

# STUDY OF THE LEGAL AND REGULATORY FRAME WORK OF THE POWER SECTOR – GUYANA

## BACKGROUND.

**1.1** The **Electricity Sector Reform Act 1999(ESRA)** is the principal piece of legislation governing Guyana’s electricity sector. The ESRA is complemented by an amended version of the **Public Utilities Commission Act (PUCA)** enacted in October 1999 and **the Guyana Energy Agency Act (GEAA)**, which was enacted in October 1997. Together, these three laws create a comprehensive, coordinated structure for regulation of the sector as a whole and for the 1999 capitalization of the principal power producer the Guyana Power & Light, Inc. (GPL), a vertically integrated utility.

**1.2** In 1999 the Government granted a licence to the Guyana Power & Light, Inc. by virtue of the provisions of Sections 4 and 42(3) of ESRA for the generation of electricity, except the generation of electricity through hydropower. It is an exclusive licence for twenty-five years for the purposes of transmission, distribution, storage, furnishing and sale of electricity; to purchase electricity in accordance with power purchase agreements between the Licensee and independent power producers, and the supply, erection, maintenance, repair, removal, replacement and operation of meters, electric lines and other electrical apparatuses, installations and facilities necessary to carry out the activities and services authorized by the Licence. For the purposes of generation of electricity, GPL shall not be required to facilitate competition during the first five years, but during such period shall use good faith efforts to add and/or replace generation capacity in the system. After that initial five-year period it shall facilitate competition through a transparent international bidding process for any capacity additions and replacements of a size larger than 10 megawatts, except that if requested by the licensee the Minister may waive this

requirement on a case by case basis, acting reasonably, with respect to proposed capacity additions or replacements which are larger than 10 megawatts and up to 20 megawatts.

**1.3** The Licensee shall enter into power purchase agreements with independent power producers licensed under the ESRA, for additions of generation capacity to the system, provided that such independent power producers generate electricity from alternative forms of energy using renewable resources and provided that such power purchase agreements (a) are on terms and conditions acceptable to the Licensee and are approved by the Public Utilities Commission, (b) reflect the principle that the purchase price payable by the Licensee to the independent power producer shall not be greater than the Licensee's marginal cost of electrical energy production, (c) allow for the economic, orderly and efficient development of the resources of the country, (d) are compatible with the national energy policy of Guyana and (e) will not cause undue hardship on the Licensee's consumers.

**1.4** **Synopsis of ESRA:** This Act consists of four major Parts and three Schedules that comprehensively reform the electricity sector. Following a preliminary **Part 1** that provides definitions of the terms used in the Act, **Part II** speaks to the requirement for licensing suppliers of electricity, both public suppliers (who provide electricity to consumers on a grid system) including independent power producers and private suppliers (such as individuals and companies that supply electricity to themselves and others in their immediate vicinity). **Section 3** stipulates that a person shall not supply electricity to any other person, or to any premises or geographical area except in accordance with the terms of a licence granted under Section 4, **but a person shall not be required to obtain a licence under Section 4 or an exemption under the section if he supplies electricity solely to himself, and not to any other person: Provided** that such person has filed a report with the Minister and the public supplier in whose authorized area such person is supplying electricity to himself, on a form to be prescribed by the Minister. The procedure and authority for granting licences are also detailed.

**Section 5** of the Act prescribes the terms and conditions under which a licence may be granted, and **Section 10** provides that it shall be in writing and unless revoked shall continue in force and effect in accordance with its terms and conditions for such period as may be specified in the licence: And **Section 11** cautions that except where the licence expires or is revoked, suspended, cancelled or terminated in accordance with its conditions, no public supplier shall cease its licensed operations within its authorized area or any part thereof without first obtaining the permission of the Minister and the Public Utilities Commission. Part II also contains procedures for monitoring and securing compliance with the terms of licences for the supply of electricity (**Sect 15**); for modifying (**Sect 13**); extending (**Sect 14**) suspending or revoking licences (**Sect 16**) and for appealing a suspension or revocation of a licence (**Sections 17-18**): Part II of the ESRA continues with provisions governing the principles upon which public suppliers are empowered and are required to operate. Part II, as supplemented by Public Electricity Supply Regulations appended as the Third Schedule to the Act or as modified by **Standard Terms and Conditions** included in a public supplier's licence, defines the relationship between public suppliers and consumers in such comprehensive areas as formation of contracts to supply electricity, the charges that can be levied for electricity, billing parameters, the use of electricity meters, penalties for the theft of electricity or destruction of a public supplier's property, and dispute resolution between public suppliers and consumers. Part II also defines the broad principles governing the rates that can be charged to consumers by public suppliers, and, as an integral part of the transaction between the Government and the Strategic Investor in GPL, the **First and Second Schedules** to the ESRA in conjunction with GPL's licence, set forth the specialised procedures, principles and formulae for determination of the rates that GPL will be permitted to charge consumers. Notably, section **20 of the ESRA** requires public suppliers to facilitate the use of alternative sources of electricity generation using renewable resources wherever commercially feasible. Part II concludes with provisions that require all public suppliers to maintain annual and rolling five-year sustainability programmes and development and expansion programmes

(Sect 38). The concluding sections of Part II also set forth the types of books, records, accounts and performance statistics that must be maintained by a public supplier and submitted to the Government and made available to the public on an annual basis (Sects 39-40).

**Part III of ESRA** establishes GPL as a public company limited by shares with a mandate to operate in accordance with commercial principles (Sect 42): Part III clarifies that GPL is not to be classified as a Government company under the Companies Act 1991. Finally, Part III set forth the principles governing such matters as rural electrification programmes and the relationship between GPL and independent power producers (Sects 43-50).

