

1. MANDATES

As entrusted by the Electricity Act of Bhutan, 2001 the Bhutan Electricity Authority was established to fulfill the following functions:

1. to develop regulations, standards, codes, principles and procedures, which include, but are not limited to the following:
 - (a) performance standards, including minimum technical and safety requirements for construction, operation and maintenance of generation, transmission and distribution facilities;
 - (b) tariff-setting, including tariffs for generation not regulated by power purchase agreement, transmission, distribution and retail sale. These regulations should also comprise terms and conditions for connection fees and investment contribution from customers, and for provision of access to the transmission grid and distribution networks;
 - (c) subsidies to entities carrying out non-economic viable electricity supply based on the policies and planning executed by the Minister;
 - (d) requirements for Licensees' reporting, accounting and issuance of information to the Authority;
 - (e) system operation, including dispatch of generation; and
 - (f) levies, charges or royalties to be paid by Licensees.
2. to process applications and issue, modify and revoke licenses for generation, transmission, system operation, export, import, distribution and sale of electricity;
3. to monitor the performance of Licensees and their compliance with provision of this Act, regulations, standards, codes, licenses and contracts approved by the Authority and concession agreements entered into between the Minister and Licensees;
4. to determine, or approve tariffs proposed by the Licensees, and review existing tariffs;
5. to prescribe and collect fees, charges or royalties from Licensees;
6. to impose any fines, sanctions or penalties for any breach of provisions of the Act, regulations, standards, codes, licenses or contracts to be approved by the Authority, and concession agreements entered into between Licensees and the Government; and
7. to establish a dispute resolution process and settle disputes between Licensees and between Licensees and customers relating to the enforcement of this Act, regulations, codes, standards and licenses issued under this Act, contracts approved by the Authority and concession agreements entered into between the Minister and Licensees, or otherwise any other arrangement for settlement of disputes which are not determined by the mentioned legal instruments.

2. COMMISSION MEMBERS



Chairman
Yeshe Wangdi
Director General
Department of Energy



Commissioner
Kapil Mani Sharma
Head
Public Enterprise Division
Ministry of Finance



