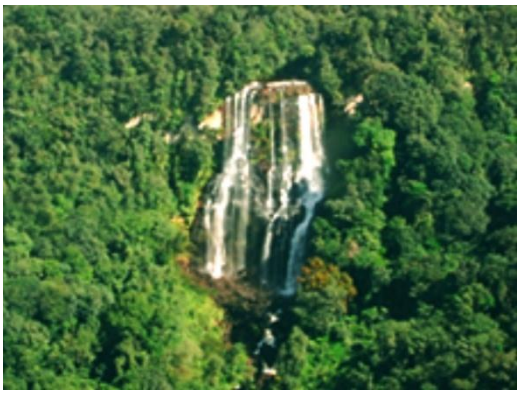
2010

GUYANA POWER SECTOR POLICY AND IMPLEMENTATION STRATEGY



VERLYN KLASS

ELECTRICAL ENGINEERING CONSULTANT

GUYANA POWER SECTOR POLICY

BACKGROUND

This Guyana Power Sector Policy has been developed following a study of eight (8) areas of the Guyana power sector with a view to formulating policies to ensure the viability of the sector. In each of these areas the study highlighted issues which if properly addressed could make a significant impact on the power sector. Where appropriate, different options were investigated and recommendations made. A summary of the results of the study in these areas is noted as follows:

- ***Sector Organisation, Management and Regulation.*** This section analysed power sector reform which is being adopted in many countries in an attempt to bring competition in the electricity supply industry with its expected concomitant effects of efficiencies and price reduction. It was noted that a more pragmatic approach is now being recommended towards power sector reform in developing countries following the failure of such reform to bring about the projected improvements in the performance of the electricity utilities. It has been determined that full competition is not practical in many countries that have weak economies and a limited private sector. It is deemed essential however that the governments find ways to introduce some measure of reform and thereby improve the performance of the power sector.

  The various options available to the Guyana power sector were discussed. Some of these included

  - Issuing of a management contract in the medium term to improve the performance of the power company and to make it ready for privatization.
  - Converting GPL to a distribution company with responsibility for the power systems at 69 kV and below which would include the diesel generating sets presently connected to these systems.
  - Forming a Generation and Transmission Authority which would be responsible for future hydro development and the associated transmission networks.

  It was however determined that some of these recommendations may be more feasible in the longer term.

  The roles and functions of the various agencies within the power sector, namely, the Office of the Prime Minister, the Guyana Power & Light Inc. and the Guyana Energy Agency, the Government Electrical Inspectors were noted and also the role of the Environment Protection Agency. Where deemed necessary, certain changes were recommended.

The issue of planning was highlighted as being very critical to the power sector. The high capital investments and the length of time before delivery of many power system projects make it essential that a medium term plan with a long term perspective be done on a regular basis.

The importance of an independent regulatory body in promoting transparency and consumer confidence was also noted.

- ***Energy Balances and Forecasts***. The study developed medium term (5 year) and long term (15 year) forecasts for GPL, the self generators, the sugar and mining industries and the other sectors of the economy. In certain sectors of the economy, information for positive forecasting was limited or nonexistent, nevertheless, a national forecast was developed for the medium term and this showed an average of 2.6 % annual growth rate up until the year 2014.

  The study for the long term forecast used the three scenarios of GDP annual growth rates namely 3.5%, 5% and 7%. Correlating GDP and population estimates with electricity usage produced forecasts of average annual electricity demand growth rates of 2.8%, 5.5% and 9.2% respectively. These three scenarios were termed the 'low', 'medium', and, 'high' forecasts for the long term, that is, from 2015 to 2025.

  The need for continual updating of the forecast was noted and so was the requirement to place the responsibility of national forecasting within a specific agency in the power sector.