**Part IV** of the Act specifies the Minister's regulatory powers and limits those powers to areas that are appropriate for governmental regulation, e.g., public safety, the definition of technical standards and the procedure for licensing the supply of electricity, and matters affecting national energy policy. Part IV also requires that, before taking any action authorized or required by the Act, the Minister must apply a test that balances the consumers' interest, public safety, the financial integrity of electricity suppliers, investor interest in achieving a guaranteed or reasonable rate of return on capital invested, and the national interest in enforcing the Act, protection of the environment and formulating and implementing national energy policy (Sect 65) Part IV also defines an electricity supplier's liability and immunity from liability during the course of supplying electricity and establishes arbitration procedures for the resolution of disputes (Sects 51: 64): Finally, Part IV sets forth the penalties for violations of the Act (Sections 53 – 63).

**1.5 Outline of the PUC Act:** The Public Utilities Commission is a body corporate and performs regulatory, investigatory, enforcement and other functions conferred on it by the Act with respect to the Electricity, Telecommunications and Water & Sewerage services throughout the country. It also has power to do anything which, in the

reasonable opinion of the Commission, is calculated to facilitate the proper discharge of its functions or is incidental thereto. In the exercise and discharge of its functions the Commission shall not be subject to the direction or control of any person or authority. However, in carrying out its functions the Commission shall be bound by and shall give effect to the provisions of the Guyana Energy Act 1977, The Electricity Sector Reform Act 1999, the Telecommunications Act 1990, any other law governing a public authority subject to the Commission's jurisdiction, the terms of any licence issued by the Government to a public utility, and the terms of any agreement between the Government and a public utility or between the Government and an investor, which agreement is in relation to the privatization or capitalization of the public utility; and in the event of a conflict between such agreements or licence and any existing written, the **agreements or licence shall prevail for the purposes of Section 33 of the Act: WRITTEN LAW shall not include the Constitution. (Section 21).**

**PART VIII** of the Act deals with the principles and procedures with respect to the setting of rates, and **section 33** mandates that the Commission shall be bound by and shall give effect to any agreement or licence granted by the Government or where any law exists specifying the rate of return the public utility or the investor is entitled to in respect of the capital invested or dedicated for providing any service; or the principles, procedures, formulae or mechanisms, on the basis of which such rate of return and, thereby, any rate charged by a public utility is to be determined or adjusted. And in determining the rate a public utility may charge for any service provided by it, **Section 32** advises that the Commission shall have regard to consumer interest and investor interest and to the rate of return obtained in other enterprises having commensurate risks, provision of safe and adequate service at reasonable costs, and to assuring the integrity of the enterprise. With respect to the Electricity Sector the Commission is required to follow the procedures set forth in the First and Second Schedules to the Electricity Sector Reform Act, 1999, as well as the licence issued to GPL, in setting the rates that may be charged to consumers of electricity and electricity-related services.

The Commission must also approve power purchase agreements between public suppliers (such as GPL) and independent power producers, as well as any changes to the Standard Terms and Conditions attached to GPL's licence governing the relationship between GPL and consumers (**Clause 2.1 of the STC**). Prior to the grant of a licence to an independent power producer for the generation of electricity for **sale to a public supplier**, the Minister must be satisfied that both the public supplier and the independent power producer have approved the terms and conditions upon which such electricity will be purchased by the public supplier, **and such terms and conditions insofar as they relate to rates have further been approved by the Commission in the exercise of its authority under section 35(1) of the PUC Act.**

The Act also empowers the Commission to make decisions in such areas as its budget (**Sect 20**); self-recusal in the case of conflicts of interest (**Section 8**) and to retain the services of professional consultants to advise on rate-making and other technical issues, and the employment of an adequate staff. The Act also defines matters such as the qualification of members of the Commission (**Section 5**); terms of appointment (**Section 6**); emoluments, avoidance of conflicts of interest, grounds for termination of member's service, (**Section 9**) immunity from suit in respect of any act done **bona fide** in pursuance or execution or intended execution of duties or powers under the Act (**Section 14**); the criteria for evaluating and approving public utilities' development and expansion programmes (**Section 28**); the making of rules prescribing the quality and standard to be achieved and maintained by a public utility in respect of any service provided by it, and the conditions to be contained in, and to become part of, all agreements entered into by a public utility and consumers in respect of any service provided by it (**Section 31**); But **Clause 16 of the Licence** issued to GPL provides that the licensee shall use its best efforts to implement, achieve and maintain the operating Standards and Performance Targets in accordance with the Second Schedule of the Licence as may be amended from time to time with the prior approval of the Minister, and there shall be no requirement for approval by the Commission of the Operating Standards and Performance Targets or as amended from time to time with the approval of the Minister: The Act also provides that

the accounting standards applicable to public utilities, the information that must be included in financial and operational reports that public utilities must present to the Commission, the availability of such information to the public and the protection of trade-secrets (**Section 83**); **Section 48** of the Act provides for the Commission by rules prescribe the forms of all books, accounts, papers and other records required to be kept by every public utility, and every such utility shall keep and render its books, etc. accurately and faithfully in accordance with internationally accepted accounting principles in Guyana, and shall comply with all directions of the Commission relating to such books, accounts, papers and other records. However, Clause 25 of the Licence provides that notwithstanding section 48, the Licensee shall not be subject to the Commission's rules regarding forms of account, but shall maintain accounts accurately and faithfully and in a form and manner satisfactory to its outside auditors and to the independent firm of accountants. There is also the requirement for the Commission to submit an Annual Report to the Minister (**Section 85**), and for the Commission to make rules for carrying out the purposes of the Act (**Section 87**).

