licensee

121. Power imports shall only be considered as a last resort, after fully utilizing all available domestic generation capacities to meet demand. If electricity imports become necessary to address domestic shortfalls, the associated costs, including any applicable charges, shall be allocated in the following order:

(1) Industries including construction power;
(2) General commercial establishments;
(3) Individual households; and
(4) Essential public institutions and services.

CHAPTER 11
TARIFF SCHEDULES

Principles for Determining Tariff Schedules

122. In preparation for the Tariff Schedules, the Licensees shall be guided by Section 6.13 of the Guidelines for Determination of Domestic Electricity Tariff 2025.

123. The tariff structure for the Transmission, Distribution and Supply Licensee shall be as follows:

(1) LV and MV Consumer tariff shall comprise only energy charges;
(2) EIC tariff shall comprise of energy and demand charge;
(3) Wheeling shall consist of a common single charge levied per unit of energy wheeled through network for export and import; and
(4) Open Access charges shall consist of a common single charge levied per unit of energy wheeled through the network.

124. In the tariff applications, Licensees shall submit detailed Tariff Schedules, demonstrating that the expected revenue from electricity sales for each Customer Group is consistent with the Average Price for that Customer Group determined according to this Regulation. Any subsidies required to achieve the tariffs in the schedule shall be shown in Ngultrum per kWh per customer category.

CHAPTER 12
MISCELLANEOUS

Penal and Enforcement

125. Any non-compliance with the provisions of this Regulation shall be treated as a violation under the Penalty Rules and Regulations 2024 and subject to sanctions prescribed therein.

Interpretation

126. Unless the context otherwise requires, words and expressions used in this Regulation shall have the meanings assigned to them in the Electricity Act of Bhutan 2001.

DEFINITION

In this Regulation, unless the context otherwise provides:

(1) **"Act**" means the Electricity Act of Bhutan, 2001;

(2) **"Authority"** means the Electricity Regulatory Authority;

(3) **"Average Price"** means a price in Ngultrum per kWh for each Customer Group that is determined by the Authority in its price reviews according to the provisions of this Regulation;

(4) "**Battery Energy Storage System (s)**" means BESS or projects utilizing methods and technologies such as electrochemical batteries (lead acid, li-ion, solid state batteries, flow batteries, etc.), providing a facility that can store chemical energy and deliver the stored energy in the form of electricity;

(5) **"Capital Cost"** means the capital expenditure incurred by the generating company within the original scope of the project as admitted by the Authority;

(6) "**Captive Power Generation**" means a power plant set up by any person or an entity to generate electricity for own use;

(7) "**Capacity Utilization Factor**" means the ratio of gross annual electricity generation (in kWh) from a generating plant to the product of installed nameplate capacity (in kW) of the generating plant, number of days in the year (365 days) and number of hours (24 hours) in a day;

$$\text{CUF}(\%) = \frac{\text{Gross Annual Electrcity Generation (kWh)}}{\text{Installed Capacity (kW)} * 8760}$$

(8) "**Control Period**" means the period during which the norms for determination of solar tariff specified in this Regulation shall remain valid;

(9) **"Customer Group"** means a group of customers, where each Customer Group is defined by the voltage at which supply is provided;

(10) **"Domestic Supply"** means the generation, transmission or distribution of electricity for domestic consumption by way of the generation, transmission or distribution system respectively;

(11) **"Economic Life"** means thirty (30) years from the Commercial Operation Date for the hydropower projects and twenty-five (25) years for the Solar Power Generating Plant;

(12) **"Electricity Regulatory Authority"** means the authority of that name established pursuant to Part 2 of the Act;

(13) "**Energy Intensive Consumer**" means those consumers with contract demand of more than or equal to 2 MW;

(14) **"Exempt Licensee"** means a Solar Generation Licensee that is exempted from obtaining a license as per the Solar Licensing Regulation 2024.