Commissioner
Karma Yonten
Chief Executive Officer
Druk Holding and Investments

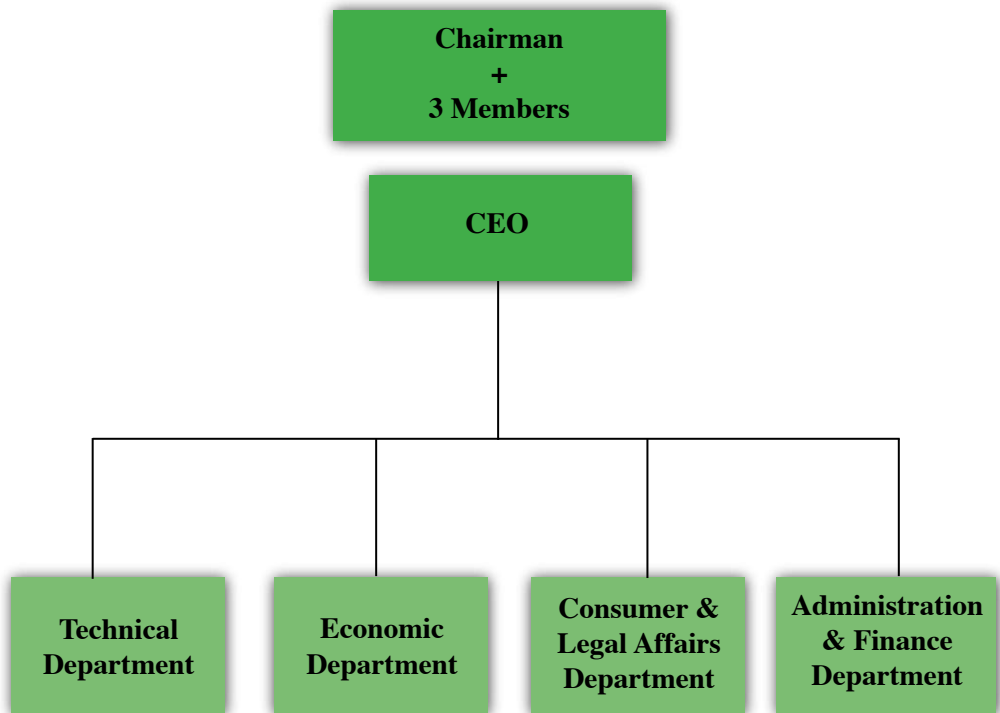


Member Secretary
Pem Dorjee
Offtg. Chief Executive Officer
Bhutan Electricity Authority



Commissioner
Pema Rinzin
Chief Legal Officer
Office of Attorney General

3. ORGANOGRAM



The above organogram was approved by the BEA Commission during the first Commission Meeting held on 14th September 2006 and the functions of the four departments are as follows:

1. **Technical Department:** is responsible for all technical matters in sector regulation and licensing.
2. **Economic Department:** is responsible for managing the licensing process and economic regulation.
3. **Consumer & Legal Affairs Department:** is responsible for public communication, legal counsel and dispute resolution.
4. **Administration and Finance Department:** is responsible for the administration and finances of BEA, licence fee collection, human resources and information systems.



4. MILESTONES

- **July 26, 2001** - The Electricity Act of Bhutan, 2001 was passed in the 79th session of the National Assembly.
- **July 1, 2002** - The Bhutan Electricity Authority Secretariat was established as division of Department of Energy under erstwhile Ministry of Trade and Industry.
- **July 1, 2005** - The Electricity Act of Bhutan, 2001 was notified by the Minister, Ministry of Trade and Industry in the national newspaper, Kuensel.
- **August 1, 2006** – The Commission Members to the Bhutan Electricity Authority were appointed by the Honourable Tengye Lyonpo, Ministry of Trade and Industry.



- **February 13, 2007**- A Dispute Resolution Committee was formed to settle disputes between Licensees and Customers.
- **March 27, 2007** -Bhutan Electricity Authority issued the Licences to Chhukha Hydropower Corporation Limited, Basochhu Hydropower Corporation Limited, Kurichhu Hydropower Corporation Limited, Tala Hydroelectric Project Authority and Bhutan Power Corporation Limited.
- **May 29, 2007** - The electricity tariff for Bhutan Power Corporation Limited was approved by Bhutan Electricity Authority for the period July 2007 to June 2010.

5. THE YEAR IN RETROSPECT

1. The Tariff Determination Regulation, 2007 was approved by the BEA Commission on October 16, 2006 and made effective from January 1, 2007. The purpose of the Tariff Determination Regulation is to provide for the determination of the electricity prices in accordance with the Electricity Act of Bhutan, 2001.
2. The Distribution Code was approved by BEA Commission in the 8th Commission meeting held on October 5, 2007 after wide consultation with the Licensees and the Distribution Code was issued with effect from January 1, 2008. The main objective of the Distribution Code is to regulate the following activities so that these are undertaken in a safe, reliable and efficient manner:
 - (i) The distribution of electricity by a Distribution Licensee for supply to its Customers,
 - (ii) The connection of a Customer's electrical installation to the Distribution System of a Distribution Licensee,
 - (iii) The connection of Embedded Generator to the Distribution System of a Distribution Licensee, and
 - (iv) Transfer of electricity between Distribution Systems.
3. The Safety Regulation was approved during the 9th Commission Meeting and was issued with effect from July 1, 2008. This regulation makes provisions for the design, construction, operation and maintenance of electric power plant and equipment in a manner that is electrically safe. The regulation outlines the responsibilities of the Licensees and the Authority with regard to electrical safety and provisions for development of Safety Code, Safety Rules, and Safety Audits and investigation into serious safety incidents.
4. The Safety Code was approved by the BEA Commission during the 9th Commission Meeting and was issued with effect from July 1, 2008. The Safety Code specifies the minimum requirements for design, construction, operation and maintenance of electric power plant and equipment under the control of the Licensees.
5. The Grid Code Regulation was approved by the BEA Commission on March 28, 2008. The main purpose of the Grid Code Regulation is to establish a single set of technical rules, applicable to all the entities connected to, or using, the Transmission System. The Grid Code Regulation provides the following:

- (i) Documentation of the principles and procedures which define the relationship between the Licensees using the Transmission System, as well as the System Operator and the Ministry;
 - (ii) Facilitation of the planning, development, operation & maintenance of an economic and reliable Transmission System;
 - (iii) Facilitation for beneficial trading of electricity by defining a common basis of operation of the Transmission System, applicable to all the Users of the Transmission System.
6. In light of experience gained over the time and suggestions/comments from Licensees after the usage of the regulation practically, first amendment was made to the Tariff Determination Regulation after thorough discussion with the stakeholders by the Commission during the 9th Commission Meeting held on March 28, 2008.
 7. The draft System Operator Regulation was developed with assistance from NVE under the Norad Project Phase I. However the regulation was not implemented since the System Operator was envisaged to be in place by the year 2010 only. The first consultative meeting on the draft System Operator Regulation was held on May 28-29, 2008 with the stakeholders.
 8. The pamphlets on “Electricity Tariff” and “Introduction to Bhutan Electricity Authority” were printed both in English and Dzongkha and distributed to electricity customers in twenty Dzongkhags in Bhutan.
 9. An audio visual program on electrical safety was developed in association with Bhutan Power Corporation Limited and KLK Animate and is being aired on BBS TV.
 10. The draft Dispute Resolution Procedure was developed in order to settle disputes between Licensees and between Licensees and customers relating to the enforcement of the Electricity Act of Bhutan 2001, regulations, codes, standards and Licences issued under the Electricity Act of Bhutan, 2001.

6. LICENSEES

Under the authority granted by the Electricity Act of Bhutan 2001, the Bhutan Electricity Authority issued Licences to Bhutan Power Corporation Limited to generate, transmit, distribute and supply electricity. BEA also issued Licences to Chhukha Hydropower Corporation Limited, Basochhu Hydropower Corporation Limited, Kurichhu Hydropower Corporation Limited and Tala Hydroelectric Project Authority to generate supply, import and export electricity. The License was issued on March 27, 2007 for a period of thirty(30) years.

A. Druk Green Power Corporation Limited

The erstwhile Chhukha Hydro Power Corporation Limited (CHPC), Basochhu Hydro Power Corporation Limited (BHPC) and Kurichhu Hydro Power Corporation Limited (KHPC) have been amalgamated to form the Druk Green Power Corporation Limited (DGPC) with effect from 1st January 2008 based on the Royal Kasha of the Fifth Druk Gyalpo. The Chhukha Hydropower Plant (CHP), Basochhu Hydropower Plant and the Kurichhu Hydropower Plant are owned by the DGPC and managed by the individual Plant Managers. Some of the salient features of the hydropower plants under DGPC are given below:

1. Chhukha Hydropower Plant

Chhukha Hydropower Plant is located in Chhukha district of Western Bhutan and has an installed capacity of 336 MW consisting of four units of 84 MW each. The hydropower plant was built with the assistance from the Government of India and was commissioned in 1986-1988. Chhukha was the first major hydropower projects of the country.



Salient Features:

Annual generation	: 1,863 Million Units.
Export tariff	: Nu.2/kWh.
Source	: Wangchhu river.
Installed capacity	: 4 x 84 MW.
Type of dam	: Ogee concrete dam.
Type of turbine	: Pelton.
No. of turbine blades	: 6.
Minimum observed discharge	: 19.8m ³ /second.