The Commission holds hearings to which the public is invited when applications are made by a utility company for rates for any service it provides. There are also Consumers' Associations which take active part in the public hearings. Hearings are also held in the public when consumers make complaints concerning the services received, and which are not resolved by direct representation to the utility company.

The Commission also each month holds awareness programmes and outreaches where staff visit consumers in the several locations and discuss their problems. At the outreaches, representatives from the several utility companies attend and many problems and issues are favourably resolved.

The Commission is not funded by the public treasury, but the Act provides for the utilities under its jurisdiction to make annual contributions not exceeding 1% of their gross revenue derived from services. “**Gross revenue derived from services**” means the gross revenue derived in the most recently-ended financial year of a public utility.

**1.6 GPL’s Licence:** GPL operates under a twenty-five year Licence that was granted in 1999. GPL’s operations comprise generation, transmission, and distribution activities within its authorized area of supply which covers the entire country with the exception of a medium-sized municipality located in Linden, approximately 100 km from the Coast, and any other areas in which a secondary supplier is licensed to operate.

GPL’s Licence establishes the procedure for the granting, modification, extension and revocation of the Licence. In accordance with the Licence, GPL has an obligation to provide universal service within its authorized area of supply. GPL’s tariffs for the supply of electricity are to be reviewed and amended annually in accordance with the First Schedule to ESRA and the First Schedule to the Licence to reflect economic cost of service to each category of customers. GPL may enter into an agreement with the Government to charge transitional rates to consumers in areas (example Linden) that are newly brought into its area of supply. GPL may with the PUC’s approval establish new rates for attracting and retaining any one consumer or any class of consumer subject to such rate not being less than GPL’s marginal cost of supply.

GPL was required to acquire the Linden electrification system by October 2001 but this has not materialized. After October 2004 GPL was required to facilitate competition in generation by purchasing electricity capacity of a size larger than 10 MW from independent power producers. Upon the Minister’s request GPL is required to implement rural electrification programmes.

**GPL's Licence includes four schedules. The First Schedule** sets the formula for determining electricity rates or components of the rate base and the rate adjustment mechanism. **Schedule 2** constitutes the Operating Standards Performance Targets which is amended from time to time by the utility with approval of the responsible Minister. **The Third Schedule** is the Development & Expansion Programme, which comprises an Annual and Five Year programme, is amended and updated on an annual basis with the Minister's approval. **Standard Terms & Conditions which apply to GPL and its customers are contained in the Fourth Schedule.** This schedule may be amended from time to time by the utility with the approval of the Public Utilities Commission (PUC).

**1.7 Interrelationship between the GEAA and ESRA:** Under the GEAA, the Guyana Energy Agency - the body charged with developing and implementing a coherent national energy policy - is required to tender any advice needed by the Minister assigned authority for the administration of the ESRA. In some cases, the Minister is required to consult with the Agency before taking action under the ESRA. **Under section 6 of the ESRA**, for example, the Minister is precluded from granting a licence without requesting and receiving the advice of the Agency. The Minister is also required to seek the Agency's advice before modifying the terms and conditions of a licence (**under section 13**). .

**1.8 GPL's Structure and Performance over the past five years:** GPL was incorporated in 1999 following privatization (through 50% capitalization). However by 2002 the utility faced severe challenges including cash shortfall, high losses exceeding 44%, significant tariff increases, unexpected fuel spikes, declining sales, non-profitability and inability to raise financing. Negotiations between Government and the investor on the restructuring of GPL failed and in April 2003 the investor sold its shares to Government. The utility is presently 100% state owned. The Government has no defined plans of re-privatising GPL in the medium term.

While GPL has shown significant improvements between 2003 and 2007, the relatively high electricity losses still continue threatening its sustainability. Some of GPL's measurable achievements include: extension of the national electricity grid to provide 34,000 new connections financed largely through the Inter-American Development Bank-supported Unserved Areas Electrification Programme (UAEP); addition of 19.8 MW of generating capacity to the system; rehabilitation of 192 km 69 kV transmission lines; introduction of remote read capability meters; replacement of over 28,000 defective meters and removal of illegal connections. The utility's loss reduction efforts have resulted in the reduction of overall losses to 33.4% at December 2007.

It may be of interest to note that for the year 2007, GPL produced 559,374.69 megawatts of power at a total cost of B\$22,519,556. The cost of fuel and freight amounted to B\$14,472,617,629. And to end of May, 2008, total generation was 229,081.30 megawatts, and total cost of generation B\$10,746,687.00. Cost for fuel and freight amounted to B\$7,398,931,748.00.

## **II. ISSUES AND PROJECT OBJECTIVES**

- 2.1** The power sector of Guyana faces formidable challenges related to its operational, institutional, regulatory and business environment. Technical challenges include inefficient equipment, inconsistent technical standards, small market size, long distances between potential hydro sites and load centers and a persistently high level of electricity losses, both technical and non-technical. These factors have impeded the development of hydropower, minimized private sector investment and threatened the sustainability of GPL. High losses generally result in the imposition of higher tariffs, cash flow problems, lengthy system interruptions resulting from undue pressure on the generation and distribution systems, and corresponding decline in the quality of service.

