GUYANA POWER & LIGHT INC.

DEVELOPMENT AND EXPANSION PROGRAMME
2015 - 2019

November 2014

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1. Executive Summary

As GPL maintains its aggressive development trajectory, twenty years has quietly passed since the first new power plant was commissioned in March 1994. Over the life of this Development and Expansion Programme, a total of 42.5MW of Wartsila manufactured generating capacity will complete 20 years of service. This includes 39.5MW in the Demerara Interconnected System (GoE Nos. 1, 2 & 4 and Kingston 1) and 4MW at Anna Regina, which is the total installed capacity at that facility.

Except for the 4MW capacity at Anna Regina, which has always been operated and maintained by GEC/GPL, all the other Units have always been operated and maintained by Wartsila under an O&M Agreement. All Wartsila machines are maintained in keeping with the Manufacturer's guidelines and continue to be available at their installed capacity. The reality is that after 20 years of base-load operation, there is a higher risk of major mechanical failure and a higher incidence of electrical forced outages. It should be noted that certain mechanical components of an engine are designed to last the life of the unit and are not maintained or inspected. The counterweights and their bolts fall into this category. Counterweight bolt failure on the No.3 at GoE is thought to be among the reasons for the failure. In addition electrical maintenance is generally limited in scope. While some electrical upgrade was done for the controls and monitoring system at GoE, the same was not done at the Kingston 1 plant nor the Anna Regina Plant. The Anna Regina Plant is the only facility where air bellows rather than spring packs have been used as mounts. While the air bags have largely maintained their integrity, the integrated protection has become unreliable.

By 2017, GPL would be depending on generating equipment that is over 20 years old to produce 30% of the energy required in the DBIS. There is certainly an attendant risk in this arrangement which has to be prudently managed by GPL. The planned retirement forecast also requires GPL to maintain 18MW of diesel fired capacity for the next five years. This includes high speed Caterpillar and EMD Units which can only be relied on for peaking duty.

The Infrastructure Development Project (IDP) was finally completed in September after repeated delays, largely attributable to CMC's subcontractors. With assembly of the various substations substantially complete, most of the subcontractor's personnel returned to China, resulting in activities being undertaken successively rather than simultaneously. Finishing works leading to commissioning therefore took months rather than weeks. Some delays were also caused by GPL completing network modifications to reassign load to the new feeders. This was expected as it was more prudent to assign load when the new feeders were ready for service. On July 29th, the last new substation was commissioned at Golden Grove, more than twenty-two months after the first new substation was commissioned at Vreed-En-Hoop in December 2012. No major problems have been encountered with the operation of the seven (7) new substations or the three (3) upgraded substations since their commissioning and achievement of commercial operation.

The new Control Center and Central SCADA system were completed in October together with the associated training. The central SCADA system had suffered two major hardware failures with the local IBM Agent intervening on the second occasion to replace a hard drive. GPL staff from the IT and Operations Divisions were involved in extensive SCADA training, provided as part of the EPC Contract. The Contract also provides for a SCADA support Engineer to be with GPL for a period of 90 days after take-over. This individual is on site and would assist GPL personnel in further developing their skills while providing support should issues arise.

It should be noted that the transmission lines constructed under the Infrastructure Development Project provide a single transmission link to West Demerara and Berbice. In fact, a single transmission line exists from Sophia to Skeldon and from Sophia to Kingston and Edingburg on the West Coast. In this D&E Programme, GPL will construct a redundant line between Sophia and Kingston and from Sophia to Good Hope and Columbia. Only from Sophia to Golden Grove and Garden of Eden there exist redundant lines (One each).

The 26MW power plant at Vreed-En-Hoop is expected to be substantially complete in November (All three Units synchronized to the grid), however the two 2,000 m^3 HFO bulk storage tanks may not be complete until January 2015. In the 2014 - 2018 D&E, attention was drawn to extensive delays occasioned by inadequate pile supplies. This was further compounded by the shortage of stone and delays in obtaining approval for over 100% variations for the civil works. The value of the civil works Contract awarded, which was premised on preliminary quantities, was $484M but after the final design was done the total cost escalated to $1.036B. While the various levels of approval were being pursued, the Contractor continued to progress the works, albeit at a much reduced pace. Although approval was obtained for incremental sums to be paid to the Contractor, beyond the Contract sum, progress was stymied by a national stone shortage. The foundation for the second HFO bulk storage tank was only completed in September, 2014.

Assembly of the 26MW plant had progressed quite quickly in the earlier months as Wartsila's subcontractor was given access to the foundations for the engine hall, electrical building and the auxiliary area, up to the radiators, in November 2013. However, having the civil works Contractor sharing space with the assembly Contractor without major complaints required close coordination through regular meetings. In September, the three Units were started for the first time using diesel. Minor issues that were encountered were resolved by Wartsila's site Supervisors.

GPL expects that the plant would be available for performance tests in late November while the first of the two HFO bulk storage tanks would be available for use in December. The full interconnection of the plant to the grid is expected to be completed by the third week of November. In an effort to complete the commissioning and achieve commercial operation, GPL will deliver fuel to the buffer tank using road tankers. GPL had already engaged Wartsila Operations Guyana Inc. (WOGI) to undertake the Operations and Maintenance of the facility since 2013 and the complement of staff have already been trained and many are regularly on site.

1.1 Loss Reduction

The Company's overall loss (Total of technical and Non-technical losses, reported on a 12-month rolling average) continue to fall steadily, albeit slowly, and is projected to be 29.6% by the end of 2014. Over the past year, the focus continued on the core initiatives contained in the Strategic Loss Reduction Plan. This included:

- Replacement of defective meters, particularly ITRON meters for Maximum Demand and large Tariff B Consumers.
- Mining billing information from CIS to identify suspicious consumption patterns and levels, including zero consumption and investigating these. 24,030 such investigations were completed by the end of August.

- Continuing the ITRON programme for large Tariff A and B consumers. Up to August an additional 389 meters were installed bringing the population of ITRON meters installed in MD and large non-MD installations since 2007 to 4,810.
- Removing illegal connections in squatter settlements and in regularized areas like Sophia where many persons refuse to access legal service. 85 sanitization exercises were conducted up to August with 3,833 illegal connections removed and 169 persons arrested.
- Investigating reports of electricity theft expeditiously. 789 complaints were received to the end of August with almost 70% being for illegal connections. All these complaints were investigated.

In addition to the implementation of these strategies, GPL completed the AMI pilot project which saw the installation of 2,000 smart meters, 160 of which were poly-phase and 1,840 single-phase, within the commercial center of Georgetown.

The AMI pilot allowed GPL to identify:

- Instances where pre-paid meters were bypassed. The AMI meter was installed in series with the pre-paid meter allowing power consumption to be accurately tracked.
- Defective meters. The AMI meter, which was connected in series with the post-paid meter revealed higher consumption. This would have resulted in the AMI meter reading being used to do retrospective billing.
- Meter tampering. Since the status of the power supply to the Customer is constantly tracked, GPL was able to discern instances where the meter was disabled for selected periods, particularly after midnight to around 06:00Hrs.
- Illegal connections. Most of these connections were detected in instances where there was a significant difference between the upstream and downstream meter readings. In one instance a large Customer was found with an unmetered connection to a dedicated transformer bank.

The coordinated approach to loss reduction, which was mentioned in the previous Development & Expansion Programme, will be utilized in Component 111 (which targets investments in network and metering upgrades) of a new US$64.5M project to address the sustainable reduction of overall losses. Component 111 of this new project, named the Power Utility Upgrade Program, has budgeted resources of US$41.5M to target technical and non-technical losses. Component 111 activities would be implemented largely between 2015 and 2018.

The coordinated approach starts with a network design that reflects the level of risk associated with electricity theft from the LV distribution network in the area. With the secure network in place, built to current construction standards to address technical losses, Automatic Metering Infrastructure (AMI) would be employed to address non-technical losses. The AMI pilot project, just completed by GPL, provides an insight into the type of intelligence that would be informing more targeted field activity.

With technology, smart designs and a Social Management Programme driving the coordinated loss reduction effort, GPL is confident that sustained loss reduction will be achieved as it should be able to effectively counter the culture of electricity theft. As has been experienced in other Countries with a problem with electricity theft as Guyana, no solution is effective forever and GPL

would have to continue to closely and consistently monitor and evaluate the situation and innovate as the challenge demands.
Major investments, sustained focus and a coordinated and disciplined approach to reduce overall losses would allow the Company to achieve sustained loss reduction, resulting in:

1. Improved service reliability and quality as networks upgraded to current standards (adequately sized transformers and conductors, better load balancing, vegetation mitigation measures and improved connections) will be more reliable, efficient and experience better voltage regulation.
2. Reduced generation needs, resulting in reduced operating cost and capital expenditure on new equipment.
3. GPL being better positioned to cushion the impact of volatile fossil fuel prices without a resort to increased tariffs. Stable tariffs would be a catalyst for growth, in preparation for hydro.
4. GPL being able to offer tariffs which are not heavily burdened by overall losses when hydropower is commercially available, catalyzing growth.
5. Improved customer service as electricity theft and the consequent retrospective billing is the source of numerous customer complaints to the PUC. The inability to steal electricity easily should reduce the prevalence of this problem and reduce the number of complaints arising out of the associated retrospective billing.
6. GPL's overall financial position improving, to allow it to meets its financial obligation under the hydro PPA and make capital investments on a timely basis. In 2015, reduction in losses resulting in 1% reduced generation would save the Company $262M while reduction in losses resulting in a 1% increase in sales would realize $336M.

1.2 Efficiency and Customer Service Improvements

With the completion of the IDP, imminent completion of the 26MW plant at Vreed-En-Hoop and the continuation of investments to improve GPL's generation and network infrastructure, GPL will continue to also invest in ICT facilities to:

1. Improve non-technical operations particularly in Data, Inventory, Human Resources and Payroll Management and Planning.
2. Implement GIS for all company assets, particularly T&D and metering infrastructure.
3. implement a Document Management computerized System.
4. Procure and Implement a Human Resource and Payroll computerized System.
5. Procure, install and configure a modern Internet Protocol (I P) Private Automatic Branch Exchange (PABX) to support the consolidation of the Emergency and Customer Call Centers.
6. Extend Fiber from ADSS Backbone in East Berbice to GPL Commercial facilities.
7. Procure and Implement a Computerized Maintenance Management System (CMMS)
8. Procure and Install a video conferencing system between Berbice and Demerara.
9. Procure and Implement a Vehicle Tracking system.
10. Procure and implement an Asset Management System.
11. Procure, install and configure reputable Business Intelligence (BI) software.
12. Upgrade Customer Information System (CIS) from a Client Server platform to a Web Based platform.
13. Upgrade Corporate Relational Database Management System from Standard to Enterprise.

1.3 Strategic Plan

The Company's Strategic Plan, which is premised on the seven "pillars" listed below, continue to inform the Key Performance Indicators (KPI) and this Development & Expansion Programme.

- Optimizing revenue.
- Minimizing cost of operations.
- Improving Customer Service (CS).
- Achieving a sustainable financial position.
- Enhancing Corporate Governance Framework and Practices.
- Enhancing Skills and Competencies of Employees and Contract workers.
- Achieving national objectives.

Details of specific activities are highlighted below, which are intended to ensure that annual targets, covering appropriate areas of the Company's operations over the next five years, realize the strategic objectives, Customer Service Standards (CSS) and Operating Standards and Performance Targets (OS&PT), consistently.

1.4 Demand Side Management

While most of the development focus is on addressing the infrastructural requirements to improve service quality, reduce losses and operating cost, the continued pursuit of Demand Side Management (DSM), including Energy Efficiency [EE], cannot be overstated as it can postpone or reduce the level of investment needed in both generation and T&D and also allow Consumers to reduce their power consumption without negatively impacting their quality of life by equipping them with the knowledge to use power more prudently and efficiently.

Making energy efficient appliances affordable and accessible to the average customer is a challenge that impacts greatly how these technologies are embraced. The Demand Side Management (DSM) plan is an annual one in this Programme and limited in scope. It should be recognized that the Guyana Energy Agency has been tasked with leading the national DSM (and EE) initiatives and would access grant resources available to the country for appropriate activities. GPL would largely confine its activities therefore to public education, attitudinal change and support the GEA, as appropriate, in the discharge of its mandate.

1.5 Capital Investments

It should be noted that under the conditions specified by the International Monetary Fund (IMF) through the Poverty Reduction and Growth Facility (PRGF), the Government of Guyana is required to meet a minimum threshold of concessionality attached to any new loan. Specifically, the grant element of any new loan must be in excess of 35%. This has severely limited GPL's ability to secure loans since May 2003 when it became a public entity. Funding for this Development & Expansion Programme is via equity contributions and grants. Concessional loans contracted by Government and unlent to GPL will be converted to equity.