2 Kurichhu Hydropower Plant

Kurichhu Hydropower Plant is located in Gyelpozhing, Mongar dzongkhag of Eastern Bhutan and has an installed capacity of 60 MW consisting of four units of 15 MW each. It is designed to generate 400 Million Units annually. The fish ladder is one of the special features of the Kurichhu Hydropower Plant built in order to allow the migration of fish from downstream of the dam to reservoir (upstream of dam) in compliance with the environmental rules and regulations.



Salient Features:

Mean annual generation	: 400 Million Units.
Export tariff	: Nu.1.75/kWh.
Source	: Kurichhu river.
Installed capacity	: 4 x 15 MW.
Type of dam	: Concrete gravity.
Catchment area	: 9135 km ² .
Type of powerhouse	: Surface.
Location of powerhouse	: Dam toe.
Type of turbine	: Vertical shaft Kaplan.
No. of turbine blades	: 6.

The hydropower plant was commissioned in 2001 with its first three generating units starting its commercial operation and the fourth unit on 31st May 2002. During the summer/monsoon season the power plant generates its full capacity of 60 MW. The power generation reduces to less than 30% of the installed capacity during the lean period.

The hydropower plant was constructed through financing from the Government of India with 60% grant and 40% loan at 10.75% interest rate per annum.

The power from the Kurichhu Hydropower plant is supplied to Mongar, Lhuentse, Trashigang, Trashiyangtse, Pema Gatshel, Samdrup Jongkhar, Sarpang and Zhemgang.

3 Basochhu Hydropower Plant

(a) Basochhu Hydropower Plant – Upper stage

The Basochhu Hydropower Plant – Upper stage is located in Hebesa under Wangduephodrang Dzongkhag and has an installed capacity of 24 MW. It is designed to gen-

erate 105 Million Units annually. The tail-water flows into a pondage which enables the Basochhu Hydropower Plant - Lower Stage to generate partly variable load. The power house control room is also equipped with a CCTV to monitor the the flow at the intake.



Salient Features:

Annual generation	: 105 Million Units.
Gross head	: 356 metres.
Installed capacity	: 2 x 12 MW.
Type of diversion weir	: Concrete gravity.
Catchment area	: 160 km ² .
Type of powerhouse	: Surface.
Type of turbine	: Pelton.

The construction of the hydropower plant was started in 1997 and commissioned in 2001.

(b) Basochhu Hydropower Plant – Lower stage

The Basochhu Hydropower Plant – Lower stage is located at Rurichhu under Wangdue-phodrang Dzongkhag and has installed capacity of 40 MW. It is designed to generate 186 Million Units annually.



Salient Features:

Annual generation	: 186 Million Units.
Source	: Rurichhu river.
Installed capacity	: 2 x 20 MW.
Gross head	: 459 metres.
Type of powerhouse	: Surface.
Type of turbine	: Pelton wheel.
Design discharge	: 10 m ³ /second.

The construction of the hydropower plant was started in 2002 and commissioned in 2005.

B Tala Hydroelectric Project

The Tala Hydroelectric Project is located in Chhukha dzongkhag of Western Bhutan and has an installed capacity of 1,020 MW, six units of 170 MW each. It is designed to generate 4,865 Million Units annually.



Salient Features:

Annual generation	: 4,865 Million Units.
Export tariff	: Nu. 1.80/kWh.
Installed capacity	: 6 x 170 MW.
Source	: Wangchhu river.
Type of dam	: Concrete gravity.
Type of powerhouse	: Underground.
Type of turbine	: Pelton.

The Tala hydropower plant is the second major joint venture hydropower project between the Royal Government of Bhutan and the Government of India. The construction of the hydropower plant was started in 1997 and was commissioned in 2006 - 2007.

The hydropower plant was constructed through financing from the Government of India with 60% grant and 40% loan at 9% interest per annum.

C Bhutan Power Corporation Limited



With the major restructuring in the power sector in July 2002, Bhutan Power Corporation Limited (BPC) was formed from the erstwhile Department of Power under the Ministry of Trade & Industry with the mandate of transmitting and distributing electricity throughout the country and also providing transmission access for generating stations for domestic supply as well as export.