- 2.2 As a result of the aforementioned factors, larger customers have moved away the grid to generate their own power to the further detriment of GPL's sustainability and the overall competitiveness of Guyana, even though this trend has progressively slowed over the past five years. Escalating oil prices have propelled the need for immediate action to reduce electricity losses.
- 2.3 **Operational challenges:** The significant volume of electricity losses poses one of the most pressing issues for the sustainability of the sector. Electricity losses, defined as the difference between energy generated and energy billed to customers, peaked at about 44% in 2003. An Evaluation and Prioritization of Loss Reduction Investments study completed in June 2006 by an independent consulting firm profiled the non-technical losses and defined an investment programme that would yield the greatest benefits in the reduction of losses. The study concluded that 28.8% of overall losses were non-technical while 11.6% were technical. The non-technical losses were further broken down to reflect 11 percent of energy lost from illegal connections, 7 percent from billing problems and 11 percent from metering issues. Inadequate or malfunctioning meters, lack of meter certification, shortage in training of meter readers, and the challenge of physically monitoring networks present opportunities for theft of electricity. The present billing system lacks the ability to provide reliable data and proper controls. GPL has initiated the process to procure a new Customer Information System software and hardware from resources made available under the IDB financed UAEP. Technical losses in the order of 11 percent are partially due to the network configuration, inefficient and antiquated infrastructure, and other technical weaknesses, which could be addressed with investments in capital works. Under current circumstances, each 1 percent of losses represent US \$1.2 million in lost revenue for GPL.
- 2.4 **Institutional challenges:** Guyana is seeking a long-term strategy or policy initiative for the power sector. The current focus, while understandable within the context of current challenges, should be supplemented with a long-term strategic direction. The development of an updated **power sector policy** that establishes

the environment for sector progress is seen as a fundamental base on which PUC and GPL could establish long-term priorities, and as an incentive for private sector participation. Although relatively recent legislation governs the sector, that legislation was created in the context of an assumption of private sector management. The existing legislation requires modifications on such key concepts as tariffs, development of the power sector, as well as in governance, transparency, and reporting requirements.

**2.5 *Regulatory challenges:*** The human and financial resources available to the PUC are inadequate to permit it to manage effectively its multi-sector responsibilities. In particular, the growing telecommunications sector has exerted significant demands for resources. The lack of resources has impacted adversely the PUC's ability to regulate the utilities, including the power sector. Currently the PUC regulates the sector using only a chairman and three commissioners (whereas the PUCA provides for a maximum of four commissioners).

**2.6 *Business challenges:*** As a state owned entity GPL faces challenges in obtaining loans at commercial rates and has financed most of its investments through internally generated funds. Given this investment strategy, operational efficiency assumes an even greater importance for the utility. The high level of electricity losses is one operational area upon which significant emphasis needs to be placed.

**2.7** GPL has also attempted to optimize its performance by devising a policy to enter into Power Purchase Agreements (PPA) for generation additions. The required investment to replace inefficient or obsolete technology and equipment is high, the market size is small, consumption per capita is low and fuel prices have increased steeply. The low level of per capita income also serves as a limitation on future demand growth for electricity. The combination of low per capita income and a relatively high tariff level (US\$0.27/kwh) is not conducive to an expanded market.

**2.8** Incidentally GPL has signed (in June 2008) a US\$31.4 M agreement with the Ministry of Finance (Guyana) to finance three major projects aimed at reducing generation costs. The funds are intended to finance (a) 20.7 MW of Heavy Fuel Oil (HFO) fired generating capacity for the Demerara system and 5kM of 69K transmission interconnection; (b) 20kM of 69kV transmission lines to interconnect Guysuco's (Guyana Sugar Corporation) factory with GPL's substation at number 53 Village on the Courantyne Coast; and (c) refurbishment and conversion of 10MV of diesel generating capacity at the Canefield Power Station (Canje, Berbice) to Heavy Fuel Oil operation (HFO).

**2.9** These three projects are critical to GPL's efforts to reduce generation cost at a time of record fuel prices: Upon implementation it is hoped the company will be able to reduce production cost by over US\$1.8M per month considering the current difference in price of US\$60 per barrel between HFO and diesel. The intention is that GPL will reduce its dependence from 32 percent now to about 5 percent by the second quarter of 2009, and to rely on renewable resources to provide about 98 percent of its supply by 2012. By providing the financing the Government is positioning GPL to manage its spiraling production cost and improve the quality and reliability of its supply, and cushion the impact of rocketing fuel prices on tariffs.

**2.10** The new 20.7MW power station will consist of three 6.9 MW Wartsila generators, and they are the latest version of the Wartsila 32 that GPL had been using very successfully since 1994. This new Heavy Fuel Oil fired generating capacity will allow the company to retire old and unreliable diesel generating capacity at two areas at Garden of Eden and Versailles, and reduce its dependency on Caterpillar power modules which have been pressed into base load duty.

**3.1** Guyana has significant potential for power generation from renewable sources, in particular sugar cane bagasse, hydroelectric projects and wind. In 2006 the Government signed a Memorandum of Understanding (MOU) with an international company for construction of a hydroelectric station on the Amelia River in the Essequibo region in the

country. The initial phase of the project is rated at 100 MW with a projected annual capacity factor of 86%. In view of the fact that increased generating capacity is needed before commissioning of the hydro facility, the MOU had provided for the developers to install, without competitive tenders around 25 MW of new diesel generating capacity in order to forestall consumer supply interruptions. Regrettably the developers could not deliver the interim supply and the Government's generosity to supply the financing for the projects heretofore mentioned has come at an opportune time. It is expected the hydro project will come on stream by 2011.