The strategic transmission plan seeks the interconnection of new load centers in Demerara through 69Kv transmission lines and substations. The generation plan seeks to achieve GPL's strategic objective of ensuring that production from HFO is optimized due to lower production costs (39% less) and the fuel security provided by HFO.

1.6 INVESTMENTS

The Programme projects investment of US$172.56M over the five years, with financing coming significantly from equity and grants. US$107.3M is being financed by equity while US$29.3M is being financed by grants. The investments are as follows:

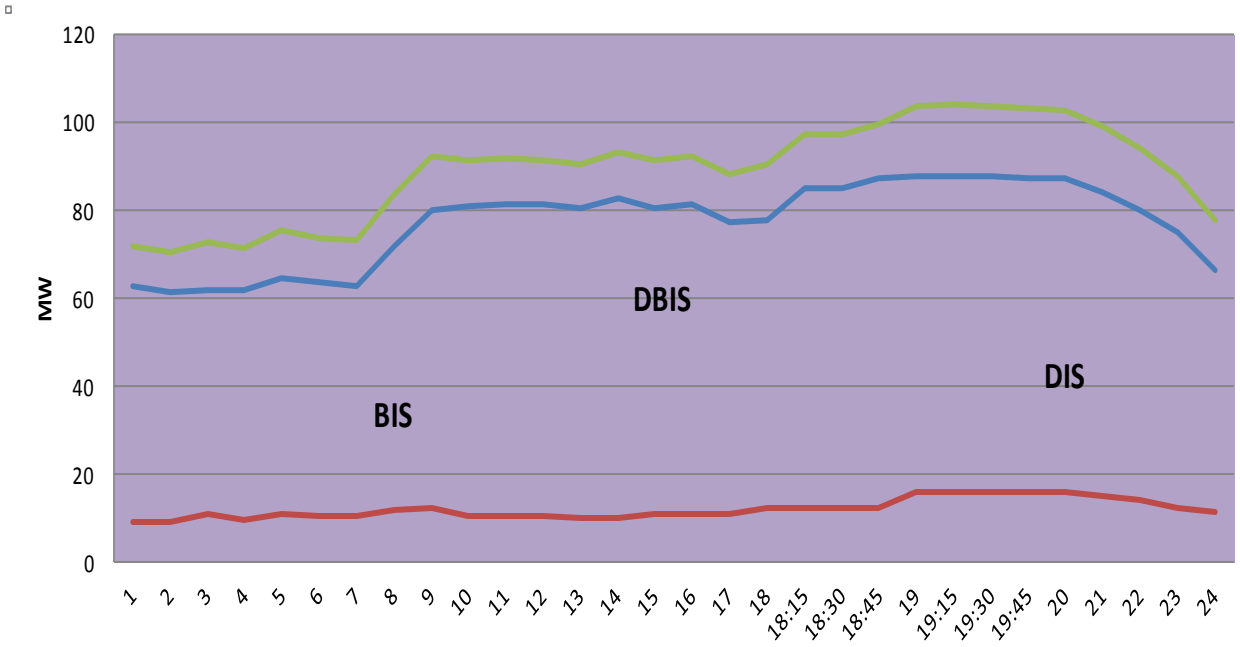
1.6.1 GENERATION

Investment of US$20.4M to:

- Construct a new 5.2MW, 60Hz HFO fired power plant at Anna Regina.
- Convert the two, 2MW (4MW total) Wartsila Units at Anna Regina to 60Hz.
- Construct a new 5.1MW HFO fired power plant at Bartica with three (3) 1.7MW Units, in two phases.
- Install a 1.2MW HFO fired Unit in Wakenaam.

It is projected that generation from renewable and HFO sources will increase to 97.9% in 2015 from 89% in 2014. Production from LFO fired capacity cost approximately 39% more than from HFO fired Units. The increase in HFO fired capacity and the introduction of this type of equipment in two of the three "island" operations in Essequibo would position GPL to minimize its generation cost.

Daily Load Curve - Demerara Berbice Interconnected System



1.6.2 TRANSMISSION LINES

Investment of US$12.13M to construct 95Km of 69Kv lines to:

- Power new substations at Linden Highway / Soesdyke junction (12.5Km), Canal No. 2 (10.5Km), Parika (16.5Km) and Linden (6Km) from Garden-of-Eden, Vreed-En-Hoop, Edingburg and Bamia respectively.
- Construct parallel lines from Sophia to Kingston (10Km total) and from Sophia to Good Hope to Columbia (39.5Km).

This would allow:

- Additional feeders to be deployed on the West Bank to meet the growing demand from large housing schemes, particularly in the Canals, thereby reducing technical losses, improving reliability and voltage regulation.
- New feeders to be available to serve loads along the Linden Highway, up to Kuru Kuru and potential new industrial developments in the Timehri area. This initiative is largely targeting market development.
- Dedicated feeders to be available to serve the growing commercial and industrial load in Parika and up to Roden Rust. This has both technical loss reduction and market development merits.
- Transmission losses between Kingston and Sophia and the link with Berbice to be reduced and reliability improved. These parallel links were recommended by the SIEMENS PTI study.

1.6.3 SUBSTATIONS

Investment of US$29.63M to:

- Construct five (5) new substations with a total capacity of 118 MVA at Soesdyke, Canal No.2, Parika, Williamsburg and Linden.
- Extend nine (9) existing substations to accommodate new transmission lines.
- Replace five (5) old 69/13.8Kv power transformers.
- Provide twenty- four (24) new feeders at the five new substations.

These facilities will:

- Position GPL with the required network capacity to meet the power needs in new load centers efficiently.
- Allow power transformers in excess of thirty (30) years old to be retired.
- Help to reduce technical losses, position the company to catalyze growth, improve supply reliability and quality.

1.6.4 DISTRIBUTION

A total of US$40.33M will be spent on upgrading the distribution network. This includes:

- Upgrading 229 Km of MV and 876 Km LV network.
- Installing 72 remote operated pole mounted breakers.
- Undertaking a menu of activities (see below), to reduce technical losses and improve reliability.

The quantities for network upgrade include the scope under the Power Utility Upgrade Program.

1.6.5 LOSS REDUCTION

US$35.36M will be expended on non-technical loss reduction over the next five years, focusing largely on the installation of smart meters. This includes:

- Upgrade of 70,230 meters to AMI, almost 53,000 of which would be done as part of the coordinated approach to overall loss reduction under Component 111 of the PUUP.
- Replacement of 17,000 defective meters with AMI meters.
- Replacement of 10,000 tampered meters with AMI meters.
- Upgrade of 5,000 meters for Maximum Demand and large Tariff A and B Consumers to AMI.
- Use of co-axial service lines in particular high-risk areas.

US$ 38.16M, which is included in the US$40.33M mentioned above, will be spent on technical loss reduction activities targeting both MV and LV networks.
This includes:

- Replacement of 93Km of service lines.
- Extension of 54Km of MV network to serve new transformers.
- Upgrade of 229Km of MV network, including load balancing.
- Upgrade of 876Km of LV network, including load balancing.
- Replacing 196 inefficient transformers.
- Right sizing 181 underutilized transformers.
- Installing 333 additional transformers.
- Upgrading 75 transformers, including load balancing.
- Installing 63,913 INSULINK on Customer service connections.
- Upgrading and crimping 6,520 transformer LV drops.
- Upgrading and crimping 3,449 MV jumpers and connections.
- Upgrading and crimping 7,156 LV jumpers and connections.

The investments in technical loss reduction will help to:

i) Reduce technical losses thereby reducing total net generation requirement.
ii) Improve voltage regulation and overall power quality.
iii) Reduce frequency of faults.

iv) Improve network design to reduce access to establish illegal connections.

1.6.6 NEW SERVICES

US$6.49M will be spent to connect 26,500 new consumers. This growth in new services recognizes the continued expansion of the housing sector and an electrification programme to serve 4,200 potential consumers, which will be implemented in 2015. Also, by the end of 2014, GPL expects to complete network construction in Angoy's Avenue (New Amsterdam) to serve potentially 323 consumers.

1.6.7 ELECTRIFICATION

US$1.58M is projected to be spent on an electrification programme in 2015, as mentioned above. Pockets of un-served consumers are appearing with some regularity next to almost every new housing development. The 2015 electrification programme will impact twenty-one (21) communities in Regions 2, 3,4,5,6 and 7.

1.6.8 INFORMATION TECHNOLOGY RELATED INVESTMENTS

US$2.4M will be invested in:

- Implementation of GIS to serve T&D, Commercial Service, etc. over three years.
- Implementation of the following:
    - A Document Management computerized System
    - A Human Resource and Payroll computerized System
    - A modern Internet Protocol (I P) Private Automatic Branch Exchange (PABX) to support the consolidation of the Emergency and Customer Call Centers.
    - Extend Fiber from ADSS Backbone in East Bank Berbice to GPL Locations
    - Procure and Implement a Computerized Maintenance Management System (CMMS)
    - Procure and Install a video conferencing system
    - Procure and Implement a Vehicle Tracking system
    - Procure and implement an Asset Management System
    - Procure, install and configure reputable Business Intelligence (BI) software
    - Upgrade Corporate Relational Database Management System from Standard to Enterprise
    - Upgrade Customer Information System (CIS) from a Client Server platform to a Web Based platform
    - Oracle Business Intelligence (Oracle B I) tool

These investments will:

- Allow the numerous advantages of GIS to be leveraged for T&D planning, overall asset management, Customer Services and Disaster Preparedness.
- Integrate with Oracle E-Business Suite to facilitate attaching source documents (invoices/ quotations etc) to the relevant transactions. Reduce excessive paper costs. Improved document version control. Maintain audit trails premised on user credentials. Reduce cost of archiving

- Provide a modern system that embraces and supports current industry standard H R practices and strongly influences payroll processing and management.
- Improve customer service and extend the use of Internet Protocol addressing to all locations accessible via the corporate LAN.
- Significantly improved network performance, which will facilitate video conferencing and remote surveillance.
- Significantly improve the company's maintenance operations, particularly in T&D and facilities management (Administration).
- Leverage the Fiber optic backbone to facilitate meetings, training sessions etc thus negating the need to travel long distances to assemble as a team.
- Provide the Company with the means of collecting fleet data for a comprehensive picture of vehicle field activity.
- Allow a significant improvement in deploying, operating, maintaining, upgrading, and disposing of assets cost-effectively and to industry standard.
- Facilitate data analysis and reporting up to the Executive Management level. Allow the merging of data thus facilitating fast and comprehensive management decisions. Reports can easily be presented in a graphical or tabular fashion.
- Upgrade the corporate database to better support the increased number of applications and data as a result of various investments in critical software and deployment of those computerized applications.
- Leverage the use of mobile equipment such as PDA's and cellular phones to access CIS application by GPLs Field Staff. Lower hardware maintenance costs, whilst noticeable improvement in system stability and performance. Easier access to staff desirous of working away from the office.

1.6.9 SCADA

US$1.4M will be invested in:

- Expanding SCADA to existing 13.8Kv switchgear and substations.
- Integrating 72 pole mounted breakers on the MV network into SCADA.
- Automatic Generation Control (AGC) capability.

It should be noted that financing from the PUUP will be used to examine the SCADA installed under the IDP to determine whether it can support GPL's future needs or whether it should / can be upgraded.

These investments will:

- Allow for improved management of all old substations, distribution switchgear and load dispatch functions.
- Reduce the frequency of power outages to Consumers.
- Allow for coordinated and automatic management of generation and load to improve system stability and power quality.
- Support easier, timelier and more accurate assessment and evaluation of abnormal system incidents.

1.6.10 COMPENSATION

The SEIMENS PTI study undertaken in preparation for hydropower recommended that measures be taken to improve voltage at various substations if one of the two hydropower tie lines becomes unavailable. In addition, GPL has completed a study to optimize the capacity of the 69Kv link between the Demerara and the Berbice Interconnected Systems. The results of the study point to the need to install the following compensation at the stated substations on the 69Kv bus:

- 20 MVAr at Columbia
- 15 MVAr at Onverwagt
- 25 MVAr at Canefield
- 15 MVAr at No. 53

In addition, a total of 30 MVAr in automatic capacitor banks will be installed on the 69Kv bus at the Kingston substation, in preparation for hydro. A total of US$3.12M will be spent on compensation.

1.6.11 DEMAND SIDE MANAGEMENT (DSM)

GPL will continue to expend resources on public education in pursuit of a reduction in peak demand and growth moderation. US$0.72M will be expended in this effort during the first three years of the Programme but this will be supplemented by a Social Management Programme (SMP) which will be implemented during the first four years of the PUUP and have a budget of US$1.5M. The SMP will further the DSM objectives in respect of public education.

1.6.12 BUILDINGS

US$3.03M will be spent on buildings in Demerara and Berbice including:

- Middle Street to house all Staff from Middle, Main and Duke Streets in one location to improve management coordination.
- Vreed-En-Hoop to house T&D and Commercial services which will address flooding of the Commercial office during particularly high tides.
- Williamsburg to relocate the Chesney Commercial office to a company owned building.
- New Amsterdam to house Commercial services, T&D and the Regional Manager's office to a company owned facility.
- Canefield to house the generation office which is in a poor state.