- ***Generation Technology***. In seeking to reduce the country's dependence on imported fossil fuels, this area of study examined hydro, wind, solar and bio-fuels as possible alternatives to fuel oils. The recommendation is that the Potaro river basin be developed in stages to meet the requirements of the national grid. The study recognized the medium term requirement for increased generation before the Amaila Falls hydropower project is commissioned, and the analysis showed fuel oil to be a better option than wind for the medium term. Wind energy did not seem appropriate for the long term either as it would be displaced by the expected hydro facility. The ongoing use and research into bio-fuels is recommended.

  The modalities of the Clean Development Mechanism that was created by the United Nations Framework Convention on Climate Change (UNFCCC) in 1997 to assist Developing Countries to address their Sustainable Development needs and also to assist Industrialised Countries in achieving compliance with their quantified emissions target and reduction of the six greenhouse gases was investigated. Although this mechanism seemed more beneficial for large projects it was recommended that its usefulness for smaller projects be further investigated.

- ***Primary Energy.*** This section of the study sought to allocate the available and projected generating capacities to the growing demand. The need for increased generation capacity of 15 MW in the medium term was demonstrated. Using the 'medium' load forecast and with the Amaila Falls hydropower station in service by 2015, this station has the capability to meet the load of the national grid until 2021 when the diesel engines would again be called into service. This situation would be brought forward by two years if the 'high' forecast was encountered. Bearing in mind the length of time necessary to acquire financing and to construct hydropower projects, it is recommended that the feasibility study for the next suitable hydropower facility commence almost immediately.

- ***Network Issues.*** The development of a national grid to which all the electricity users in Guyana could be connected was the focus of the study in this area. As desirable as this is, there are various constraints, in particular the small sizes of loads in various sections of the country, and the different system frequency in the case of the sugar estates.

  The study highlighted the need for regional forecasts to augment the national load forecast as it is essential to know where the load growths are expected. Load flow runs were performed to determine the sufficiency of the 69 kV network to meet load growths in the long term with Amaila hydropower station being the main power source. It was demonstrated that the interconnecting 69 kV transmission line between Demerara and Berbice was a critical link in maintaining system losses at an acceptable level. It was also necessary to have some level of generation in Berbice to maintain good voltages.

  Other issues investigated were the feasibility of transmission line interconnections to neighbouring countries and the use of digital technological developments in increasing efficiencies in the Guyana power sector. In the case of the former, such interconnections were not deemed economical at present and in the case of the latter this required benefit/cost analyses to determine their practicability.

- ***Energy Efficiency.*** Energy efficiency/conservation measures are very important in terms of delaying the dates of future investments in the power sector. In situations where the electrical energy is produced by fossil fuels then these measures also help to reduce the carbon footprint. An energy efficiency policy needs to be developed and the funding of programmes to promote energy efficiency needs to be addressed. Quantifying the expected benefits and savings as a result of these programmes can only be done through energy audits of residential, commercial and industrial buildings. The Guyana Energy Agency has been tasked with this initiative and has drawn up an energy efficiency programme for approval.

- ***Financial Issues.*** The report investigated the issues of sustainability, profitability and payment of dividends by a government owned utility. It was determined that these financial decisions should be made by the government as deemed appropriate. Historically the Government has been foregoing its return on investment and has also been seeking concessionary financing for GPL's rehabilitation, extension and new generation works as a measure of subsidizing the tariffs.

- ***Commercial Issues.*** Tariff proposals are the subject of another study however the following position on tariffs was determined:

  - There is the need to do tariff rebalancing to allow each consumer category to pay to the utility the costs imposed by each category, however, such rebalancing can be delayed until the Amaila Falls hydropower project is commissioned and loss reduction measures have been fully incorporated. These two measures will bring about reduced financial costs to the utility and should cushion the effects of the tariff rebalancing on the residential customers and should also provide attractive rates to the industrial customers.

  - Tariffs should be set such that they will continue to maintain a reasonable return on investment.

  - There will continue to be the investigation of appropriate ways to implement a tariff structure that includes lifeline rates.