BPC is the only distribution and transmission Licensee in Bhutan. There are eight (8) Departments with total employees of 1576 spread over twenty dzongkhags. The BPC is governed by a board of seven directors with the Director General of the Department of Energy as the Chairman and is headed by

a Managing Director. Apart from handling transmission and distribution of electricity within the Kingdom, the BPC also operates mini and micro hydro plants with a total installed capacity of 7.99 MW and diesel generation of 9.148 MW. BPC has also been designated as the System Coordinator which is responsible for coordinating the system operation with the generating companies.

7. ELECTRICITY TARIFF

The electricity tariffs for distribution, supply, transmission, generation or system operation are determined by the Bhutan Electricity Authority as per the Tariff Determination Regulation, 2007 which is in accordance with the Electricity Act of Bhutan, 2001.

The Tariff Determination Regulation, 2007 prescribes a Cost of Supply methodology where the scope of costs includes the following:

- (i) Operating and maintenance costs;
- (ii) Depreciation;
- (iii) A return on fixed assets, including an allowance for company taxation;
- (iv) Power purchases and fuel costs for electricity generation, should either of these be applicable;
- (v) The cost of losses and non-payment of electricity bills;
- (vi) The cost of working capital; and
- (vii) Any regulatory fees, duties or levies that the Licensee is liable to pay under the Laws of Bhutan.

The regulation sets an allowance for the regulatory parameters such as operating and maintenance costs, depreciation rates, return on equity, gearing ratio, auxiliary consumption, availability and losses and benchmarks for Operation and Maintenance costs.

Bhutan Electricity Authority reviewed the tariff proposal submitted by Bhutan Power Corporation Limited based on the Tariff Determination Regulation, 2007 and approved the BPC tariffs for a three year period. The approved BPC tariff schedule is given below:

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		July 1, 2007 onwards	July 1, 2008 onwards	July 1, 2009 onwards
LV -Domestic Customers				
Block	kWh/month	Charge Nu./kWh		
I	0 - 80	0.75	0.75	0.75
II	81 - 300	1.25	1.35	1.4
III	above 300	1.55	1.7	1.85
Low Voltage - Bulk Customers		1.55	1.7	1.85
Medium Voltage Customers (33/11/6.6 kV)				
Energy Charge (Nu./kWh)		1.3	1.43	1.55
Demand Charge (Nu./kW/ month)		65	75	85
High Voltage Customers (66 kV and above)				
Energy Charge (Nu./kWh)		1.29	1.4	1.51
Demand Charge (Nu./kW/ month)		65	75	85

8. ANNUAL STATEMENT OF ACCOUNTS

As mandated by the Electricity Act of Bhutan, 2001, Bhutan Electricity Authority collected the License fees from the generating and distributing Licensees after the issuance of License. A total amount of Nu. 13.231 million was collected from the Licensees for the year 2007-2008. The details are as given below:

Fees Received During Financial Year 2007 – 2008

Licensees	License Fees in Nu.	Miscellaneous Receipt in Nu.	Total Amount in Nu.
BPC	1,696,000.00		175,000.00
BHPC	748,000.00		748,000.00
CHPC	2,652,000.00		2,652,000.00
KHPC	720,000.00		720,000.00
THPA	7,240,000.00		7,240,000.00
Total	<u>13,056,000.00</u>	<u>175,000.00</u>	<u>13,231,000.00</u>

During the Financial Year 2007-08, the total expenditure incurred was Nu. 4.065 million. The details of expenditure are given below:

Expenditure Statement from July 2007 – June 2008

Particulars	Expenditure in Nu.
Current Expenditure	
Pay & Allowances	1,736,204.00
Travel- In country	283,760.00
Travel – Outside country	34,416.00
Utilities - Telephone, fax, email, internet	36,074.00
Utilities - Telegram, wireless transmission, postage	24,207.50