These facilities will:

i) Help to consolidate Georgetown administrative and commercial operations under one roof.
ii) Provide accommodation to reduce the dependence on rented facilities.
iii) Improve customer service facilities and working conditions for staff.
iv) Improve the image of the company.

1.6.13 CAPACITY BUILDING

US$18.15M will be invested in:

1. Additional and more specialized tools and articulated vehicles.
2. 72 remote operated, pole mounted breakers.
3. Training for professional staff in both technical and non-technical areas.
4. Office equipment, including computers to improve efficiency.
5. Vehicles to build capacity and reduce the large rental fleet of over 150 vehicles.
6. Annual software licensing fees.

These investments will:

- Improve T&D maintenance capacity and emergency response capability.
- Significantly SAIFI and SAIDI contribution from T&D related issues and allow improved management of network isolation for maintenance and automatic, more localized fault isolation.
- Improve skills in all critical areas.
- Ensure ICT facilities, office equipment and support systems are adequate and available.
- Provide the Company with its own transport capability for all critical activities and increase the range of specialized vehicles.
- Ensure that the Company remains a legitimate user of all software it employs in its operations and benefits from all upgrades.

1.7 Customer Service

Investments to further advance the improvement in Customer Service will be an important feature of this Development & Expansion Programme, as has been the case, particularly over the last five years. In 2014, the Company opened three new commercial offices, which addressed the need for access to a Company Commercial facility on the East Bank (Grove), East Coast Demerara (Mon Repos) and East Bank Essequibo (Parika). Initiatives to increase the number of consumers signing up for E-billing were, and will continue to be aggressively pursued. By the end of September electronic bills were being emailed to 1,400 Consumers.

Performance, in respect of the Customer Service Standards (CSS) while improving significantly in most areas since 2011, when the Standards were introduced, have somewhat stagnated over the past two years. These Standards have since been revised for the years 2015 – 2016 but have not evidenced any notable improvement as GPL is of the opinion that much more has to be done to improve data gathering, management and dissemination. The ICT investments being made in this D&E are expected to significantly improve data gathering, mining, transmission and reception which will positively impact customer service.

The area of greatest challenge continues to be the time taken to establish new services. This is mainly because of the accumulation of a large backlog of jobs which started since 2013 arising out of problems associated with maintaining an adequate inventory of meters, associated supplies and installation teams. To compound the problem, over 6,000 post-paid meters were installed temporarily with the expectation that they would be replaced eventually by pre-paid meters. This

has significantly increased the metering workload. The transition to AMI is currently creating another inventory problem.

To resolve the problem of backlog jobs, Consumers who opt for post-paid service were requested to pay the security deposit and consummate the post-paid contract while those Customers who opted for the pre-paid service had the post-paid meter replaced.

While the processes relevant to the Company achieving all the CSS consistently are under periodic review and appropriate adjustment, the general frustrations experienced by Consumers in all the critical areas will be addressed comprehensively. These include issues relating to:

- Meter reading
- Billing
- Bill payments
- Disconnection and reconnection
- Queries of all types
- Access to services

The Company proposes over the next five years to:

- Ensure new Commercial Offices recently opened on the West Coast, East Bank and East Coast of Demerara in 2014 provides the highest quality service, consistently.
- Install over 102,000 smart meters. These meters will comprehensively deal with meter reading issues, disconnection and reconnection, billing and some types of queries.
- Expand its public education initiatives to promote electronic payments to make financial transactions with GPL hassle free. Only 1,400 consumers are utilizing the E-billing facilities which are currently available.
- Encourage more consumers to agree to electronic billing and using the Company's website to file complaints.
- Improve the operations of the Company's consolidated Call Center where commercial and technical queries are directed by utilizing new hardware and software to improve caller access and track service quality.
- Evaluating and implementing merited changes informed by comments received from consumers which are lodged on our website.
- Fostering a relationship between Consumer Representatives and the Private Sector to ensure energy efficient appliances are more available, affordable and accessible.
- Expanding the initiatives to foster behavioral change to impact DSM.
- Improving communication with customers, expanding the use of Social Management Programs as an integral part of any major service improvement and loss mitigation project

and expanding customer care training for Staff and Contractor's personnel.
- Achieving full ISO 9001 – 2008 certification in 2014.

1.8 Market Development

Although GPL is a monopoly, the Law does not place any restrictions on self - generation. Businesses that depend heavily on an uninterrupted supply of electricity that is efficiently priced generally tend to self-generate. GPL has taken a conscious decision to avoid frequent tariff increases and, in fact, has foregone tariff increases of G$30.5B, projected up to the end of 2014. The fact that tariffs have not increased since February 2008 and weighted average fuel prices have increased by almost 69% since 2009 has caught the attention of self-generators. At least three large self-generators have been reconnected with more expected in the coming years.

The fact that the Amaila Falls hydropower development is only delayed and that GPL will be faced with a take or pay arrangement, makes market development critical, particularly growth driven by industrial and commercial off-takers. The Amaila Falls development is expected to make available annually 1,037.5 GWh to GPL at delivery points at Bamia (Linden) and Sophia.

The demand forecast of over 1,052 GWh for 2019 assumes that 51 GWh will come from current off-grid demand (This is for 6 months of the year as Hydro COD is estimated at July 1st, 2019). GPL will reveal a new tariff category when the hydro achieves commercial operation by July 1st, 2019, for demand above 2.5MVA. The tariff for this new category is expected to serve as an important growth catalyst. Since GPL will be faced with a take or pay arrangement with the hydro, this implies that the lowest tariff will be derived if all the energy is used.

1.9 SUMMARY

The Programme, as mentioned before, projects expenditure of US$172.56M over the next five years. Major sources of financing will include 62% from equity and 17% in grant from the EU using CIF resources. The Programme projects more significant investment in the earlier years to ensure improvements are leveraged to improve service, reduce cost and losses at the earliest possible opportunity.

US$118.4 M will be spent on loss reduction with total reduction in losses of 3.9% projected over the next five years. This level of projected loss reduction is based on a recent assessment of losses by each feeder and a revision of the loss profile for technical and non-technical losses. The assessment shows that 73% of GPL's losses occur in Region 4 and some parts of Region 3 where just less than 82,000 consumers are being served.

Non-technical losses are projected to reduce from 16.3% at the end of 2014 to 13.1% at the end of 2019 while technical losses are projected to reduce from 13.3% at the end of 2014 to 12.6% at the end of 2019. The non-technical loss reduction plan is premised heavily on a comprehensive coordinated approach to dealing with the 73% overall losses in Regions 4 and parts of Region 3.

This plan involves the use of smart meters in a secure installation along with a secure network, built to an acceptable standard, to address overall losses. This project would be implemented in concert with an aggressive Social Management Programme.

2 METHODOLOGY TO PLAN

The Guyana Power and Light Inc.'s (GPL) current five-year Development and Expansion Programme (2015 – 2019 D&E Programme) and Annual Programme (2015) have been prepared in accordance with the requirements of the company's Licence (Amended October 4th, 2010), the Public Utilities Commission Act 1999, the Electricity Sector (Technical Standards) Regulations 2008 and the Electricity Sector Reform Act (ESRA) 1999 and Amendment 2010.

Section 38 (2) of the ESRA and its 2010 amendment sets out the details that ought to be captured in the GPL's sustainability programme. Specifically, the Act states:

"The sustainability programmes developed and maintained by a public supplier shall contain detailed descriptions of and data on –

(a) the plans and projections through which the public supplier will achieve and sustain the customer service, engineering and technical standards necessary for the public supplier's efficient, coordinated and economical supply of electricity under the terms of its Licence (See pages 53-54, 58, 59-62,63-67, 71-73);

(b) the benefits to be accrued to consumers of the service rendered, and the engineering and technical standards to be achieved and maintained, by the public utility as a result of the implementation of the programmes, and the rationale therefore (See pages 53-54);

(c) a development and expansion programme setting forth the plans and projections through which the public supplier will develop and expand its facilities and services to be provided to consumers (See pages 54 - 63) ;

(d) the operating costs and capital expenditures of the programmes (See pages 78 - 80);

(e) the sources and amounts of revenues necessary to finance the programmes, including the proposed or actual costs, terms and sources of any debts or equity financing commitments necessary to carry out the programmes and any bids actually, or anticipated to be, received by the public supplier (See page 62);

(f) the debt to equity ratio tolerances to be maintained by the public supplier in implementing the programmes (See page 81);

(g) the timing, amounts and terms of any issuance of securities contemplated by the public utility for the financing of the programmes and the persons to whom they will, or are anticipated to, be offered or issued; **No securities are to be issued during this Programme**.

(h) the impact the programmes are expected to have upon the natural and social environment (See page 85);

(i) the extent to which the programmes facilitate the use of alternative forms of electricity generation using renewable resources and commercial feasibility thereof. (See page 58);

(j) any other aspects of the programmes which the Minister may direct; and

(k) planned acquisition of new generating capacity; (See Page 58)

(l) loss reduction strategies; (See Pages 68-70)

(m) plans to regain industrial customers; (See Page 71)

(n) plans for providing electricity for development and redevelopment projects in urban areas; (See Page 71)

(o) cost-benefit analysis for each investment project; (See Page 88) and

(p) consistent with any applicable regulations, the following items –

a. a maintenance programme for the inspection, repair, replacement and upgrade of the supplier's works; (See Pages 60-62 & 67)
b. a programme for the promotion of technical efficiency and economy in its supply of electricity and in the consumption of electricity by consumers; (See Pages 69 - 70 and 82) and
c. a report on the public supplier's compliance with any technical standards required under the regulations. (Note: the two Regulations under ESRA, The Technical Standards and Wiring Regulations have not been enacted into Law as yet)

2.1 Review of 2014 Achievement

2.1.1 Work Programme

2014	2014
Generation	4MW HFO Unit for Anna Regina
	2MW HFO Unit for Bartica
	3 x 500Kw gensets (2 for Leguan & 1 for Wakenaam)
Substations	Williamsburg sub-station (17MVA)
	Extension & upgrade of No.53 Substation
Distribution	Distribution upgrade
DSM -	Demand Side Management , energy efficiency Initiative
Non Tec Loss Reduction	Replace 6,000 meters with pre-paid meters (meters in stock)
	Upgrade 4,000 installations to current interface, including new meters (AMI).
	Public Education & Social Management Programme
	Replace 5,800 defective meters
	ITRON AMI (300 Meters)
Electrification	Provision of electricity to 8,855 potential consumers
New Services	7,000 new services
Buildings	New Vreed-En-Hoop Commercial and T&D Office
	New Williamsburg Commercial Office
	New Generation Office - Canefield
	Security Facilities
Capacity Building	Office Equipment, motor vehicles, computer hardware & software
Information Technology	GIS Application and collection of field data
	Inventoty Management Module (Oracle Financial Computerized System)
	ICT Infrastructure (Sophia & Middle St.)

2.1.1.1 Generation

1. Wartsila was approved as the supplier for the new power plants at Anna Regina and Bartica; however the initial proposals that were submitted to GPL indicated costs of up the US$3M / MW, which is over twice the budgeted cost. These projects would now commence in 2015, premised on the expectation that the pricing issue will be resolved or a new supplier approved.

2. The additional machines for Leguan and Wakenaam are expected to be installed and commissioned by December 15th, from when 24/7 operation will commence.

2.1.1.2 Substations

No progress was made on the new Williamsburg substation or the expansion of the No. 53 substation. Due to financing constraints, both these projects have now been rescheduled to commence in 2015.

2.1.1.3 Distribution

Target Indicators 2014		Demerara		Essequibo		Berbice		Total	
		Plan	Achieve	Plan	Achieve	Plan	Achieve	Plan	Achieve
LINE EXTENSION (KM)	PRIM.	45	17	0	1	9	2	54	20
	SEC.	0	3	0	1	0	1	0	5
LINE UPGRADE (KM)	PRIM.	24	2	0	0	6	0	30	2
	SEC.	134	12	0	0	38	2	172	14
SERVICE LINE REPLACEMENT (KM)		46	3.2	0	2	21	2.1	67	7
REPLACING TRANSFORMERS (MV Upgrade)	SEC.	45	29	0	53	0	0	45	82
INSTALLATION OF ADDITIONAL TRANSFORMERS	SEC.	56	3	1	4	20	3	77	10
JUMPER SERVICING/REPLACEMENT	PRIM.	1,171	619	3	37	477	217	1,651	873
	SEC.	3,887	1,743	290	207	1812	1211	5,989	3,161
SERVICE CONNECTION @ CONSUMER		31,525	10,461	555	4,584	9,400	1,895	41,480	16,940

2.1.1.4 Demand Side Management (DSM)

In 2014, the Guyana Power and Light Inc. embarked on its massive Energy Conservation/Energy Efficiency/Demand Side Management Public Education/Public Awareness Programmes. These programmes varied from School Education, Community Outreach, Radio and Television Discussions, Newspaper Articles, to Expo Interaction with potential customers and customers.