  The study of Commercial Issues also examined the following:

  - Guidelines for negotiations with Independent Power Producers (IPPs),

  - Incentives to attract private investment for renewable power projects in the hinterland regions,

  - Programme for maintaining good system management, and,

  - Investment and activity priorities for sustainable loss reduction and commercial viability

  On the subject of hinterland electrification the general principle that was determined was that the government should provide the funds for the initial capitalization however beneficiaries of the power supply will have to pay for the operations and maintenance of the installed power system and also any necessary improvements and/or extensions.

The ensuing policy document has been developed in consultation with a committee involving members from the Office of the Prime Minister, the Guyana Power & Light Inc., and the Guyana Energy Agency.

1.0 INTRODUCTION

1.1 This document outlines the power sector policy to be implemented by the Guyana Government for the medium term (2010-2014). In some areas however, a long term (15 year) perspective is given.

1.2 The Guyana Power & Light Company Inc. (GPL) is the main power company and is responsible for providing electricity to the residential, commercial and small industrial customers.

1.3 The sugar and bauxite industries, the two major industries in Guyana, have developed their own power systems. There was a short period of interconnection between the main power company and the bauxite company at Linden but this link has been disconnected.

1.4 The government sought to pursue power sector reform through the privatizing of the power company in 1999, however, for various reasons the measure was unsuccessful and the Guyana Power & Light company reverted to being a fully owned government company in 2003.

1.5 High electricity rates and poor quality and reliability of supply have caused some of the small industrial customers to turn to self generation to supply their electricity needs.

1.6 It is important that the power company regains the confidence of the industrial sector through a competitive tariff structure that would be achieved by loss reduction, and also by improvements in reliability and quality.

1.7 There are investment and other plans in place to achieve these improvements.

1.8 Guyana is presently dependent on imported fossil fuels for its electricity production which is done primarily by relatively small-sized diesel generators which are deemed appropriate for the size of Guyana's power system.

1.9 However, a 1970's survey estimated Guyana's hydropower potential to be in the vicinity of 7000 MW. The country has not yet taken advantage of this renewable resource because of its relatively small power demand, the long distances of the major load centres from the hydropower sites, and the corresponding high capital investment required for hydropower facilities.

1.10 In recent years negotiations have been ongoing with investors to develop the Amaila Falls hydropower station. These negotiations should be concluded this year for a 154 MW hydropower station to be constructed to supply existing load centres mainly along the coastal regions.

1.11 Attempts to develop Guyana's biomass capacity have seen the recent construction of a cogeneration steam plant to use bagasse for its fuel and supply the extra power to the national grid.

1.12 Guyana is also interested in pursuing the economic development of bio-fuel energy for hinterland electrification.

1.13 Studies have been carried out to determine Guyana's wind energy potential however this seems to be favourable only along the coastline.

1.14 Recognising that electrification of hinterland communities needs to be undertaken to help persons in rural communities who without adequate and clean forms of energy risk being deprived of socio-economic development, the government with the aid of the multilateral financial agencies has sought to determine the most economic means of supplying 'clean' electricity to the many villages across its hinterland regions.

1.15 The electricity industry is capital intensive requiring financial resources not readily available through the normal means and any investment has a long gestation period and carries a certain amount of risks.

1.16 In the light of the above this power sector policy is being set forth with the following aims and objectives.

2.0 AIMS AND OBJECTIVES

The National Power Sector Policy aims at achieving the following objectives:

- Supply of reliable power at the lowest possible sustainable costs with adequate energy security
- Utilisation of available local cleaner energy resources for the generation of electricity
- Developing efficient and environmentally sustainable energy production and consumption patterns
- Regaining self generators to the national grid
- Increased access of electricity to households over the entire Guyana
- Protection of consumers' interests
- Mobilizing local and foreign capital to finance the power sector development
- Financial turnaround and commercial viability of the power company
- Where necessary, mobilizing foreign expertise to sustain the development process and to train local persons.