In the meanwhile four hinterland communities are at present receiving electricity under demonstration projects of the Unserved Areas Electrification Programme (UAEP). Solar systems which generate electricity from sunlight energy have been successfully implemented in Yarakita in Region One, Capoey in Region Two and Kurukubaru, Region Eight. In July, 2008, solar home system was commissioned at Muritaro in Region Ten, with about 66 buildings including the main primary school in the village equipped with the technology which has a capacity of providing about 125 watts of electricity. The community is now, for the first time, able to receive television signals, and make use of several other home appliances such as compact Disc (CD) and radio sets.

The electrification programme is part of Government's poverty alleviation strategy which also provides electrification for housing schemes in Georgetown and on the coastal areas close to the national grid. At present a feasibility study is being conducted through the collection of wind data to determine the viability of wind power in Jawalla, Campbelltown and Yupukari. It is hoped that some communities will be electrified using wind power. In addition studies are being conducted on the Chiung River in Region Eight, and the Eclipse Falls in Region One for hydropower development. But these projects are not without challenges. The spaced out nature of many houses in the hinterland areas as well as their subsistence economies result in high production costs for such projects to be implemented.

The specific investment costs in terms of dollars per kilowatt of hydro plants are typically substantially higher and their useful operating life normally much longer than those for thermal plants. These considerations tend to result in Power Purchase Agreements (PPA's) for hydro plants being issued for longer periods, typically a minimum of about forty (40) years, that for thermal plants. In addition, although hydro generation is not significantly affected by fuel price volatility, it is subject to hydrologic variability, over which the station operators have no control. Hydropower facilities should therefore not be subject to capacity factor guarantees since power generating capability at any given time is a function of available water flow. It may be possible for a hydro plant operator to install fossil fuelled generators to guarantee a specified kilowatt capacity, but this solution may not be economically optimal, especially in view of the long period of the PPA. If thermal back-up were to be agreed on in order to guarantee firm power or energy availability, the PPA must require that the facility be operated in such a manner as to achieve the optimum economic cost of generation.

## Tariff Setting

Tariff setting is guided by three important policy objectives, namely:

- **Economic Policy Objective:** This requires efficient resource allocation thereby ensuring consumers pay for the costs incurred by the supplier in delivering electricity services
- **Financial Policy Objective:** This requires that short and long term financial viability of sector utilities be safeguarded
- **Social Policy Objective:** This requires cost re-allocation to safeguard specific vulnerable consumer groups. The combination of **Tariffs and Subsidies** where applicable must be sufficient to cover the full cost of the sub-sector
- **Other Policy Objectives:** The government requires that a National Uniform Tariff be put in place.

There exists an inherent conflict in the policy objectives guiding tariff design, which in practice is resolved by commencing tariff design with the derivation of cost-reflective tariffs to satisfy the economic policy. These are then adjusted to satisfy financial and social policy objectives. Tariff setting starts with economic policy objectives in order to ensure efficient resource allocation within the economy. The economic tariff is then adjusted to yield the financial tariff which ensures the financial viability of sub-sector utilities. The final adjustments are made to satisfy social policy

objectives: For instance the incorporation of cross-subsidies to safeguard the welfare of vulnerable groups, such as rural folk, low income groups or farmers.

### Characteristics of Tariffs

Some desirable characteristics for tariffs include the following. Tariffs should be:

- cost reflective in order to promote efficient resource allocation and utilisation
- simple and easily understood by customers
- structured in a way that enhances consumer responsiveness
- publicised in order to enhance transparency in pricing
- long-term oriented and stable to facilitate planning on the part of consumers

### Stages in Tariff Design

The process of tariff setting commences with a demand (sales) forecast for the market in question. This is followed by the determination of the mix of generating capacity to meet the forecast demand. The mix of generating capacity is in terms of the technology type i.e. hydro, geothermal, coal, petroleum, nuclear, biomass, wind etc. It is also in terms of the ownership i.e. whether public, private or a mix of both. The third step involves the determination of the sector's total revenue requirements based on the actual costs of generation and supply likely to be incurred by the sector during the plan period.

The next step is the determination of marginal costs of generation, transmission, distribution and retailing. This also requires determination of the pricing periods and the computation of the ensuing revenue gap. The revenue gap is the difference between the marginal cost revenue and the sector's revenue requirements. The current tariff policy requires that marginal costing is done on the basis of the Long Run Marginal Cost (LRMC).

The final two steps involve the allocation of the total revenue requirement among customer classes on the basis of the marginal costs and price sensitivity; and the subsequent determination of retail tariffs. The determination of the retail tariffs is an iterative procedure in which the retail tariff is subjected to sensitivity analysis in which the impacts of the tariff on the final electricity bill is assessed for competitiveness *vis-à-vis* alternative sources of electricity e.g. self generation. The impact of the bill is also assessed for competitiveness *vis-à-vis* alternative sources of energy for similar uses e.g. gas and kerosene for lighting and cooking.

### Tariff Structure

The structure of the tariff is designed to facilitate the recovery of the costs imposed on the system by consumers. These are the capacity related costs, energy related costs and consumer related costs, respectively.

**Capacity related** costs are generation and usage related costs. They are costs which are incurred as a result of a change in the level of peak demand on the system, and hence include costs of

future additions of generation, transmission and distribution capacity as well as fixed operations and maintenance.

**Energy related** costs are design-demand related costs. They are costs which are incurred in the supply of an extra kWh of energy whenever it occurs, hence are dominated by expenditure on fuel and variable operations and maintenance.

**Consumer related** costs are also known as customer-related costs. They are costs incurred on behalf of each consumer regardless of their electricity consumption and include metering, billing and revenue collection.