Programmes were aimed at targeting the Company's Customers, general households and schools both primary and secondary.

The main objective was to inform, educate and make Customers aware of the following:

1. The Definition of Energy Conservation/Energy Efficiency/Demand Side Management,
2. The Importance of Energy Conservation/Energy Efficiency/Demand Side Management,
3. Benefits of Energy Conservation/Energy Efficiency/Demand Side Management, and
4. To inform them of practical saving tips and best practices, this would ultimately result in a reduced electricity bill and monies saved.

The programme educated and informed students and teachers in over eighty (80) Primary and Secondary Schools in Regions 3, 4, 5 and 6. Consequently, customers were educated and informed through the use of the Company's Radio programme "**Power Talk**" which is aired every Wednesday morning at 06:45 Hrs on VOG 560 AM and through several printed advertisements, as well as Newspaper articles, all of which were published on our Corporate Website and Facebook page.

Outreaches also played a pivotal role in educating GPL's Valued Customers and this was executed at the Guy Expo 2014 event. Brochures and Posters on how to save energy in the home, school and at work were also created and distributed to customers.

After a rigorous evaluation process, the Company garnered feedback on it efforts and sought ways to improve its quality of service and programmes aimed at educating the general public on Energy Conservation/Energy Efficiency/Demand Side Management.

Initiatives	Objectives	Methods/Forum	Achievement
AMI as an EC Tool in the pilot zone (Vlissingen Rd. North Rd. Ave. of the Republic. South Rd.)	• To inform and educate Customers in the pilot zone on how to use AMI to their advantage to not only see their daily consumptions but to monitor their energy usage as well.	• This was done during several face-to-face interactions with the customers in the said zone. (This is called direct marketing).	• Based on observation of the AMI database, there was a significant reduction of some Customers' consumption. This was as a result of a direct correlation between what the customer was utilizing and best practice based on PE/PA of the AMI as a conservation tool.
PPM as an EC Tool. This is across the served areas.	• To continuously educate and inform our Customers on how to use energy efficiently.	• Public advertisements (print and electronic), • PSA's, Guy Expo 2014.	• Feedback survey to be completed at the end of December 2014.
Education Programmes in forty (40) Primary Schools in Regions 3, 4, 5 & 6	• To Educate and inform students on conservation methods in schools & homes. • To use Children as peer educators and catalyst for change.	• This was done in the classroom environment in the various schools during the morning hours when the children were most receptive to learning. • Through the Distribution of Flyers, Brochures and Posters and EC/DSM Word Search.	• Based on feedback during the question and answer segments after the presentations the children were informed and pledge to educate their parents and peers on the EC/DSM. Further, the children were encouraged to police the system in schools to make sure that they remind their teachers to turn off all lights and

			equipment that were not in use and to report any breaches to their class teacher.
Education Programmes in forty (40) Secondary Schools in Regions 3, 4, 5 & 6	• To Educate and inform Children on conservation methods in their schools & homes and possible public space that they may have to use from time-to-time. • To use Children as peer educators.	• This was done in the classroom environment in various schools during the morning hours when the children were most receptive to learning. • Through the Distribution of Flyers, Brochures and Posters. • EC/DSM Word Search and debating competitions.	• Based on feedback from the question and answer segments after the presentations the children were informed and pledge to educate their parents and peers on the matter as well as to police the system in schools to take off lights and equipment that were not in use and to report any breaches to their class teachers. They also promised to be better Stewarts of electricity.
Housewives via Radio & Television Programmes & Advertisements	• To inform and educate Housewives on the importance of EC/DSM in the Home. • Teach them the importance of EC/DSM & how they can save energy and money over time through the implementation of these methods.	• EC/DSM Television Advertisements on NCN. • Printed adverts in the Guyana Chronicle Newspaper. • EC/DSM Adverts on GPL Web Site and Facebook Page. • Through the SMP Community Outreach.	• Some Housewives called into GPL's PR to ask follow-up questions. While some indicated in person their concerns at our SMP Community Outreach & Guy Expo 2014 face-to-face interactions.
During and after	• To gain	• Face-to-face	• The customers in

Community Outreach in nineteen (19) communities in Regions 3, 4, 5 & 6 & in Cummings Park	community involvement in the Conservation Drive to reduce carbon emission and to assist GPL in propelling the message to ultimately enhance the quality of service GPL offers to the customers.	communications in the communities. • Through the Distribution of Flyers, Brochures and Posters. • Continuous education via our corporate web site and FB Page.	Cummings Park indicated their satisfaction with the programmes. They also lauded GPL's immediate intervention in some cases to assist them in fault finding in their homes.
Guy Expo 2014	• To meet with our customers on an interpersonal level to answer pertinent questions that may be affecting them and to offer solutions to their EC/DSM problems.	• Face-to-face communications with Customers who visited the GPL Booth. • Through the Distribution of Flyers, Brochures and Posters.	• Some customers expressed their approval of the PPM and reiterated the benefits of the conversation tool that lend to a manageable bill. This was as a result of the use of EC best practices.
Television Advertisements	• To educate and inform the General Public on Specific EC/DSM Matter. • To give them useful tips to assist them in managing their electricity usage at Home, Work, School and further afield.	• Via the print media, GPL's Web Site & Facebook Page	A few persons called and requested additional information on the cost per KWH.
Radio Announcements	• To educate and inform the General Public on Specific	• Through our Power Talk Programme.	No Feedback was garnered.

	EC/DSM Matter. • To give them useful tips to assist them in managing their electricity usage at Home, Work, School and further afield.		

2.1.1.5.1 Non-Technical Loss Reduction

2.1.1.5.1 Secure Metering

Up to August 8,364 pre-paid meters were installed.

2.1.1.5.2 Replacement of Defective Meters

By the end of August 1,591 defective meters were replaced.

2.1.1.5.3 Social Management Programme

The twenty (20) communities that were engaged by GPL in 2013 under the US$5M Project, Sustainable Operation of the Electricity Sector and Improved Quality of Service, financed by the IADB, continued to the main focus of the Company's Social Management Programme. With network upgrade completed in all the areas, post project engagement is ongoing.

With Phase 11 work scope now confirmed for only twenty-five (25) of the original 36 areas because of financing constraints, the Social Management Programme will target some of those areas before the end of the year.

2.1.1.5.4 Expanded Use of ITRON Meters

389 additional ITRON meters were deployed for large customers by the end of August 2014.

2.1.1.5.5 Co-Axial Cable

No co-axial cable was purchased in 2014 but it is expected that some will be purchased in 2015 for Phase 11 of the network rehabilitation component under the Sustainable Operation of the Electricity Sector and Improved Quality of Service Project.

2.1.1.5.6 Electrification

Financing for network construction in three communities with a total of 3,523 house lots was realized in Q3 of 2014. It is expected that by end of 2014 GPL would be able to complete the network for 323 potential connections in Angoy's Avenue.

2.1.1.5.7 New Services

By the end of Q3 2014 GPL established 5,376 new services, resulting in a net increase of the customer base of almost 2,000 Accounts.

2.1.1.5.8 Buildings

The Sophia building to house Loss Reduction and T&D, the Bartica building to house T&D and Commercial Services and the T&D building in Wakenaam are all expected to be completed by the end of Q3 of 2014.

2.1.1.6 Capacity building

Investment in T&D power tools and equipment continued in 2014 with over US$320,000 expended on:

Item	Amount US$
20 Fiber Glass Ladders	$ 6,025
(32) Aluminum top opening handline 3"	$ 2,872
To record the receipt of goods/services for Jan 2014	$ 751
Grounding set complete,fiber glass ladders, sling around polyester	$ 3,324
Grounding Set Complete	$ 4,829
Crimper Tool Burndy HY Tool, Crimp Tool Hand Ratchet	$ 4,616
(1) Chain Saw with guide bar 45cm, (1) Chain saw with 72 link chain	$ 810
(3) 1.5 Ton Chain hoist	$ 1,059
Varcorders 60HZ, 69 KV	$ 6,328
(1) Stihl saw	$ 762
Varcorders 60HZ, 69 KV	$ 6,328
Hot Stick Disconnect	$ 724
Varcorders 60HZ, 69 KV	$ 6,328
Y35 HYPress Crimpy Tool	$ 1,097
(1) Hammer drill, (1) drill set, (1) screw driver 10", (1) tool box 24", (1) socket set 30 p	$ 323
(4) Metal 220 V 60 HZ 400W Spotlight	$ 735
Supplied 6 Fibre glass ladder RFP #20095,LPO # 34317	$ 2,306
(1) Chain Saw with guide bar 45cm, (1) Chain saw with 72 link chain	$ 810
(3) BT-45 Auga/ wood drill,	$ 1,414
(1) Stihl saw	$ 762
1 Tractor RFP # 22735,LPO # 31725	$ 64,500
MF 4291-4WD Air Condition Tractor and Logging Winch	$ 139,200
1 Backhoe loader, RFP#260708, LPO#35386	$ 64,762
Total US$	$ 320,665

2.1.1.7 Summary

Overall losses are projected to reduce by 1.3% in 2014. Gross generation is projected to increase by 4.3% in 2014 over 2013. According to the 2014 budget, fuel expenditure was expected to be G$24.5B (IS), at a weighted average cost (CIF) of US$123.61 per bbl and loss after tax of G$3.3B.

The Final Return Certificate for 2014 allowed GPL a tariff increase of 17.2% over those existing at December 31st, 2013. GPL's 2013 Audited Accounts reflects overall income of $30.2B and fuel expenditure of $23B and a Weighted Average fuel cost of US$105.92 per barrel (CIF). Net loss for the year was $1.8B.

2.1.2 Strategic Plan – 2014 Achievement

2.1.2.1

a. Optimize Revenue:		2014 Target	End of Q3 Status
1.	Maximize collection of billing (% of Billing collected)	**99.5**	97.6
	(i) Maximize collection of billing (% of Government billing collected)	**100**	80.91
	(ii) Maximize collection of billing (% of Non – Government billing collected)	**99**	101.75
2.	Maximize level of power billed (GWh)	**513.3**	363.96 (72%)
	(ii) Regularize customers with bypass or tampering (GWh)	**1.6**	7.87
	(iii) Replace defective meters and bill accordingly (GWh)	**2.8**	0.34
3.	Optimize growth: (i) Expand customer base (# of new customers added in yr.)	**7,000**	5,376
	(ii) Increase uptake in recently served areas (No. of new connections)	**2,100**	1,328
	(iii) Net growth (GWh) (Combination of natural growth and loss reduction)	**41.2**	11
	(iv) New Consumers (MWh)	**3,780**	1,793 (47%)
1.	Expand overall revenue by optimizing price, volume and tariff mix (US$ M)	**153.4**	109.5 (71.4%)
	(i) Annual increase in volume (US$M, over previous year)	**2**	0.5
	Mix of customers (ii) Residential	**0.9**	.33
	(iii) Commercial	**0.4**	0.16
	(iv) Industrial	**0.7**	0.01
2.	Maximize collection of arrears from past customers – Number of Accounts.	**2400**	2,803
	(i) Pursue Inactive Customers – Number of demand Letters.	**1200**	856
	(ii) Maximize legal action and enforcement – Number of Cases filed in Commercial Court.	**360**	146
3.	**Ensure strong disincentives to Electricity Theft** (i) Prosecute consumers found tampering/Bypass (%)	**70**	100 (151 cases)
	(ii) Prosecute individuals with illegal connections (%)	**100**	100 (94 cases)
7.	Maximize number of secure meters installed.	**16,100**	13,476

2.1.2.2

b. Minimize costs of operations		2014 Target	End of Q3 Status
1.	Labor cost (US Cents / kWh)	**1.85**	2.1
2.	Control Employment Costs (annual US$ K)	**14,031**	10,776 (76.8%)
	1. Basic Pay	**8,839**	5,670
	2. Overtime	**1,403**	1,311
	3. Allowances	**2,385**	1,844
	4. Employers Contribution	**841**	762
	5. Others	**563**	1,190
3.	Reduce total technical and commercial losses (%)	**30.9**	29.5
	Reduce technical losses (total % at end of period)	**14.4**	13.3
	Reduce commercial losses (total % at end of period)	**16.5**	16.2
4.	Control Generation Costs (US $M)	**125.9**	91.5 (72.7%)
	(i) Maximum use of cheaper sources of generation (HFO/ LFO /Co-gen/Hydro mix)	**95:1:4:0**	87:11:2:0
	(ii) Maximum availability of engine relative to weighted capacity	**77%**	67.2%
	(iii) Ensure contract for O&M is managed to optimize value for money	**As per contract**	Fuel efficiency Target is now 8,452 BTU/kWh but was not achieved.
	(iv) Availability	**92%**	93%
	(v) Lube oil Consumption (g/kWh)	**0.15**	0.58
	(v) Fuel Efficiency (BTU/kWh)	**8,312***	8,886 (+5%)
	(vii) Optimize dispatched Power	**Merit order system**	Merit order system is being observed.
5.	Ensure fuel is procured at the lowest cost at all times	**Ensure the contractual terms with Staatsolie are met**	Contractual terms for HFO are generally fulfilled but not for LFO.
6.	Ensure overhauls are done on schedule, reduce emergency procurement of spares, reduce downtime, maximize availability and minimize maintenance costs.	**Meet Generation SAIFI & SAIDI**	Emergency spares orders have been necessary for most of Wartsila's overhauls.
7.	Optimize other controllable Costs (US$K)	**6,958**	5,591 (80.3%)
	1. Transmission & Distribution	**1,011**	764 (75.6%)
	2. Administrative	**5,947**	4,827 (81.2%)

* - New Efficiency benchmark is 8,604 BTU/kWh for last Heat Rate Test. A reconciliation of fuel used at the end of the year will give a more accurate value of actual efficiency due to the absence of fuel mass flow meters.