3.0 NATIONAL POWER SECTOR PLAN

Planning is an essential power sector activity because of the long periods for developmental projects. Tools necessary for power sector planning include economic load forecasting, historical and projected economic data and knowledge of proposed investments in the private and public sector in the various regions.

3.1 Assessment of demand is important for the planning of capacity additions. There needs to be planning not only by the main power company but for the entire power sector.

3.2 Accordingly, a power sector planning committee will be formed with members from the various agencies within the power sector and annual consultations will be made with all stakeholders including the private sector, the major industries and the regional administrations.

3.3 The national power sector plan would be for the medium term framework of five years while giving a 15 year perspective and will include:

- Short and long term demand and energy forecasts for the different regions
- Areas and locations for capacity additions in terms of generation and transmission
- Technologies that would be adapted for efficient generation, transmission and distribution additions
- Fuel to be utilized based on economy, energy security and environmental considerations

3.4 Short and long term studies of the electricity demand will be fostered by the collection of economic data by the relevant agencies and the development of economic models that would reflect the correlation between electricity demand and the various economic indicators of the country.

4.0 ISSUES ADDRESSED

The policy seeks to address the following issues:

- Organisation and Management of the power sector
- Regulation of the power sector
- Generation
- The National Grid
- Distribution
- Hinterland Electrification
- Financing the power sector
- Recovering of cost of service in the power sector

- Regaining self generators to the national grid
- Energy efficiency/conservation

In particular, the policy seeks to inform all parties in the sector, GPL, regulators, investors and customers, about what the government views as a desirable end state for the country's power sector five years hence.

5.1 POWER SECTOR ORGANISATION AND MANAGEMENT

The organization and management of the power sector will take into account the importance of the sector to the development of the country while understanding that the small nature of the power market and the scarce likelihood of attracting private investment in the power company negate the implementation of certain power sector reform measures. It is still important, however, to improve the coordination within and the efficiency of the power sector.

Office of the Minister

5.1.1 The designated Minister will have ministerial responsibility for the power sector.

5.1.2 The Minister will be directly responsible for power sector reform, power sector policy, issuing of licences to private and public suppliers of electricity and to Independent Power Producers.

5.1.3 The Minister will be directly responsible for national power sector planning through an appropriately formed committee.

5.1.4 The Minister will be directly responsible for hinterland electrification.

5.1.5 The Government Electrical Inspectorate and the Guyana National Bureau of Standards are the two agencies respectively tasked with the enforcing of the regulations that govern the power sector and the technical standards of equipment. A power sector regulations committee would be formed to assess the work of these two agencies and also to assess the requirement for the technical qualifications of personnel operating within the power sector.

5.1.6 The Electricity Sector Reform Act which was enacted on the formation of the privately owned Guyana Power & Light Inc. encompasses the power sector as has been defined in the medium term.

Guyana Power & Light Inc.

5.1.7 The small nature of the Guyana power market necessitates that the Guyana Power & Light Inc. remains a vertically integrated company in the medium term.

5.1.8 Because of the investment needed for the company and the challenges involved in pursuing an economic tariff structure, the government does not envisage that any changes to the ownership of GPL would be made in the medium term.

5.1.9 The financial viability of the company is important. The issues of sustainability, profitability and payment of dividends will be continually addressed.

5.1.10 The Operating and Performance Standards for the utility will be reviewed and the utility will be held accountable to these performance measures. These standards include reliability and quality standards as well as loss reduction targets.

5.1.11 Greater efficiencies will be achieved through ongoing improved management practices, greater accountability, outsourcing auxiliary services, capital investments in transmission and distribution facilities and a sustained and effective loss reduction programme.

Guyana Energy Agency

5.1.12 The Guyana Energy Agency is charged with advocating the use of cleaner energy and efficiency in the production of electricity.

5.1.13 The Guyana Energy Agency will be in the forefront of promoting efficiencies in demand through various programmes and recommendations of measures whose effects would have been quantified.

5.1.14 The power sector would seek to develop adequate expertise in the modalities of the Clean Development Mechanism, and therefore be able to assess the financial gains that could be achieved when using this mechanism for small projects.