Capacity and consumer related costs are typically recovered in a fixed monthly charge, while energy related costs are usually recovered in a per unit energy charge.

### **Adjustments to the End User Tariff**

The end-user-tariff (EUT) also includes adjustments which are part and parcel of the tariff. These are the Fuel Cost Adjustment (FCA) and the Foreign Exchange Rate Fluctuations Adjustment (FERFA), respectively. The adjustments are instruments of parity between utilities and consumers, designed to ensure fair play in a dynamic regulated market in which pricing elements exhibit dynamic behaviour. This is discussed further below.

The tariff is computed on the basis of a specific mix of generating capacity, which includes a defined proportion of thermal capacity based on petroleum fired plants. The base fuel cost is specified at the time of setting the tariffs, as is the proportion of thermal capacity. However, these vary from one billing period to the next: The former due to the price movements on the international oil market; and the latter due to seasonality. Thus the proportion of petroleum fired generation in the mix is higher during the dry season and lower during the wet season. The actual quantities ultimately depend on the effective installed capacity and the level of consumer demand. The FCA is therefore meant to cushion the utilities from increases in petroleum prices beyond the base rate used during tariff setting. The FCA also cushions the consumers when petroleum prices fall below the base rate ensuring that the utility passes any gains to the consumers. The fuel costs are passed onto utilities by IPPs in accordance with their respective power purchase agreements.

The tariff is also computed on the basis of a given base Foreign Exchange Rate. However, this rate varies on a daily basis thereby exposing the utilities to risks they are ill-equipped to bear given that they operate in a regulated market. The exchange rate risks faced by the utilities include dollar denominated loan repayments, capital expenditures, and payments for power e.g. from IPPs. These risks are passed onto utilities from the IPPs in accordance with their respective power purchase agreements. The FERFA is therefore meant to cushion the utilities from increases in exchange rates beyond the base rate used during tariff setting. The FERFA also cushions the consumers when the exchange rates fall below the base rate, ensuring that the utilities passes any gains to the consumers.

### **Power Quality of Service**

A. Standard Frequency - The standard frequency for alternating current distribution systems shall be sixty (60) Hertz, with permissible variations not exceeding maximum and minimum values of 60.3 and 59.7 Hertz.

B. Service Voltage - The following service voltage standards shall be maintained at the point where the electrical system of the supplier and the electrical system of the user are connected.

Table I [These values are ANSI C84.1 (1989). Values shall change if ANSI adopts new standards.]

Established Standard Service Voltage	Minimum Voltage	Maximum Voltage	Type of Service
120	114	126	Single Phase
120/240	114/228	126/252	Single or Polyphase
208Y/120	197Y/114	218Y/126	Single or Polyphase
240	228	252	Single or Polyphase
480Y/277	456Y/263	504Y/291	Single or Polyphase
480	456	504	Single or Polyphase

For distances exceeding a 2-mile radius from any distribution sub-station serving the customer, the minimum permissible voltage shall not be less than 97% of the minimum values shown in Table I.

C. Momentary Fluctuations - Momentary fluctuations of voltage and/or frequency at the customer's service shall not be construed as non-compliance with this Section IV, Subsection 2 and for the purposes of these Rules a momentary fluctuation of voltage and/or frequency shall be defined as a change in voltage and/or frequency not exceeding a three (3) second time interval of a non-periodic recurring cycle; provided, however, that fluctuations in frequency and/or voltage having continuous and/or recurring periodic time cycles shall not be considered as compliance with this Section IV; and the public utility shall immediately initiate and complete all necessary action to eliminate and/or correct the cause of such fluctuations, if found to originate directly or indirectly within the public utility's system.

D. Abnormal Conditions - These Rules shall not apply to temporary conditions due to acts of God, windstorm, fire, strikes, insurrections, construction and/or maintenance or other disruptions of service beyond the immediate control of the public utility; provided, however, that all public utilities shall initiate immediate action and proceed without delay and perform all necessary work to restore its system and/or customers' services to normal operating conditions.

E. Special Provisions - No public utility shall be required to maintain service voltage according to Table I, at any point beyond the point where the electrical system of the supplier connects to the electrical system of the user if the wire or cables of the customer are (i) inadequate or undersized (ii) not capable of delivering the customer's normal requirements for electricity, or (iii) not in conformance with the requirements of the National Electric Code or any applicable statute, ordinance, rule or regulation of any authority having jurisdiction.

## V. VOLTAGE SURVEYS AND RECORDS

A. Each public utility shall make a sufficient number of voltage tests for the areas (cities, villages and rural areas) served to indicate compliance with voltage requirements contained in Table 1.

B. All voltage test records shall be retained by the public utility for at least two (2) years and shall be available for inspection by the Division.

## VI. INTERRUPTIONS OF SERVICE

A. Each public utility shall use all reasonable means to avoid interruption of service but should an interruption occur, service shall be re-established within the shortest time practicable, consistent with safety requirements.

B. Each public utility shall make a record of all interruptions of service of more than five (5) minutes' duration affecting the entire distribution system of a single community or the entire distribution circuit serving a division of a community and shall include in such record the date and time of interruption, approximate number of customers affected, the date and time of service restoration, and, when known, the cause of such interruption. Reports with reference to such service interruption shall be made monthly to the Division on Form E-1.

C. Each utility shall notify the Commission (or a designated member of the staff) by telephonic means of any major interruption of service when the interruption results in 1000 or more customer hours between normal working hours increasing to 3000 or more customer hours after normal business hours. A company having less than 5,000 customers will notify the Commission when outages exceed 100 customer hours during normal working hours and increasing to 200 customer hours after normal business hours.