2.1.2.3

c. Improve Customer Service (CS)	2014 Target	End of Q3 Status
1. Meet Customer Service Standards & OS&PT.	*	*
2. Implement ISO 9001: 2000 Quality System	**Full certification**	Final preparation of audits completed.
3. Customer Satisfaction: Improve Image of GPL as first class utility via improving Customer Service, increase efficiency, and optimize tariffs.	**65%**	60%

4. % of calls answered at Call Center	**95%**	76%

* - The OS&PT and Q3 Status are reported in the Strategic Targets. CSS are applied on an ongoing basis.

2.1.2.4

d. Achieve Sustainable Financial Position 2014 Targets		End of Q3 Status
1. Ensure that 99.5% of billed sales is collected.		97.6%
2. Ensure that GPL is creditworthy to attract private investment in a US$840M, 165 MW hydroelectric project without Government guarantees.		GPL will be 100% equity financed. Current debt obligations, all of which is owed to the Government of Guyana, will be converted to equity.
3. Complete audited accounts and hold Annual Shareholders Meeting within 6 months of year's end.		2013 Accounts were audited and the Company received a clean audit opinion. GPL's Board is coordinating a time for the AGM.
4. Manage GPL finances to justify concessional financing.	Ensure compliance with conditionalities.	GPL has received another concessional loan / grant from the IADB / EU (US$64.5M) which is a good indicator of the management of the Company's Finances to attract concessional financing.

2.1.2.5

Enhance Corporate Governance Framework and Practices	
2014 Targets	End of Q3 Status
1) Reports are submitted to Board and its Sub-Committees on a timely basis.	All statutory Reports were submitted to be Board although there have been a few instances of tardiness.
2) Policies are implemented faithfully.	All Policies are implemented faithfully save where there are mitigating circumstances. In those instances, the Board is notified.
3) Financial Statements are audited within stipulated time frames and Management Letters are responded to promptly.	Financial Statements were audited within the stipulated time. Management Letter would be responded to before the end of November.
4) Procurement process is fair and transparent and in keeping with Procurement Manual.	Procurement process was in keeping with Procurement Manual.
5) Internal Audit recommendations are implemented.	Departments have been reporting to the Board subcommittee on actions taken to implement recommendations.
6) The Board is assisted in its annual self evaluation and that of its sub-committees.	No self evaluation was completed by the Board.
7) Assistance is provided, as necessary, in policy formulation.	Assistance was provided.

2.1.2.6

e. Enhancing Skills and Competencies 2014 Targets	**End of Q3 Status**
1) Determine or identify the skills and competencies required for each job.	Consultant to be engaged to undertake exercise in 2015.
2) Periodically asses the level at which each employee is performing.	Assessments are done quarterly for each employee.
3) Provide advice and/or feedback to employees on performance, career development and future prospects.	Feedback is provided at each quarterly assessment. Advice on career development and future prospects is provided to professional staff at Quarterly Management retreats.
1) Facilitate requisite training/attachments/development interventions recognizing current deficiencies and future needs.	Training is ongoing and targeted based on current and future needs. Professional advancement is limited to training provided by ITEC and JICA.
6) Utilize teamwork and 'special assignment' strategies to advance group skills.	This strategy is being used, particularly for Project Management.
7) Seek out and provide opportunities for coach/mentor interactions with relevant Experts.	Experts are engaged routinely to share their expertise in workshops and seminars.
8) Provide necessary training to Contracted personnel and the staff of Contractors.	This is an ongoing process with most of the training targeting metering and T&D skills development.
9) Incentivize attainment of new skills.	This is now a Policy where salary is adjusted on submission of evidence of new qualification.

2.1.2.7

f. Achieve National Objectives 2014 Targets	End of Q3 Status
1) Promote conservation of electricity through public education.	Ongoing public education campaign to promote conservation as part of DSM initiative.
2) Maximize use of **renewable** sources of generation to minimize generation costs and reduce carbon footprint.	Dispatch from cogeneration at Skeldon is optimized while new, efficient HFO Units are operated for base-load duty.
3) Maximize efficiencies while implementing an effective Social Management Programme.	Overall losses are expected to be reduced by 1.3% in 2014. Social Management Programme has been effective in areas targeted for concerted Loss Reduction activity.
4) Ensure regulatory compliance with electricity laws and GPL's license.	GPL has been compliant with its legal and regulatory obligations.
5) Expand national grid to catalyze direct investments in the Country.	Network expansion is an ongoing exercise to serve new housing and business developments. In 2014, extension to

	accommodate 2,789 potential consumers would be completed.
6) Provide advice for national Energy Policy formulation.	Update of the National Energy Policy has not attracted recent attention.
7) Provide technical support to hinterland utilities.	Technical support has been provided when serious technical problems arise.

2.1.3 OS&PT Status

2.1.3.1

Category	**Analysis and Projections**		
Customer Interruptions	Targets for System Average Interruption Frequency Index (SAIFI) and System Average Interruption Duration Index (SAIDI) proposed for 2014 - 2018 are: SAIFI = Total Number of Customer Interruptions / Total Customers Served SAIDI = Total Customer Hours of Interruptions / Total Customers Served		
		2014 Target	**End of Q3 Status**
	SAIFI	100	102.86
	SAIDI	100	107.57

2.1.3.2

Voltage Regulation	The nominal voltage and frequency levels are indicated in paragraph 3.6 of the Standard Terms & Conditions. GPL will seek to maintain, in stable conditions voltages, of ±5% of the nominal voltage and ± 10% following a system disturbance. Since it is difficult to monitor the voltage delivered to each customer the Standard is based on number of voltage complaints and the time taken to resolve them.		
		2014 Target	**End of Q3 Status**
	100% of customer voltage complaints due to network reconfiguration, vegetation, upgrade of lines, additional transformer, etc.	40 days	100% completed within 40 days (940 complaints were received)

2.1.3.3

Category	Definition of Target		
Meter Readings	**Large Consumers – Maximum Demand Consumers (Tariffs C & D)** Produce Ninety-Seven percent (97%) of Maximum Demand Bills based on actual meter readings **Domestic and Small Business Consumers (Tariffs A & B)** Produce Ninety percent (90%) of non Maximum Demand Bills based on actual meter readings.		
		2014 Target	**End of Q3 Status**
	MD Cons.	97%	91%
	Non MD	90%	88%

2.1.3.4

Category	Definition of Target		
Issuing of bills	Issue Non Maximum Demand Bills within ten (10) days of meter reading Issue Maximum Demand Bills within seven (7) days of meter reading		
	Days	**2014 Target**	**End of Q3 Status**
	Non MD	10	8
	MD	7	6

2.1.3.5

Category	Definition of Target		
Accounts Receivable	The status of GPL accounts receivable is stated in its audited annual financial statements. The quoted figures are net of provision for doubtful debts. Unlike the figures in the financial statements the receivables as per the billing system include GEC's receivables.		
	Net	**2014 Target**	**End of Q3 Status**
	Days	40	54
Accounts Payable	While most of GPL's Creditors offer 30 days credit some of the largest ones actually offer up to sixty days. The determination of this target is from the invoice date.		
		2014 Target	**End of Q3 Status**
	Days	26	73

2.1.3.6

Losses	The level of losses at Dec. 2013 totaled 30.9% of dispatched power with technical losses estimated at 13.8% and non-technical at 17.1%. The total projected losses as a percent of dispatched power are included below, along with the forecasted split: The Company expects to achieve these targets at end of the year.		
		2014 Target	**End of Q3 Status**
	Technical (%)	14.40	13.3
	Non-Technical (%)	16.50	16.2
	Overall (%)	30.9	29.5

2.1.3.7

Average Availability	The Availability Target is based on the ratio of declared capacity and available hours to installed capacity and hours in the period. Availability = $\frac{\text{Available capacity x Total Available Hours}}{\text{Installed capacity x Hours in the period}}$		
		2014	**End of Q3 Status**
	Availability	77%	67.2%

2.1.4 T&D Maintenance

ACTIVITIES		Total Summary (January to September 2014)							
		Demerara		Essequibo		Berbice		Total	
		Plan	Ach	Plan	Ach	Plan	Ach	Plan	Actual
POLE REPLACEMENT	PRIM.	667	674	152	168	436	277	1255	1119
	SEC.	655	413	207	133	607	573	1469	1119
POLE PLUMBING	PRIM.	370	78	120	90	329	446	819	614
	SEC.	317	92	167	93	337	443	821	628
POLE TREATMENT	PRIM.	1888	810	2152	1996	1788	3888	5828	6694
	SEC.	1963	756	2131	2737	2160	4180	6254	7673
OLD POLE REMOVAL	PRIM.	633	190	115	58	454	348	1202	596
	SEC.	580	203	164	76	628	654	1372	933
POLE STUBBING	PRIM.	245	36	48	45	154	187	447	268
	SEC.	107	29	42	48	138	86	287	163
ANCHOR BLOCK REPLACEMENT.	PRIM.	121	57	43	20	86	95	250	172
	SEC.	120	43	56	17	105	189	281	249
GUY REPLACEMENT	PRIM.	146	106	56	46	93	155	295	307
	SEC.	139	75	60	37	85	215	284	327
REPLACEMENT DEFECTIVE CROSS ARMS	PRIM.	772	1072	203	229	410	422	1385	1723
INSULATOR REPLACEMENT	PRIM.	805	1116	368	734	338	427	1511	2277
	SEC.	623	308	187	211	87	191	897	710
LINE/HARDWARE TRANSFER	PRIM.	635	648	121	70	448	204	1204	922
	SEC.	665	572	171	115	608	727	1444	1414
LINE EXTENSION (KM)	PRIM.	1	13	1	1	0	210	2	223
	SEC.	14	9	0	1	0	51	14	61
LINE UPGRADE (KM)	PRIM.	13	2	0	0	0	0	13	2
	SEC.	21	12	5	0	3	2	29	14
LINE RETENSION (KM)	PRIM.	44	52	8	7	5	125	56	184
	SEC.	22	84	10	13	26	110	58	206
SERVICE LINE REPLACEMENT (MTS)		13008	8101	3716	1652	3919	18170	20642	27923
INSTALLATION/REPLACEMENT (GAB)	PRIM.	29	6	1	4	12	2094	42	2104
INSTALLATION/REPLACEMENT (SPD)	PRIM.	40	52	6	9	15	23	61	84
INSTALLATION/REPLACEMENT (RCO)	PRIM.	332	176	50	111	99	69	481	356
INSTALLATION/REPLACEMENT (PMCO)		363	13	71	0	142	73	576	86
TRANSFORMER MAINTENANCE	SEC.	325	1067	306	121	165	749	796	1937
INSTALLATION OF ADDITIONAL TRANSFORMERS	SEC.	150	73	45	16	18	324	213	413
MAINTENANCE OF CAPACITOR BANKS		14	11	1	0	2	4	17	15
JUMPER SERVICING/REPLACEMENT	PRIM.	450	619	349	379	442	476	1241	1474
	SEC.	329	676	465	386	304	1451	1098	2513
SERVICE CONNECTION @ CONSUMER		2205	6416	3676	4584	2872	2182	8753	13182
INSTALLATION OF ADDITIONAL EARTHS		211	158	57	63	232	223	500	444
ROUTE CLEARING (KM)	PRIM.	605	63	24	53	10	84	639	200
	SEC.	328	47	34	71	9	34	371	152
LINE INSPECTION (KM)	PRIM.	673	443	165	509	52	500	889	1452
	SEC.	747	68	155	405	114	285	1016	758

2.1.5 Generation Maintenance

All scheduled generation maintenance was completed when due.