(15) **"Free Power"** means the energy to be provided by a generation Licensee to the Royal Government of Bhutan free of charges;

(16) **"Gearing Ratio"** means the ratio of debt to total net fixed assets;

(17) **"Generation Licensee"** means any person issued with a license to generate electricity pursuant to Part 3 of Electricity Act of Bhutan 2001 from sources such as hydropower and wind.

(18) **"Government"** means the Royal Government of Bhutan;

(19) "**Ground-mounted Solar Power Plant**" shall mean grid connected medium-scale ground-mounted Solar Power Plant, typically designed to supply electricity directly to the grid, with an installed capacity up to 3000 kWp, as specified under Section 8 of the Licensing Regulation for Solar Power Plants, 2024;

(20) **"GWh"** means one million kilowatt-hours;

(21) **"kWh"** means kilowatt-hour, being a measure of electrical energy;

(22) **"Licensee"** means any person issued with a license pursuant to Part 3 of the Act;

(23) **"LV consumers"** means those consumers having capacity less than 300 kW;

(24) **"Ministry"** means the Ministry which is assigned responsibility for the electricity sector;

(25) **"MV consumers"** means those consumers having capacity equal to 300 kW or less than 2 MW;

(26) **"Ngultrum"** means the currency of the Kingdom of Bhutan;

(27) **"Non-Tariff Revenue"** means revenue collected from Customers or Licensee that are obtained from sources other than tariff revenue;

(28) "**Open Access**" means the non-discriminatory provision for the use of transmission lines or distribution system or associated facilities with such lines or system by any licensee or consumer or a person engaged in generation in accordance with the regulations specified by the Authority;

(29) "**Open Access Consumer**" means a consumer, who is permitted by the Authority to receive supply of electricity from a person other than Transmission, Distribution and Supply Licensee. The expression includes an agreement between a generation licensee and consumer, and captive power plant who has availed of or intends to avail of open access;

(30) **"Power Purchase Agreement"** means a bilateral contract dealing with the sale and

purchase of power and electrical energy;

(31) "**Prosumer**" means an electricity consumer that produces part of electricity needs from solar and other renewable energy systems installed in its premises and uses the distribution network to inject excess production for sale and to withdraw electricity when self-production is not sufficient to meet own needs from the same distribution network;

(32) **"Rooftop Solar Power Plant"** shall mean grid connected Solar Power Plant installed on the rooftops of building or premises, which is connected to the grid with an installed capacity up to 1000 kWp, as specified under Section 8 of the Licensing Regulation for Solar Power Plants, 2024;

(33) **"Solar Generation Licensee"** means any person issued with a license to generate electricity from Solar pursuant to Part 3 of Electricity Act of Bhutan 2001.

(34) **"System Operator"** means the person/s designated by the Authority, whose function is defined under Section 39 of the Electricity Act of Bhutan, 2001;

(35) **"Subsidy"** means a financial transfer from the Royal Government to consumers in order to reduce the cost or price of services;

(36) **"Tariff Period"** means the period, in a designated number of years, for which the approved tariffs shall apply;

(37) **"Tariff Schedule"** means the detailed set of charges to be applied by a Licensee for the provision of electricity supply services;

(38) **"Transmission, Distribution and Supply Licensee"** means any person issued with a license to transmit, distribute and supply electricity from generating stations through the national grid pursuant to Part 3 of Electricity Act of Bhutan 2001

(39) **"Utility Solar Power Plant"** means grid connected large-scale Solar Power Plant, typically designed to supply electricity directly to the grid, with an installed capacity above 3000 kWp, as specified under Section 8 of the Licensing Regulation for Solar Power Plants, 2024; and

(40) **"WACC"** means the Weighted Average Cost of Capital determined in this Regulation.