D. When service is interrupted to perform work on lines or equipment, such work shall be done at a time causing minimum inconvenience to customers consistent with the circumstances. Customers seriously affected by such interruption shall, whenever

reasonably possible, be notified of the time and expected duration of the service interruption.

### **Electricity Supplier Licensing and Reporting**

38.5.8001 GENERAL REQUIREMENT TO OBTAIN LICENSE TO SUPPLY ELECTRICITY (1) All electricity suppliers, including unregulated public utility affiliates, for-profit affiliates

of cooperative utilities that provide electricity supply service using public utility distribution facilities, market

aggregators, marketers and brokers must file an application and receive a license from the public service commission before selling or offering to sell electricity to consumers in the state of Montana. An application must include a certificate of service showing that the application was sent

to each distribution services provider on a list of providers created and maintained by the commission. The commission will issue a license within 30 days of receipt of

a complete application. The commission may reject an application deemed incomplete or inadequate, and issue an order specifying the deficiencies of the application and, if

practical, identify alternative ways to overcome deficiencies.

(2) An electric cooperative supplying electricity to its members is not required to obtain a license from the commission, whether or not the electric cooperative has opened its local distribution system to other suppliers. A for-profit affiliate of an electric cooperative must obtain a license from the commission before supplying electricity to the parent cooperative's members. (History: Sec. 69-8403, MCA; IMP, Sec. 69-8-404, MCA; NEW, 1998 MAR p. 1929, Eff. 7/17/98.)

38.5.8002 CONTENTS OF APPLICATION FOR LICENSE TO SUPPLY ELECTRICITY

(1) Except as provided for in (2) and (3), an applicant shall include the following information in an application for a license to supply electricity:

(a) complete business name of the applicant, and all names that may be used when marketing electricity supply services to consumers;

(b) complete street and mailing address of the applicant=s principal office;

(c) if intending to serve or solicit residential or commercial (under 300 kW) consumers, the address and direct,

toll-free phone number of the department or office that should be contacted by consumers regarding supply;

(d) the name of a regulatory contact who should be contacted regarding the application, and the address, direct phone number, fax number and e-mail address of that person;

(e) the name and business address of all applicant=s officers and directors, partners, or other similar officials, and a statement that neither the applicant, nor any of its officers and directors, partners or other similar officials are currently in violation of, and within the past three years have not violated, any state or federal consumer protection laws or rules;

(f) descriptions of the activities and purposes of applicant, including:

(i) customer segments which applicant intends to serve or solicit (e.g., residential, small business (under 20 kW), commercial, industrial); and

(ii) a list of public utility and cooperative utility electric distribution service territories in which applicant intends to provide service or solicit customers;

(g) a list of affiliates, a corporate organization diagram, a description of each affiliate=s activities and purposes, a description of any distribution facilities owned or operated

by an affiliate in the state of Montana and the status of open and nondiscriminatory access to those facilities for all electricity suppliers;

(h) the state(s) under which applicant is organized, the form(s) of organization (corporation, partnership, association, firm, individual, etc.), the date of organization and duration, and a list of states where applicant is currently licensed or registered to provide

electricity supply;

(i) an agreement that, on commission request, the applicant will demonstrate that it has obtained generation capacity, power purchases and transmission rights sufficient to deliver subscribed retail electricity services with adequate reserves;

(j) an agreement to comply with reliability criteria established by the North American electric reliability council and the western systems coordinating council and mid-continent area power pool, as applicable;

(k) prior to executing contracts with residential and

commercial (under 300 kW) customers, a demonstration of applicant's financial integrity through one of the following:

(i) a long term bond (or other senior debt) rating of BBB-, or equivalent debt or credit rating, obtained in one of the following ways:

(A) the rating must be determined by Standard and Poors, Dunn and Bradstreet Information Services, or another recognized U.S. or Canadian debt or credit rating service, or

(B) the applicant may, at its own expense, obtain a private rating from a recognized debt rating service, or request that an independent accountant or financial advisor, mutually acceptable to the commission and the applicant, prepare an equivalent evaluation based on the financial rating methodology, criteria, and ratios for the industry as published by the above rating agencies from time to time;

(ii) two years of audited financial statements; or

(iii) a \$100,000 performance bond;

(l) most recent annual report to shareholders; and

(m) copies of standard forms or contracts used to provide service to residential and commercial (under 300 kW) customers.

(2) An electricity supply broker not taking title to electricity supplies but acting as an agent or intermediary in the sale or purchase of electricity shall include the following information in an application to supply electricity:

(a) complete name of the applicant, and all names that may be used when marketing or brokering;

(b) complete street and mailing address of the applicant's principal office;

(c) the name of the person to contact regarding the application, and the address, direct phone number, fax number and e-mail address of that person;

(d) descriptions of the activities and purposes of applicant, including:

(i) customer segments which applicant intends to serve or solicit (e.g., residential, small business (under 20 kW), commercial, industrial); and

(ii) a list of public utility and cooperative utility electric distribution service territories in which applicant intends to provide service or solicit customers;

(e) a list of affiliates, a corporate organization diagram, a description of each affiliate's activities and purposes and any distribution facilities owned or operated by an affiliate in the state of Montana and the status of open and nondiscriminatory access to those facilities for all electricity suppliers; and

(f) a description of all ownership interests in any supplier operations.