3 STRATEGIC PLAN 2015 – 19

Key Performance Indicators (KPI) has been developed to ensure that the strategic business objectives of the company are achieved. These KPIs have been further developed and expanded into annual targets to form the five-year strategic plan, as detailed below. The current D&E Programme is a function of th 2015 – 19 Strategic Plan.

GPL is a regulated, state-owned electricity utility that enjoys a monopoly in the transmission, distribution and sale of electricity on the Coast where 90% of the population resides in Guyana. As at the end of December 2014, GPL expects to have over 176,000 customers, 862 permanent,

425 contracted employees and projected revenue of US$148.5M of which 72% would be expended on fuel.

Present Electricity Supply	Medium Term Electricity Supply
Mainly thermal: • Installed Capacity**: 158 MW: 105MW Heavy Fuel Oil (includes 10 MW of IPP); 53MW diesel fired.** • Total Availability: **121.4 MW: 31.6MW is diesel fired.** **111.4 MW owned; 10MW IPP.** • Total Peak Demand to date: **103.6 MW** • Self Generation**: Estimated at 42MW** • Fuel Mix: **2% co-gen; 87% HFO; 11% diesel in 2014**	Proposed Renewable energy projects 1. **Hydro (starting July 1st 2019)—140 MW** 2. **Bagasse (extended use of co-generation)—10 MW**
	Key Challenges: **High customer tariffs due to:** 1. **Total dependence on fossil fuel, high and volatile fuel prices.** 2. **High losses – technical & commercial losses of about 29.6 %.**

GPL has a balance sheet of US$182.6M in net assets. In 2014, 87% of GPL's generation is projected to come from HFO (production from HFO being 39% cheaper than diesel) fired equipment. With a 165 MW hydropower project achieving commercial operation in July 2019, GPL will need fossil fuel for less than 15% of its electricity supply by 2020. As a state-owned entity, GPL's key objective is to deliver reliable electricity at the lowest sustainable price and without requiring Government support for its operations. This requires optimized efficiency in the production, transmission and distribution of power while prudently managing revenue collection, reducing technical and commercial losses and minimizing other costs, particularly employment as this is the largest non-fuel expenditure. 79% of the Financing for this Programme would be coming from equity and grant through the Government and EU respectively.

SWOT Analysis

Strengths	Weaknesses
a. GPL is debt free; b. Generation overwhelmingly coming from HFO fired capacity; c. Staff is competitively remunerated compared to Private Sector. d. Funding secured for major capital investments in overall loss reduction.	1. High level of technical and commercial losses currently at 29.6%; 2. Limited pool of indigenous skills pose a problem to improving efficiencies; 3. Financing limited only to concessional sources and internal resources. 4. Infrastructure barely meets minimum requirement, no redundancy.

Opportunities	Threats
a. Hydro financial close should occur by Q2-2015 with construction starting shortly after. Completion of hydro by Q2 2019 will lower electricity cost and attract self-generators to the grid; b. Major investment secured to reduce overall losses and improve management capacity; c. Capital program largely funded by equity and grant; d. ISO 9001 can improve the quality of CS. e. Connection of 26,500 new customers by 2019 with secure metering will reduce electricity theft by providing legitimate access to electricity; f. Competitive staff compensation and incentives coupled with new infrastructure and modern equipment will result in improvements in productivity and attitude.	• Risk of rise in fuel prices can adversely impact costs and tariffs before 2019 thereby negatively impacting market development; • Threat of strike action as GPL right sizes its workforce following investments; • Implementation delays for loss reduction projects or the hydro could impact tariffs and deter self – generators; • Consumers can react violently to efforts to reduce non-technical losses. • Loss of key employees via migration could impact operations. • Changes in global weather patterns could result in severe water shortages for the hydro.

Vision:

Guyana Power & Light Inc. aims to be Guyana's premier service provider, meeting and exceeding where possible the expectations of its stakeholders.

Mission:

To provide an expanding customer base with electricity services which are technically, financially and environmentally sustainable, achieving best practice and acceptable international norms, delivered by our people performing in accordance with Company values to the highest ideals of work excellence and integrity.

3.1 Strategic Objectives:

- Optimize revenue
- Minimize cost of operations
- Improve Customer Service (CS)
- Achieve a sustainable financial position
- Enhance Corporate Governance Framework and Practices
- Enhancing Skills and Competencies of Employees and Contract workers
- Achieve national objectives

See strategies and targets for each below.

3.2 Strategies and Associated Targets

g. Optimize Revenue:		2015	2016	2017	2018	2019
1.	Maximize collection of billing (% of Billing collected)	**99.5**	**99.5**	**99.5**	**99.5**	**99.5**
	(i) Maximize collection of billing (% of Government billing collected)	100	100	100	100	100
	(ii) Maximize collection of billing (% of Non – Government billing collected)	99	99	99	99	99
2.	Maximize level of power billed (GWh)	542.5	584.8	629.9	678.8	767.6
	(ii) Regularize customers with bypass or tampering (GWh)	4.0	3.7	3.5	2.8	2.3
	(iii) Replace defective meters and bill accordingly (GWh)	1.2	1.1	1.2	1.1	1.0
3.	Optimize growth: (i) Expand customer base (# of new customers added in yr.)	6,000	5,500	5,000	5,000	5,000
	(ii) Increase uptake in recently served areas (No. of new connections)	2,400	2,000	1,800	1,600	1,000
	(iii) Net growth (GWh) (Combination of natural growth and loss reduction)	41.6	45.6	48.6	53.1	107.7
	(iv) New Consumers (MWh)	3,240	2,970	2,700	2,700	2,700
5.	Expand overall revenue by optimizing price, volume and tariff mix (US$ M)	163.3	173.0	183.3	194.3	185.7
	(i) Annual increase in volume (US$M, over previous year)	13.47	9.7	10.29	11.00	(8.66)
6.	Maximize collection of arrears from past customers – Number of Accounts.	2400	2300	2100	1800	1600
	(i) Pursue Inactive Customers – Number of demand letters.	1200	1150	1050	900	800
	(ii) Maximize legal action and enforcement – Number of cases filed in Commercial Court.	240	280	300	350	425
7.	Ensure strong disincentives to Electricity Theft (i) Prosecute consumers found tampering/Bypass (%)	70	80	80	85	85
	(ii) Prosecute individuals with illegal connections (%)	100	100	100	100	100
7.	Maximize number of secure meters installed.	16,100	23,500	38,000	16,300	12,300

h. Minimize costs of operations		2015	2016	2017	2018	2019
1.	Labour cost (US Cents / kWh)	1.91	1.83	1.76	1.69	1.54
2.	Control Employment Costs (annual US$ M)	14,975	15,269	15,568	15,874	16,185
	1. Basic Pay	8,643	8,814	8,986	9,163	9,342
	2. Overtime	1,912	1,949	1,987	2,026	2,066
	3. Allowances	1,949	1,987	2,026	2,066	2,106
	4. Employers Contribution	1,053	1,073	1,095	1,116	1,138
	5. Others	1,418	1,446	1,474	1,503	1,533
3.	Reduce total technical and commercial losses (%)	29.6	28.6	27.6	26.6	25.7
	Reduce technical losses (total % at end of period)	13.30	13.10	12.90	12.60	12.60
	Reduce commercial losses (total % at end of period)	16.30	15.50	14.70	14.00	13.10
4.	Control Generation Costs (US $M)	128.34	136.01	145.77	156.60	141.22
	(i) Maximum use of cheaper sources of generation (HFO/ LFO /Co-gen/Hydro mix)	95:2:3:0	96:1:3:0	96.5:0.4:3.1:0	96.8:0.3:2.9:0	51:0.4:2.6:46

	(ii) Maximum availability of engine relative to weighted capacity	80%	80%	80%	80%	80%
	(vi) Ensure contract for O&M is managed to optimize value for money	As per contract	As per contract	As per contract	As per contract	As per contract
	(vii) Availability	92%	92%	92%	92%	92%
	(v) Lube oil Consumption (g/kWh)	0.97	0.97	0.97	0.97	0.97
	(viii) Fuel Efficiency (BTU/kWh)	8,604	8,604	8,604	8,604	8,604
	(vii) Optimize dispatched Power	Merit order system	Merit order system	Merit order system	Merit order system	Merit order system
5.	Ensure fuel is procured at the lowest cost at all times	Ensure the contractual terms with Staatsolie are met	Ensure the contractual terms with Staatsolie are met	Ensure the contractual terms with Staatsolie are met	Ensure the contractual terms with Staatsolie are met	Ensure the contractual terms with Staatsolie are met
6.	Ensure overhauls are done on schedule, reduce emergency procurement of spares, reduce downtime, maximize availability, minimize maintenance costs.	Meet Generation SAIFI & SAIDI	Meet Generation SAIFI & SAIDI	Meet Generation SAIFI & SAIDI	Meet Generation SAIFI & SAIDI	Meet Generation SAIFI & SAIDI
7.	Optimize other controllable Costs (US$K)	10,984	11,199	11,419	11,643	11,871
	3. Transmission & Distribution	2,531	2,581	2,632	2,683	2,736
	4. Administrative	8,452	8,618	8,787	8,959	9,135

i. **Improve Customer Service (CS)**	2015	2016	2017	2018	2019
5. Meet Customer Service Standards & OS&PT.					
6. Implement ISO 9001: 2000 Quality System	Full certification	Maintain certification	Maintain Certification	Maintain Certification	Maintain Certification
7. Customer Satisfaction: Improve Image of GPL as first class utility via improving Customer Service, increase efficiency, and optimize tariffs.	65%	70%	75%	75%	80%
8. % of calls answered at Call Center	95%	95%	95%	95%	95%

j. **Achieve Sustainable Financial Position**	2015	2016	2017	2018	2019
1. Ensure that 99.5% of billed sales is collected.					
2. Ensure that GPL is creditworthy to attract private investment in a US$840M, 165 MW hydroelectric project without Government guarantees.					
3. Complete audited accounts and hold Annual Shareholders Meeting within 6 months of year's end.					
4. Manage GPL finances to justify concessional financing.	Ensure compliance with conditionalities.				

k. **Enhance Corporate Governance Framework and Practices**
1) Reports are submitted to Board and its Sub-Committees on a timely basis.
2) Policies are implemented faithfully.
3) Financial Statements are audited within stipulated time frames and Management Letters are responded to promptly.

4) Procurement process is fair and transparent and in keeping with Procurement Manual.
5) Internal Audit recommendations are implemented.
6) The Board is assisted in its annual self evaluation and that of its sub-committees.
7) Assistance is provided, as necessary, in policy formulation.

l. Enhancing Skills and Competencies
1) Determine or identify the skills and competencies required for each job.
2) Periodically asses the level at which each employee is performing.
3) Provide advice and/or feedback to employees on performance, career development and future prospects.
2) Facilitate requisite training/attachments/development interventions recognizing current deficiencies and future needs.
5) Utilize teamwork and 'special assignment' strategies to advance group skills.
6) Seek out and provide opportunities for coach/mentor interactions with relevant Experts.
8) Provide necessary training to Contracted personnel and the staff of Contractors.
9) Incentivize attainment of new skills.

m. Achieve National Objectives
8) Promote conservation of electricity through public education.
9) Maximize use of **renewable** sources of generation to minimize generation costs and reduce carbon footprint.
10) Maximize efficiencies while implementing an effective Social Management Programme.
11) Ensure regulatory compliance with electricity laws and GPL's license.
12) Expand national grid to catalyze direct investments in the Country.
13) Provide advice for national Energy Policy formulation.
14) Provide technical support to hinterland utilities.

3.3 Functional Strategies (with reference to Objective Strategies)

3.3.1 2015

Management/Overall Coordination
1) Ensure budget reflects appropriate priorities and is implemented prudently.
2) Undertake quarterly review of achievements of all Divisions; Strategic Targets, CSS and OS&PT and take corrective action as necessary.
3) Manage all capital projects to ensure delivery on time and within budget.
4) Provide the environment necessary for key skills to be developed and retained.
5) Ensure communications are adequate and efficient and internal communications support achievement of CSS, OS&PT and keep stakeholders informed of pertinent developments while external communications inform relevant stakeholders of supply issues, major developments, tips on DSM and support the Company's Social Management Programme.
6) Develop and implement a Customer Services Charter.
7) Ensure implementation targets for Power Utility Upgrade Program (PUUP) are met.

8) Develop and implement programmes in support of DSM objectives

Commercial
1) Customer Service Standards (CSS) and relevant Operating Standards & Performance Targets (OS&PT) are met consistently.
2) Implement systems to provide an exceptional quality of Customer Service at all offices.
3) Constantly review procedures to ensure customer service is optimized.
4) Assist in the Development and implementation of the Customer Services Charter.
5) Assist in promoting E- transactions (billing, payments, queries, etc)
6) Keep consumers informed of key milestones using the PR Unit.
7) Provide active support to Legal and Loss Reduction to pursue outstanding balances.