5.2 POWER SECTOR REGULATION

Power sector regulation is necessary to protect the interest of consumers of electricity in respect of the prices charged and other terms of supply, the continuity of supply, and the quality of the electricity supply services provided, and, to ensure that public suppliers finance the activities that they are authorized by their licences to carry on, and obtain a reasonable rate of return on capital invested.

5.2.1 The Public Utilities Commission will continue its regulatory role in the power sector specifically its role in the protection of the interests of the consumers.

5.2.2 Consumers complaints would be treated promptly and effectively by both the regulatory commission and the power company in accordance with the Operating and Performance Standards included in the GPL's Licence.

5.2.3 In the medium term the Minister will continue his role in giving approval of GPL's development and expansions plans.

5.3 GENERATION

Generation capacity with an adequate reserve margin is critical to improving the reliability of the electricity supply within the country. With the uncertainty surrounding fuel oil prices, Guyana will reduce its dependency on this imported resource and develop its own hydropower potential commencing with the Amaila Falls hydropower station. The emphasis will be on the development of 'clean' sources of energy, nevertheless, in the medium term, additional diesel generating facilities are necessary to improve reliability.

Fuel Oils

5.3.1 Guyana will gradually ease its dependence on the use of imported fuel oils for the generation of electricity.

5.3.2 In the event of the discovery of oil and/or gas, onshore or offshore of Guyana, there would be an appraisal of the potential role of utilizing this resource for electricity generation.

Hydropower

5.3.3 The harnessing of the country's hydropower potential, which is in excess of 7000 MW, will be given the highest priority.

5.3.4 The Potaro River Basin, with an estimated average potential of around 500 MW, will be developed to meet the needs of the national grid.

5.3.5 Funds would be garnered to carry out pre-feasibility and feasibility studies to identify the best suitable location for the next hydropower development after Amaila Falls.

5.3.6 Foreign Direct Investment would be encouraged for the development of the Mazaruni River Basin for large scale industrial development (e.g. aluminum smelter), and export of power to neighbouring countries. The estimated average potential of the Mazaruni River basin is around 3500 MW.

5.3.7 Micro and mini hydropower development will be aggressively pursued to enhance the social and economic development of hinterland communities.

5.3.8 Adequate safeguards for environmental protection with suitable monitoring mechanisms will be established.

Wind

5.3.9 Because of Guyana's proximity to the equator, opportunities for the development of wind energy lie mainly along its 459 km coast line and not in its hinterland region.

5.3.10 Wind is a 'clean' source of power and Guyana will continue to examine what role this resource can play in providing power both to the national grid and in its hinterland regions where mini wind turbines can be used for individual homes.

Solar

5.3.11 In keeping with the government's hinterland electrification strategy, the development of solar home systems will be encouraged.

5.3.12 Any technical cooperation initiative in solar energy, such as the Japanese demonstration 1 MW solar farm for interconnection with the national grid, will be pursued.

Biomass

5.3.13 Better organization and management of existing facilities, and greater research efforts will be carried out to develop a greater role for bio-fuels in the generation mix of the Guyana power sector. It has been established that Guyana has an excellent potential as a biofuel producer amongst Caribbean countries (Binger 2006). The lead crops identified were sugarcane, oilseed and fast growing trees. There are a number of agro-energy feedstocks currently being produced in Guyana. These include sugarcane, coconut and oil palm as raw material for ethanol and biodiesel production. Molasses, a by-product of the sugarcane industry can be use for the production of ethanol. The use of bagasse as well as rice husks and wood waste for co-generation are also feedstocks for agro-energy purposes. Additionally the production of biogas from raw manure is also a consideration.

General

5.3.14 The present installed generation capacity mix of 85% fuel oil, and 15% biomass (bagasse) would be changed to a mix of hydro (32%), biomass (bagasse) (11%), thermal (diesel) (57%) by 2015.