Schedule 1: Benchmark for Solar: Capital Cost and Capacity Utilization Factor

Type of Solar Power Plant	Category of License	Capacity	Capital Cost of Project (Nu/kW)	CUF (%)
Rooftop Solar Power Plant	Category 1A	30 kW and below	Up to 50,000	15%
	Category 1B	31 kW till 1000 kW	Up to 47,500	
Ground-mounted Solar Power Plant	Category 2	0 till 3000 kW	Up to 47,500	17%
Utility scale solar power plant	Category 3A	3001 till 10,000 kW	Up to 45,000	
	Category 3B	10,001 till 50,000 kW	Up to 42,500	
	Category 3C	Above 50,000 kW	Up to 40,000	

Schedule 2: Benchmarks for O&M costs

Activity	Benchmark cost
Transmission	1.0 percent of capital cost, adjusted by the change in the consumer price index since installation.
Distribution	3.0 percent of capital cost, adjusted by the change in the consumer price index since installation.
Others	2.0 percent of capital cost, adjusted by the change in the consumer price index since installation.

Schedule 3: Allocation Factors

The allocation factors for Transmission, Distribution and Supply Licensees are presented below.

Items	Category		Export	HV	MV	LV
$AALLOC_{i,c}$ Allocation of Asset related Costs	Building		20%	26%	10%	44%
	Generation	Mini/micro hydels	0%	0%	30%	70%
	Transmission	Civil structures	36%	46%	6%	12%
		400+kV lines	99%	1%	0%	0.0%
		220kV lines	42%	58%	0%	0%
		132kV lines	18%	63%	4%	15%
		66kV lines	0%	37%	15%	48%
		Substations	33%	51%	7%	9%
		Meters	36%	46%	6%	12%
	Distribution	Civil structures	0%	0%	14%	86%
		33kV lines	0%	0%	16%	84%
		11kV lines	0%	0%	16%	84%
		6.6kV lines	0%	0%	0%	100%
		LV lines	0%	0%	0%	100%
		Substations/ transformers	0%	0%	0%	100%
		Meters	0%	0%	14%	86%
	Others		20%	26%	10%	44%
$OM\ AALLOC_{i,c}$ Allocation of O&M Costs	Generation		0%	0%	30%	70%
	Transmission		36%	46%	6%	12%
	Distribution		0%	0%	14%	86%
	Others		20%	26%	10%	44%
IAALLOC i,c, Allocation of inventories			20%	26%	10%	44%
FAALLOC i,c, Allocation of Fees & Levies			20%	26%	10%	44%

Schedule 4: Depreciation Rates

SI.	Type	Subtype	Rate
1	Buildings & land	Buildings	3.33 %
		Civil Structures	
		Land	0.00 %
2	Generation	Civil Works	3.33 %
		Electro-mechanical*	
		Mini and Micro-Hydro Installations (<5 MW)	5.00 %
		Diesel Generating Sets	
3	Transmission	>= 220 kV Lines	3.33 %
		132 kV Lines	
		66 kV Lines	
		Transmission Substation Equipment	
4	Distribution	33 kV Lines	3.33 %
		11 kV Lines	
		6.6 kV Lines	
		LV Lines	
		Distribution Substation Equipment	
5	Vehicles	Heavy Vehicles	15.00 %
		Light and Medium Vehicles	
		Earth Mover	
		Two Wheelers	
6	Office Equipment	Computers & Accessories	20.00 %
		Printer	
		Photocopier	
		Overhead Projectors	
		Telecommunication Equipment	
		Other Office Equipment	
		Software	
		Furniture	10.00 %
7	Tools	Tools & Plants	10.00 %
		Fire Fighting Equipment	
		Electrical Equipment	

Schedule 5: Loss Allowances

Maximum allowable Loss allowances for the Customer Groups for Wheeling, HV, MV and LV are provided below:

Item	**Wheeling (Export / Import) & HV**	**MV**	**LV**
Technical Losses	2 percent	2.5 percent	9 percent
Commercial Losses	0 percent	0 percent	0 percent
Collection rate	100 percent	100 percent	100 percent

Electricity Regulatory Authority
Ministry of Energy and Natural Resources
Royal Government of bhutan

Land line: +975-02-327317
E-mail:era@era.gov.bt