Finance
1) Prepare annual budget in consultation with Management, Board and any Shareholder guidance.
2) Manage cash flows in accordance with budget and to optimize working capital.
3) Ensure timely completion of statutory financial reports.
4) Facilitate completion of annual audits to ensure Company meets its statutory obligations on time.
5) Complete Procurement Plan (PP) and ensure efficient procurement process in compliance with Procurement Manual. Ensure PP and large Contracts, US$100k and above, are published on GPL's website
6) Provide routine financial reports to all Divisions on a timely basis.
7) Ensure inventory levels are optimized and overall stores management is efficient.

IT
1) Implement GIS application and populate database.
2) Implement Document Management computerized system
3) Manage Hardware and software infrastructure to ensure 99.9% system availability.
4) Assist in procurement and implementation of Human Resource and Payroll computerized system.
5) Optimize security and integrity of corporate systems.
6) Pursue all options to expand electronic bill payments.
7) Expand fiber optic link in East Bank Berbice to other GPL locations.
8) Assist in procurement and implementation of Oracle Business Intelligence Tool.
9) Provide support for SCADA operations, maintenance and expansion.
10) Support expansion of AMI.

Loss Reduction
1) Implement all elements of the Strategic Loss Reduction Plan (SLRP) not detailed below.
2) Upgrade 2,000 meters with AMI compatible meters.
3) Replace 5,000 defective and tampered meters with AMI compatible meters.
4) Upgrade 1,000 MD meters with AMI compatible meters.
5) Meter 6,000 New Services.
6) Continuously review the returns on all initiatives to focus field activity.
7) Manage disconnection / reconnection activity prudently.
8) Investigate all reports of theft of company property.
9) In conjunction with the PR Unit, Coordinate Social Management Programme activities in areas targeted for loss reduction investment.

HR/Admin
1) Continuously review employee attendance and staffing levels to determine appropriate actions to limit overtime cost.
2) Assist in implementation of Human Resource and Payroll Computerized System.
3) Complete job evaluation and skills assessment – Q4
4) Develop and implement a Strategic Training and Development Plan.
5) Develop and implement initiatives to boost employee's morale.
6) Complete Vreed-En-Hoop commercial & T&D office.
7) Complete new Williamsburg commercial office.
8) Complete new generation office at Canefield.
9) Complete security facilities as determined by latest security review.
10) Facilitate ongoing review of Safety Rules and Codes of Practice Handbook.
11) Coordinate annual environmental audit of Company facilities.
12) Ensure Company is compliant with relevant Labour, Safety, Environmental and Health Laws.
13) Complete ongoing right-sizing review in consultation with respective Divisions and implement approved plans.
14) Undertake clean-up and bio-remediation of Versailles and Onverwagt Power Plants. 35% complete by Q4.

Projects - Manage the following sub-projects effectively to ensure completion by Milestones indicated.
1) New 5MW, 60Hz, HFO Power Plant at Anna Regina – 50% complete by Q4
2) New 2 x 1.7MW HFO fired plant at Bartica – 70% complete by Q4
3) Williamsburg substation – Procure equipment and complete foundations – Q4
4) No. 53 substation – Procure equipment and complete foundations – Q4
8) Complete SCADA expansion review – Q4

Operations
1) Complete Technical Loss Reduction investment works – Q4
2) Install 10 pole mounted circuit breakers on MV distribution network.
3) Ensure Operating Standards & Performance Targets are met consistently.
4) Complete maintenance programme – Q4
5) Facilitate compilation of GIS field data – Ongoing
6) Manage Government financed Un-served Areas Electrification Project
7) Leguan voltage upgrade (4.16 to 13.8Kv) – Complete Q2
8) Ensure effective and adequate maintenance programme is developed and implemented for the Company's fleet of vehicles and T&D support equipment.
9) Reduce feeder trips by 12%.

3.3.2 2016

Management/Overall Coordination
1) Ensure budget reflects appropriate priorities and is implemented prudently.
2) Undertake quarterly review of achievements of all Divisions, Strategic Targets, CSS and OS&PT and take corrective action as necessary.
3) Manage all capital projects to ensure delivery on time and within budget.
4) Provide the environment necessary for key skills to be developed and retained.
5) Maintain ISO 9001 – 2008 Quality system certification.
6) Ensure communications are adequate and efficient and internal communications support achievement of CSS, OS&PT and keep stakeholders informed of pertinent developments while external communications inform relevant stakeholders of supply issues, major developments and tips on DSM.
7) Ensure implementation targets for Power Utility Upgrade Program (PUUP) are met.
8) Develop and implement programmes in support of DSM objectives
9) Ensure objectives of Customer Services Charter are met.

Commercial
1) Ensure Customer Service Standards (CSS) and relevant Operating Standards & Performance Targets (OS&PT) are met consistently.
2) Assist in the promotion of electronic transactions.
3) Constantly review procedures to ensure customer service is optimized and relevant Standards and Targets are surpassed.
4) Provide active support to Legal and Loss Reduction to pursue outstanding balances.
5) Ensure Customer Services Charter is implemented faithfully.
6) Reduce billing queries by 10%.
7) Assist in the implementation of the Asset Management System and Business Intelligence Tool.

8) Ensure objectives of Customer Services Charter are met.

Finance
1) Prepare annual budget in consultation with Management, Board and any Shareholder guidance.
2) Manage cash flows in accordance with budget and to optimize working capital.
3) Provide necessary support to secure funding for capital projects, where necessary.
4) Ensure timely completion of statutory financial reports.
5) Facilitate completion of annual audits to ensure Company meets its statutory obligations on time.
6) Complete Procurement Plan (PP) and ensure efficient procurement process in compliance with Procurement Manual. Ensure PP and large Contracts, US$100k and above, are published on GPL's website.
7) Provide routine financial reports to all Divisions on a timely basis.
8) Ensure inventory levels are optimized and overall stores management is efficient.
9) Assist in the implementation of Asset Management System and Oracle Business Intelligence Tool.

IT
1) Optimize and maintain Local and Wide Area Network performance.
2) Manage Hardware and software infrastructure to ensure 99.9% system availability.
3) Optimize security and integrity of corporate systems
4) Provide support on implementation of Phase 11 of GIS database development.
5) Support expansion of Automatic Metering Infrastructure (AMI).
6) Support operations, maintenance & expansion of SCADA.
7)
8) Assist in procurement and implementation of Computerized Maintenance Management System (CMMS)
9) Assist in procurement and installation of a video conferencing system between Berbice and Demerara
10) Assist in the procurement and implementation of a vehicle tracking system.
11) Assist in the procurement and implementation of an Asset Management System.

Loss Reduction
1) Replace 5,000 tampered and defective meters with AMI compatible meters.
2) Upgrade 1,000 MD meter installations using AMI compatible meters.
3) Upgrade 2,000 minor meters to AMI compatible meters.
4) Meter 5,500 new services.
5) Implement an effective Social Management Programme in areas targeted for loss

reduction investment.
6) Implement other elements of the Strategic Loss Reduction Plan (SLRP).
6) Continuously review the returns on all initiatives to focus field activity.
7) Manage disconnection / reconnection activity prudently.
8) Investigate all reports of theft of company property.
9) In conjunction with the PR Unit, Coordinate Social Management Programme activities in areas targeted for loss reduction investment.

HR/Admin
1) Continuously review employee attendance and staffing levels to determine appropriate actions to limit overtime cost.
2) Develop and implement a Strategic Training and Development Plan.
3) Develop and implement initiatives to boost employee's morale.
4) New building in New Amsterdam – 45% Complete – Q4
5) New Middle Street – 30% complete.
6) Facilitate ongoing review of Safety Rules, Regulations and Codes of Practice Handbook.
7) Coordinate annual environmental audit of Company facilities.
8) Ensure Company is compliant with relevant Labour, Safety, Environmental and Health Laws.
9) Complete ongoing right-sizing review in consultation with respective Divisions and implement approved plans.
10) Complete clean-up and bio-remediation of Versailles and Onverwagt Power Plants.

Projects – Manage the following sub-projects effectively to ensure completion by Milestones indicated.
1) Complete new 5MW, 60Hz, HFO Power Plant at Anna Regina – Q3
2) Complete new 2 x 1.7MW HFO Power Plant at Bartica – Q3
3) Frequency conversion of Anna Regina 4MW power plant – 10% complete.
4) New Williamsburg sub-station with tie lines – complete Q3
5) Extend No. 53 Substation – Complete Q3
6) Transmission line from Vreed-En-Hoop to Canal No.2 – 20% complete – Q4
7) Transmission line from Edingburg to Parika – 15% complete – Q4
8) Transmission line from GoE to Soesdyke / Linden Highway junction – 5% Complete – Q4
9) New double circuit transmission line from Sophia to Kingston – 25% complete – Q4
10) Expansion of Kingston substation (1 bay) – 15% Complete – Q4
11) Expansion of Sophia substation – 25% Complete – Q4
12) Canal No. 2, 17MVA substation – 25% complete – Q4
13) Linden Highway / Soesdyke Highway junction 17MVA substation – 20% complete
14) Parika 17MVA substation – 40% complete- Q4
15) Extend Vreed-En-Hoop substation – 50% complete – Q4

16) Extend Edingburg substation – 50% complete – Q4
17) Rebuild former L2 bay at GoE substation – 35% complete – Q4
18) Replace two 16.7MVA transformers at No.53 and Sophia substations.
19) Execute EPC Contract for SCADA expansion and Manage project.
20) Procure 9 Capacitor Banks (total 75MVAr capacity) and prepare structures to install at Columbia, Onverwagt, Canefield and No. 53 substations.

	Operations
1)	Complete Technical Loss Reduction investment works – Q4
2)	Ensure Operating Standards & Performance Targets are met consistently.
3)	Complete T&D maintenance programme – Q4
4)	Facilitate compilation of GIS field data – Ongoing
5)	Achieve competence to undertake live-line maintenance up to 13.8Kv.
6)	Install 18 pole mounted breakers on MV distribution network.
7)	Assist in the implementation of the Asset Management System and Oracle Business Intelligence Tool.
8)	Complete maintenance of all new substations, switchgear, protection and instrumentation equipment and pad-mounted transformers.
9)	Reduce feeder trips by 10%.

3.3.3 2017

	Management/Overall Coordination
1.	Ensure budget reflects appropriate priorities and is implemented prudently.
2.	Undertake quarterly review of achievements of all Divisions, CSS and OS&PT and take corrective action as necessary.
3.	Manage all capital projects to ensure delivery on time and within budget.
4.	Provide the environment necessary for key skills to be developed and retained.
5.	Maintain ISO 9001 – 2008 Quality system certification.
6.	Ensure communications are adequate and efficient and internal communications support achievement of CSS, OS&PT and keep stakeholders informed of pertinent developments while external communications inform relevant stakeholders of supply issues, major developments and tips on DSM.
7)	Ensure implementation targets for Power Utility Upgrade Program (PUUP) are met.
8)	Develop and implement programmes in support of DSM objectives
9)	Ensure objectives of Customer Services Charter are met.

Commercial
1) Ensure Customer Service Standards (CSS) and relevant Operating Standards & Performance Targets (OS&PT) are met consistently.
2) Actively promote electronic transactions.
3) Constantly review procedures to ensure customer service is optimized.
4) Provide active support to Legal and Loss Reduction to pursue outstanding balances.
5) Assist in the implementation of the upgrade of the Corporate Relational Database Management System from Standard to Enterprise.
6) Reduce billing queries by 15%.
7) Assist in the implementation of Business Intelligence software.
8) Ensure objectives of Customer Services Charter are met.

Finance
1) Prepare annual budget in consultation with Management, Board and any Shareholder guidance.
2) Manage cash flows in accordance with budget and to optimize working capital.
3) Provide necessary support to secure funding for capital projects, where necessary.
4) Ensure timely completion of statutory financial reports.
5) Facilitate completion of annual audits to ensure Company meets its statutory obligations on time.
6) Complete procurement Plan and ensure efficient procurement process in compliance with Procurement Manual. Ensure PP and large Contracts, US$100k and above, are published on GPL's website.
7) Provide routine financial reports to all Divisions on a timely basis.
8) Ensure inventory levels are optimized and overall stores management is efficient.

Loss Reduction
1) Replace 5,000 defective and tampered meters with AMI compatible meters.
2) Upgrade 1,000 MD, large Tariff A and B meters with AMI compatible meters.
3) Meter 5,000 New Services.
4) Install 1,000 ITRON AMI meters for MD customers.
5) Implement other elements of the Strategic Loss Reduction Plan (SLRP).
6) Continuously review the benefit of all initiatives to focus field activity.
7) Manage disconnection / reconnection activity prudently.
8) Investigate all reports of theft of company property.
9) In conjunction with the PR Unit, Coordinate Social Management Programme activities in areas targeted for loss reduction investment.