5.3.15 The corresponding electrical energy generation mix will change from 95% fuel oil and 5% biomass (bagasse) in 2008 to 80% hydro, 10% fuel oil, and 10% biomass (bagasse) in 2015.

5.4 THE NATIONAL GRID

The national grid will be developed at transmission voltages to limit transmission losses to below 1%. An interconnected system improves reliability, provides benefits of economies of scale and enables a more efficient use of available generation.

5.4.1 Guyana will develop a national grid at 60 Hz and will pursue the connection of all electricity users to that grid.

5.4.2 Transmission voltages may be 230 kV, 138 kV, 69 kV and any other voltages that may be determined in the future.

5.4.3 Guyana will be open to interconnection arrangements with its neighbours providing that these arrangements will be economical and beneficial to the country.

5.4.4 Guyana will avail itself of all digital technological developments that will assist in its provision of an economical, reliable and efficient electricity service.

5.5 DISTRIBUTION

The operations of the distribution section of a power company are critical to the success of the company. Its performance on sales and collection, technical and commercial losses, reliability and quality of service, labour, productivity and consumer confidence all lie within the ambit of its

distribution section. Greater emphasis will be placed on effective management in these areas of the company to receive improved results. Automation of the power system with the use of SCADA will help to improve efficiencies.

5.5.1 Better segregation of technical and commercial losses through energy audits is important and would be given priority.

5.5.2 Strict adherence would be given to the action plan for the reduction of losses through investments and other measures. Stricter legal measures would be put in place to prosecute persons caught stealing electricity.

5.5.3 Consumer index and mapping, that is the linking of each customer to a distribution transformer and feeder, are important in the monitoring of the success of loss reduction measures.

5.5.4 The use of prepaid meters will be encouraged as a tool for energy conservation and revenue management.

5.5.5 Modern information technological systems that will facilitate the creation of network information and customer data base which will help in the management of load, improvement in quality, detection of theft and tampering, customer information and prompt and correct billing and collection will be implemented after considerations of costs and benefits.

5.5.6 Other creative community based incentive measures would be developed as part of the loss reduction programme.

5.5.8 The SCADA system that is being purchased will be used for the efficient working of the distribution system.

5.6 HINTERLAND ELECTRIFICATION

The necessary institutional framework will be put in place not only to create hinterland electrification infrastructure but also to operate and maintain the supply system for securing reliable power supply at a price that the hinterland communities can afford. Education and awareness programmes would be used for creating the demand for electricity and for achieving the objective of effective community participation.

5.6.1 Electrification of hinterland communities will be continued to help persons in rural communities who without adequate and clean forms of energy risk being deprived of socio-economic development.

5.6.2 Innovative programmes and financing mechanisms to enable profitability and sustainability will be developed because the situation of high electricity development costs, low demand/consumption and limited affordability renders hinterland electrification largely unprofitable to private investors.

5.6.3 In order to develop and promote these measures government will seek to set up a Hinterland Electrification section within the Office of the Minister.

5.6.4 The results of pilot programmes to determine the suitablilty of wind, solar and mini hydropower plants are being used to determine the types of alternative and renewable or other types of generation technology that would be suitable for each hinterland region.

5.6.5 A programme for the sustainable development of electricity supply in all hinterland areas at the earliest possible time would be developed.

5.6.6 The hinterland electrification strategy and policy would be reviewed periodically.

5.7 FINANCING THE POWER SECTOR

In order to be able to fund the power sector the government would seek out partnerships with the private sector and therefore the required return on investments would need to be assured. However an appropriate balance would be maintained between the interests of consumers and the financial arrangements that are necessary for private investments.

5.7.1 The electricity industry will continue to be capital intensive as in the future electricity is to be provided by hydropower facilities which will also require long transmission interconnections.

5.7.2 Efforts will be made to improve efficiency in all segments of the power industry and thereby maintain sustainable financial operations.

5.7.3 The government as owner of any power company will determine the level of profitability of the power company in tandem with all other social policies.