(3) A broker or marketer obtaining a license pursuant to (2) of this rule may not sell retail electricity supplies in the state of Montana, be an aggregator or engage in market aggregation by taking title to electricity for sale to retail end-use customers unless it has submitted the information listed in (1) of this rule and the commission has determined the information to be complete and adequate. (History: Sec. 69-8-403, MCA; IMP, Sec. 69-8-404, MCA; NEW, 1998 MAR 1929, Eff. 7/17/98.)

### 38.5.8003 ELECTRONIC REGISTRATION

(1) Licensed electricity suppliers must complete and maintain an electronic registration form on the commission's internet web site as a condition of remaining licensed. Licensed suppliers must provide the following information electronically:

(a) the complete business name of the applicant, and all names that may be used when marketing electricity supply or brokering services to consumers;

(b) the complete street and mailing address of the applicant's principal office;

(c) the name, address, direct phone number, fax number and e-mail address of a regulatory contact person;

(d) a customer service telephone number, which must be toll-free if the supplier serves or solicits residential and commercial (under 300 kW) customers;

(e) customer segments served (e.g., residential, small business (under 20 kW), commercial, industrial);

(f) if serving or soliciting residential and small business (under 20 kW) customers, a description of, and prices for, the standard service offer; and

(g) public utility and cooperative utility electric distribution service territories where products are offered to customers under 20 kW. (History: Sec. 69-8-403, MCA; IMP, Sec. 69-8-404, MCA; NEW, 1998 MAR p. 1929, Eff. 7/17/98.)

#### 38.5.8004 ANNUAL REPORTS

(1) On an annual basis on or before August 1, or more frequently if the commission so orders, licensed electricity suppliers must update the information required under ARM 38.5.8002 and file reports containing the following information for the previous 12 month period ending June 30:

(a) a descriptive list of products and services offered to residential and commercial (under 300 kW) customers (e.g., variable/formula-based electricity supply, fixed price electricity supply, environmentally oriented or "green" electricity supply, demand-side energy management products and services, metering services, billing services, other customer account services);

(b) the aggregate number of Montana residential subscribers, aggregate sales in units and revenues, and number and average term of contracts signed with Montana residential customers in the reporting period;

(c) the number of times distribution companies had to provide emergency supply service for the reporting supplier; and

(d) the aggregate number of Montana commercial (under 300 kW) subscribers, aggregate sales in units and revenues and average term of contracts signed with Montana commercial customers in the reporting period.

(2) A supplier may request a protective order for information provided in (1)(a), (b) and (d). (History: Sec. 69-8-403, MCA; IMP, Sec. 69-8-404, MCA; NEW, 1998 MAR p. 1929, Eff. 7/17/98.)

#### 38.5.8005 STANDARD SERVICE OFFER

(1) Licensed suppliers serving residential and small business (under 20 kW) customers must maintain a standard service offer characterized by:

(a) service contracts no longer than three months, except as provided in (3);

(b) fixed prices per kilowatt-hour of consumption and per kW demand, as applicable, subject to (2) through (4).

(2) Standard service offer prices may vary by season and for consumption blocks of at least 400 kilowatt-hours.

(3) The standard service offer may include a budget/fixed monthly bill option, in which case the contract term may extend for no more than 12 months. The historical average consumption used to compute the customer=s bill amount must be prominently identified and explained on the monthly bill.

(4) Licensed suppliers may modify the price(s) and structure of their standard service offers, within the framework set forth in this rule, at any time by updating the supplier=s electronic registration information.

(5) Licensed suppliers serving residential and small business (under 20 kW) customers may offer other services to these customer segments, in addition to the standard service offer. (History: Sec. 69-8-403, MCA; IMP, Sec. 69-8-404, MCA; NEW, 1998 MAR p. 1929, Eff. 7/17/98.)

#### 38.5.8006 SERVICE CONTRACT

(1) All rates, terms and conditions for supply service must be provided to a retail consumer in a service contract, written in plain language. The service contract must be signed by the consumer and returned to the supplier before any service is provided. For residential and commercial (under 300 kW) electricity consumers, the front page of a service contract shall prominently and clearly disclose:

(a) the term of the contract; and

(b) the effective price for electricity supply service, in

cents per kilowatt-hour for various levels of consumption typical for the consumer's customer segment;

(c) whether the price is fixed or variable and, if variable, a general description of the potential range and possible causes of price variations and the pricing formula or index, as applicable;

(d) the amount of any late payment penalties and an explanation of when they apply;

(e) an explanation of conditions under which the supplier will terminate the supply agreement; and

(f) the toll-free telephone number.

(2) All customer or miscellaneous surcharges must be prominently identified and explained in the service contract.

(3) No supplier, distribution service provider, transmission service provider, system services provider, energy service provider, metering service provider, billing service provider, or other company or individual involved in the sale or delivery of electricity may disclose individual consumer information to others without prior written consent

from the consumer except as provided by commission rule or order.

(4) Residential and commercial (under 300 kW) consumers shall have a 3-day grace period from the time of entering into a service contract to notify the supplier of termination of the contract without incurring liability for supply services not consumed or taken under the contract.

(5) A consumer with a load under 300 kW may terminate a service contract without incurring liability for supply services not consumed or taken under the contract by notifying the supplier that the consumer is relocating outside the geographic area served by the supplier, or is moving to a location where the consumer is not responsible for payment of the service consumed.

(6) A supplier must notify its customers, the commission and the distribution companies in writing at least 30 days prior to ceasing business under an existing license or terminating service to an entire customer segment.

(7) The contract must clearly explain that distribution charges from the customer's local distribution utility are not part of the contract.