Utilities - Electricity, water, sewerage charges	9,264.50
Office supplies, printing, publications	168,674.00
Maintenance of Property – Computers	18,450.00
Operating Expenditure – Advertising	117,775.00
Operating Expenditure – Others	63,000.00
Hospitality and entertainment	64,476.00
Hospitality and entertainment	115,780.00
Retirement benefits	41,865.00

Capital Expenditure

Furniture	5,630.00
Office equipment	118,000.00
Computer and peripherals	28,500.00
Professional services	890,639.20
Sitting Fees	309,000.00
Total	<u>4,065,715.20</u>

From the details above, it can be seen that the expenditure incurred is minimum. The main reasons for actual expenditure being less than approved budget for 2007-08 are:

- (i) the regional consultant who was supposed to advise BEA for regulatory implementation issues was not recruited (budget allocation of Nu. 6.00 million),
- (ii) flat for office was not hired and hence office was not shifted (budget allocation of Nu. 0.25 million),
- (iii) savings from the other heads such as travel in country and outside Bhutan and printing of regulations.

9. ACTIVITIES FOR THE YEAR 2008-2009

The Bhutan Electricity Authority has the following important activities to be under taken during the Fiscal Year 2008-2009.

1. Activities under NORAD Phase III project

Under the Norad Phase III project, the following activities will be carried out with assistance of the Norwegian Water Resources and Energy Directorate (NVE):

- (a) Amendment of Electricity Act of Bhutan, 2001;
- (b) Development of Regulations related to the Independent Power Producers;
- (c) License Condition for System Operator License;
- (d) Licensee Condition for Construction License;
- (e) Guidelines for Tariff applications.

2. System Operator Regulation

The draft System Operation Regulation will be submitted to the Commission for approval.

3. Designation of System Operator

The Bhutan Power Corporation Limited will be designated as the National System Operator and will be issued a license for System Operation.

4. Issuance of the Dispute Resolution Procedure

The draft Dispute Resolution Procedure will be submitted for approval and information on the Dispute Resolution Procedure will be disseminated to the general public.

5. Issuance of the Standard of Performance Regulation

A Standards of Performance Regulation will be developed in consultation with the Licensees.

6. Issuance of the Right of Way Regulation

The draft Right of Way regulation will be submitted for approval to the Commission after consultation with the stakeholders.

10. TRAINING

The BEA attaches great importance in providing training to its employees on a regular basis to enhance their knowledge and skills, to stay abreast with the changing times and the technological changes taking place around the world. The Table below provides the summary of the trainings attended by the employees of BEA during the Fiscal Year 2007-2008.

Sl. No.	Name & Designation	Period	Seminar/Training/ Study tour	Place & Country	Funding Agency
1.	Karma Choden, Administration Assistant	December 24, 2007 - January 19, 2008	Training on advanced IT Applications (Windows Vista & Office 2007).	Phuntsholing , Bhutan	BEA
2.	Jigme Dorji, Junior Engineer	February 11 - 22, 2008	Training on “Power System Switch gears, Protection and Metering”.	Hyderabad, India	BEA
3.	Nermin, Junior Engineer	February 11 -22, 2008	Training on “Power System Switch gears, Protection and Metering”.	Hyderabad, India	BEA
4.	Deki Choden, Dy. Executive Engineer	May 31 - June 11, 2008	Study tour to regulatory agencies.	Delhi (India), Manila (Philippines), Singapore, Bangkok (Thailand)	BEA
5.	Dorji, Engineer	May 31 - June 11, 2008	Study tour to regulatory agencies.	Delhi (India), Manila (Philippines), Singapore, Bangkok (Thailand)	BEA
6.	Thukten Wangmo, Engineer	May 31 - June 11, 2008	Study tour to regulatory agencies.	Delhi (India), Manila (Philippines), Singapore, Bangkok (Thailand)	BEA