5.7.4 The government will pursue the development of successful power companies with dividend payment histories that would attract wide scale investment in the companies in the longer term.

5.7.5 Independent power producers (IPPs) in joint BOOT (Build Own Operate Transfer) arrangements with the government would be pursued for large power sector investments.

5.7.6 Guidelines would be set out for negotiations with IPPs. These guidelines would include the measure that all generating initiatives should follow the Least Cost Generation Plan which is to be developed.

5.7.7 IPPs should be chosen after there has been a transparent and competitive bidding process.

5.8 RECOVERY OF COST OF SERVICE

In order to maintain the financial viability of the power utility it must be able to recover its cost of service from its customers. Although some level of support may be necessary for the poor and elderly, in the main, the customers in the various categories should pay for the cost that they impose on the company. All efforts will have to be made however to improve the efficiency of operations within the industry. The utility will have to obtain suitable performance norms so that the protection of the consumers' interests can be achieved.

5.8.1 The utility will recover the cost of service imposed on it from each category of consumers in order to make the power sector sustainable.

5.8.2 A minimum level of support may be required to make electricity affordable to consumers of the very poor category.

5.8.3 The commissioning of the Amaila Falls hydropower station with its new financial arrangements will provide the opportunity to carry out the necessary rebalancing of tariffs between all customer categories.

5.9 SELF GENERATORS

It is essential that self generators be won back to the national grid especially as their usage of grid electricity is necessary for the full utilization of the power from the Amaila Falls hydropower station. Dialogue with the self generators individually and as a group could influence decision making within the power sector.

5.9.1 Every effort will be made to win back to the national grid customers who have opted to self generate their electricity.

5.9.2 Tariff rebalancing will be done to offer the industrial customers more competitive rates.

5.9.3 Proposed investments in transmission and generation would be made to improve reliability and quality.

5.9.4 Further investment in generation in the medium term will be pursued as required to improve supply reliability.

5.9.5 Official dialogue will be done with the self generators to explain government's plans for the power industry which includes the purchasing by self generators of about 15% of the electricity from the Amaila Falls hydropower station.

5.9.6 The commissioning of the Amaila Falls hydropower station should coincide with a more reliable and efficient power company that will be able to attract and maintain supply to the small industrial companies in Guyana.

5.10 ENERGY CONSERVATION

Energy efficiency and conservation measures will be pursued as, if successful, they are able to delay investment in new plant and equipment and to provide electricity to users at better rates.

5.10.1 The Guyana Energy Agency (GEA) will be in the forefront of the energy conservation measures to be taken within the power sector.

5.10.2 GEA will estimate the potential for energy savings through energy efficiency and demand side management for the residential, commercial and industrial sector.

5.10.3 Energy conservation measures shall be adopted in all Government buildings for which the saving potential has been estimated to be about 30% of energy.

5.10.4 The use of passive solar architecture will be promoted and encouraged.

5.10.5 Energy efficient lighting technologies will be adopted in industrial, commercial and residential buildings.

5.10.6 In the industrial sector, energy efficient technologies should be used and energy audits carried out to indicate the scope for energy conservation especially for motors and other drive systems.

5.10.7 The initial approach for energy conservation would be voluntary and self regulating with emphasis on labeling of appliances. Gradually as awareness increases, a more regulatory approach of setting of standards would be developed.

5.10.8 Incentives aimed at promoting energy efficiency appliances will be adopted and the appropriate legislative and budgetary measures taken to implement them.

IMPLEMENTATION STRATEGY

OBJECTIVES

1. This strategy for the practical implementation of the Guyana power sector policy has been developed to assist policy makers to put in place the legal and other institutional framework that are required to ensure that the proposed policy actions are carried out.

2. This strategic plan is necessary to ensure that power sector policy measures are given the necessary priority to ensure that the pivotal role of the power sector in Guyana's development is carried out.

3. The strategy includes measures that are organizational, legislative and administrative.

SECTOR PLANNING

4. A power sector section should be formed within the Office of the Minister with responsibility for developing power sector policy, power sector planning and initially for hinterland electrification.

5. A power sector planning committee should be formed in 2010 headed by personnel from OPM and with representation from the other power sector agencies. Its first task should be a review of the present load forecast and determining and soliciting the data that would be needed to carry out economic load forecasts in the future.

6. Beginning in 2010, the power sector planning committee should hold annual consultations with all stakeholders including the private sector, the regional administrations, etc. and present a national power sector plan for the period (2011 – 2015). GPL's Development and Expansion Plan will be a key element of this plan, however the hinterland electrification programme, future hydro feasibility studies and the energy efficiency/conservation programmes and any other elements will also be a part of this plan.

7. Plans should include the financial projections necessary to implement such plans.

SECTOR MANAGEMENT AND ORGANISATION

8. The overall energy sector policy that is being developed should embrace the power sector policy that has been approved.

9. The oversight of the energy policy should include inter alia the oversight of the power sector policy.

10. Plans should be made to upgrade the performance of the Government Electrical Inspectorate and to ensure that technical regulations that have been approved are enforced.

SECTOR REGULATION

11. By 2011, options for improving the regulatory capabilities of the Public Utilities Commission will be pursued.

GENERATION

12. The need for any additional generation capacity in the medium term would be kept under review.

13. By 2011for pre-feasibility and feasibility studies will be facilitated and promoted to determine the next most economic hydropower site.

14. The country's bio-fuels potential should be developed, for local use and export, by keeping abreast with the latest developments in the field.

15. Financing should be secured for the mini hydropower station at Kato in Region 8.

THE NATIONAL GRID

16. In additional to its national forecasts, GPL should produce regional load forecasts highlighting any major planned developments that would require substantial power.

17. The adequacy of the 69 kV network should be continually monitored.

18. The planning and design section should be aware of the continuing developments in the use of digital communications technology to improve the performance of the power system.

19. GPL would remain a vertically integrated company in view of the small size of the power market and the present stage of the country's development.

DISTRIBUTION

20. GPL's managers will be continually trained and upgraded. There should be a greater requirement on the accountability with respect to their performance.

21. A system should be developed that would more accurately quantify the results of GPL's loss reduction programme.

22. Stricter legislative measures will be enforced to deal with theft of electricity.

23. There should be a system of measurement of supply voltages to ensure the correct levels and maintaining of standards of construction of distribution systems.

HINTERLAND ELECTRIFICATION

24. A hinterland electrification policy should be drafted by 2011.

25. A programme to continue the electrification of all hinterland communities at the earliest opportunity should be developed. The costs of such a programme should be worked out and assistance from multilateral and other financial agencies should be pursued.

26. Projects should be established to develop the economy of the hinterland regions.

FINANCING THE POWER SECTOR

27. Power sector planning should include methods to finance the projects that are needed to develop the power sector.

28. GPL's tariff structure should be such that it can maintain a state of profitability throughout the medium term.

RECOVERY OF COST OF SERVICE

29. GPL should develop the database so that the cost of service to the various consumer categories can be more correctly allocated.

30. The efforts to recover the cost of service must go hand in hand with loss reduction and other efficiency measures.

31. The public relations measures to encourage the use of prepaid meters should continue.

SELF GENERATORS

32. The power sector planning committee should commence dialogue with the private sector in 2010.

33. The results of the tariff study should be carefully studied and implemented in a timely manner.

34. GPL will continue to develop special relationships with its major industrial and commercial customers.

ENERGY CONSERVATION

35. GEA should hire teams to carry out energy audits which should begin in 2010. These audits would determine the potential for savings by the various categories of consumers.

36. GEA should quantify the potential for savings in government buildings.

37. GEA should regularly appraise the options that could be utilised to encourage the use of energy efficient appliances.

38. Public relations programmes should be developed in order to show the benefits that can be accrued by the consumer and the country by investing in energy conservation measures.