I T
1) Optimize and maintain Local and Wide Area Network performance.
2) Manage Hardware and software infrastructure to ensure 99.9% system availability.
3) Optimize security and integrity of corporate systems
4) Provide support on GIS implementation, Phase 111.
5) Provide appropriate support for Automatic Metering Infrastructure (AMI).
6) Provide appropriate support for SCADA operations, maintenance and expansion.
7) Procure, install and configure a reputable Business Intelligence (BI) Software.
8) Upgrade Corporate Relational Database Management System from Standard to Enterprise.

HR/Admin
1) Continuously review employee attendance and staffing levels to determine appropriate actions to limit overtime cost.
2) Develop and implement a Strategic Training and Development Plan.
3) Develop and implement initiatives to boost employee's morale.
4) Complete new Building in Middle Street. – Q4
5) Complete new building in New Amsterdam. – Q2
6) Complete ongoing right-sizing review in consultation with respective Divisions and implement approved plans.

Projects – **Manage the following sub-projects effectively to ensure completion by Milestones indicated.**
1) Complete frequency conversion of Anna Regina 4MW, 50Hz plant to 60Hz. – Q4
2) Procure, install and commission 1.2MW, HFO fired Unit at Wakenaam – 40% Complete – Q4
3) Linden substation and interconnection – Complete – Q4
4) Complete replacement of two 16.7MVA power transformers, one each at GoE and Sophia substations.
5) Complete Canal No.2 17MVA substation – Q3
6) Complete extension of Vreed-En-Hoop substation – Q3
7) Complete rebuild of former L2 bay at GoE substation – Q3
8) Complete Linden Highway / Soesdyke junction 17MVA substation – Q4
9) Complete extension of Edingburg substation – Q3
10) Complete Parika substation – Q4
11) Complete transmission line from Vreed-En-Hoop to Canal No.2 – Q3
12) Complete transmission line from Edingburg to Parika – Q3
13) Complete transmission line from GoE to Linden Highway / Soesdyke junction – Q4
14) Complete double circuit transmission line from Sophia to Kingston – Q4
15) Complete Kingston substation expansion (1 bay) – Q4

16) Complete Sophia substation expansion (2 bays) – Q4
17) Complete SCADA expansion – Q4
18) Complete installation of automatic capacitor banks at Columbia, Onverwagt, Canefield and No. 53 substations.

Operations
1) Complete Annual Maintenance Programme – Q4
2) Implement Technical Loss Reduction Plan – Q4
3) Ensure universal usage of Planned & Emergency Management System Software – Q4
4) Reduce planned maintenance outages by 30%.
5) Assign load and deploy new feeders from all new substations.
6) Support activities to replace two 16.7MVA transformers at Sophia and GoE.
7) Reduce feeder trips by 8%.
8) Develop and implement maintenance programme for all substations, protection and instrumentation assets and pad-mounted transformers.

3.3.4 2018

Management/Overall Coordination
1) Ensure budget reflects appropriate priorities and is implemented prudently.
2) Undertake quarterly review of achievements of all Divisions, CSS and OS&PT and take corrective action as necessary.
3) Manage all capital projects to ensure delivery on time and within budget.
4) Provide the environment necessary for key skills to be developed and retained.
5) Maintain ISO 9001 – 2008 Quality system certification.
6) Ensure communications are adequate and efficient and internal communications support achievement of CSS, OS&PT and keep stakeholders informed of pertinent developments while external communications inform relevant stakeholders of supply issues, major developments and tips on DSM.
7) Ensure implementation targets for Power Utility Upgrade Program (PUUP) are met.
8) Develop and implement programmes in support of DSM objectives
9) Ensure objectives of Customer Services Charter are met.

Commercial
1) Ensure Customer Service Standards (CSS) and relevant Operating Standards & Performance Targets (OS&PT) are met consistently.
2) Actively promote electronic transactions.
3) Constantly review procedures to ensure customer service is optimized.
4) Provide active support to Legal and Loss Reduction to pursue outstanding balances.
5) Ensure objectives of Customer Services Charter are met.

Finance
1) Prepare annual budget in consultation with Management, Board and any Shareholder guidance.
2) Manage cash flows in accordance with budget and to optimize working capital.
3) Provide necessary support to secure funding for capital projects, where necessary.
4) Ensure timely completion of statutory financial reports.
5) Facilitate completion of annual audits to ensure Company meets its statutory obligations on time.
6) Complete procurement Plan and ensure efficient procurement process in compliance with Procurement Manual. Ensure PP and large Contracts, US$100k and above, are published on GPL's website.
7) Provide routine financial reports to all Divisions on a timely basis.
8) Ensure inventory levels are optimized and overall stores management is efficient.

I T
1) Optimize and maintain Local and Wide Area Network performance.
2) Manage Hardware and software infrastructure to ensure 99.9% system availability.
3) Optimize security and integrity of corporate systems
4) Provide support on GIS maintenance.
5) Provide support for SCADA operations and maintenance.
6) Provide appropriate support for Automatic Metering Infrastructure (AMI).

Loss Reduction
1) Replace 5,000 tampered and defective meters with AMI compatible meters. – Q4
2) Upgrade 1,000 meters for MD, large Tariff A and B Consumers with AMI compatible meters. – Q4
3) Meter 5,000 New Services – Q4
4) Implement other elements of the Strategic Loss Reduction Plan (SLRP).
5) Continuously review the benefit of all initiatives to focus field activity.
6) Manage disconnection / reconnection activity prudently.
7) Investigate all reports of theft of company property.
8) In conjunction with the PR Unit, Coordinate Social Management Programme activities in areas targeted for loss reduction investment.

HR/Admin
1. Continuously review employee attendance and staffing levels to determine appropriate actions to limit overtime cost.
2. Develop and implement a strategic training and development plan.
3. Develop and implement initiatives to boost employee's morale.

4. Ongoing right-sizing review in consultation with respective Divisions and implement approved plans.
5. Complete review of Safety Rules & Regulations and Codes of Practice Handbook – Q4

Projects
1) Complete commissioning of 1.2MW, HFO fired Unit at Wakenaam – Q3
2) Procure, install and commission new 1.7 MW HFO Unit for Bartica
3) New transmission line Sophia to Good Hope – 35% complete – Q4
4) New transmission line Good Hope to Columbia – 10% complete – Q4
5) Expand Good Hope substation – 50% complete – Q4
6) Linden Substation and Interconnection – 60% complete – Q4
7) Expand Columbia substation – 15% complete – Q4
8) Install three (3) 10MVAr automatic capacitor banks (69Kv) at Kingston substation – Complete Q4

Operations
1) Implement annual maintenance programme. – Q4
2) Implement technical loss reduction plan. – Q4
3) Interconnect five (5) feeders in Linden to new substation.
4) Develop and implement maintenance programme for all substations, protection and instrumentation assets and pad-mounted transformers.

3.3.5 2019

Management/Overall Coordination
1) Ensure budget reflects appropriate priorities and is implemented prudently.
2) Undertake quarterly review of achievements of all Divisions, CSS and OS&PT and take corrective action as necessary.
3) Manage all capital projects to ensure delivery on time and within budget.
4) Provide the environment necessary for key skills to be developed and retained.
5) Maintain ISO 9001 – 2008 Quality system certification.
6) Ensure communications are adequate and efficient and internal communications support achievement of CSS, OS&PT and keep stakeholders informed of pertinent developments while external communications inform relevant stakeholders of supply issues, major developments and tips on DSM.
7) Ensure objectives of Customer Services Charter are met.

Commercial
1) Ensure Customer Service Standards (CSS) and relevant Operating Standards & Performance Targets (OS&PT) are met consistently.
2) Actively promote electronic transactions.

3) Constantly review procedures to ensure customer service is optimized.
4) Provide active support to Legal and Loss Reduction to pursue outstanding balances.
5) Ensure objectives of Customer Services Charter are met.

Finance
1) Prepare annual budget in consultation with Management, Board and any Shareholder guidance.
2) Manage cash flows in accordance with budget and to optimize working capital.
3) Provide necessary support to secure funding for capital projects, where necessary.
4) Ensure timely completion of statutory financial reports.
5) Facilitate completion of annual audits to ensure Company meets its statutory obligations on time.
6) Complete procurement Plan and ensure efficient procurement process in compliance with Procurement Manual. Ensure PP and large Contracts, US$100k and above, are published on GPL's website.
7) Provide routine financial reports to all Divisions on a timely basis.
8) Ensure inventory levels are optimized and overall stores management is efficient.

I T
1) Optimize and maintain Local and Wide Area Network performance.
2) Manage Hardware and software infrastructure to ensure 99.9% system availability.
3) Optimize security and integrity of corporate systems
4) Provide support on GIS maintenance.
5) Provide appropriate support for Automatic Metering Infrastructure (AMI).
6) Provide support for SCADA operations and maintenance.
7) Update CIS from Client Server platform to a web based platform.

Loss Reduction
1) Replace 7,000 defective and tampered meters with AMI compatible meters.
2) Upgrade 10,000 electromechanical meters with AMI compatible meters
3) Meter 5,000 New Services
4) Upgrade 1,000 large Tariff A and B meters with AMI compatible meters.
5) Upgrade 6,000 meters in Linden with AMI.
6) Implement other elements of the Strategic Loss Reduction Plan (SLRP).
7) Continuously review the benefit of all initiatives to focus field activity.
8) Manage disconnection / reconnection activity prudently.
9) Investigate all reports of theft of company property.
10) In conjunction with the PR Unit, Coordinate Social Management Programme activities in

areas targeted for loss reduction investment.

HR/Admin
1) Continuously review employee attendance and staffing levels to determine appropriate actions to limit overtime cost.
2) Develop and implement a Strategic Training and Development Plan.
3) Develop and implement initiatives to boost employee's morale.
4) Complete right-sizing review in consultation with respective Divisions and implement approved plans.

Projects
1) Good Hope substation extension – Complete – Q3
2) Columbia substation extension – Q4
3) New transmission line Sophia to Good Hope – Complete Q3
4) New transmission line Good Hope to Columbia – Complete Q4

Operations
1. Develop and Implement annual maintenance plan for all generation, T&D and substation assets.
2. Implement technical loss reduction plan.
3. Develop and implement maintenance programme for all substations, protection and instrumentation assets and pad-mounted transformers.

3.4 Monitoring, Review and Management of Plan

GPL will review and revise its strategic plan, if necessary, semi-annually, based on reports presented by management to the Board of Directors and decisions of the Board. Management's detailed operating plans will be consistent with the strategic plan.

4. OPERATING STANDARDS AND PERFORMANCE TARGETS

Category	Analysis and Projections
Customer Interruptions	Targets for System Average Interruption Frequency Index (SAIFI) and System Average Interruption Duration Index (SAIDI) proposed for 2014 - 2018 are: SAIFI = Total Number of Customer Interruptions / Total Customers Served SAIDI = Total Customer Hours of Interruptions / Total Customers Served

	2015	2016	2017	2018	2019
SAIFI	85	75	68	65	60
SAIDI	95	90	85	80	70

Voltage Regulation	The nominal voltage and frequency levels are indicated in paragraph 3.6 of the Standard Terms & Conditions. GPL will seek to maintain, in stable conditions voltages, of ±5% of the nominal voltage and ± 10% following a system disturbance. Since it is difficult to monitor the voltage delivered to each customer the Standard is based on number of voltage complaints and the time taken to resolve them.

	2015	2016	2017	2018	2019
100% of customer voltage complaints due to network reconfiguration, vegetation, upgrade of lines, additional transformer, etc.	30 days	30 days	30 days	30 days	30 days

Category	Definition of Target
Meter Readings	**Large Consumers – Maximum Demand Consumers (Tariffs C & D)** Produce Ninety-Seven percent (97%) of Maximum Demand Bills based on actual meter readings **Domestic and Small Business Consumers (Tariffs A & B)** Produce Ninety percent (90%) of non Maximum Demand Bills based on actual meter readings.

	2015	2016	2017	2018	2019
MD Cons.	97%	97%	97%	97%	97%
Non MD	90%	90%	90%	90%	90%

Category	Definition of Target
Issuing of bills	Issue Non Maximum Demand Bills within ten (10) days of meter reading Issue Maximum Demand Bills within seven (7) days of meter reading

Days	2015	2016	2017	2018	2019
Non MD	10	10	10	10	10
MD	7	7	7	7	7

Category	Definition of Target

Category	Definition of Target					
Accounts Receivable	The status of GPL accounts receivable is stated in its audited annual financial statements. The quoted figures are net of provision for doubtful debts. Unlike the figures in the financial statements the receivables as per the billing system include GEC's receivables.					
	Net	**2015**	**2016**	**2017**	**2018**	**2019**
	Days	30	30	30	30	30
Accounts Payable	While most of GPL's Creditors offer 30 days credit some of the largest ones actually offer up to sixty days. The determination of this target is from the invoice date.					
		2015	**2016**	**2017**	**2018**	**2019**
	Days	26	26	26	26	26

Losses	The level of losses at Dec. 2014 is projected at 29.6% of dispatched power with technical losses estimated at 13.3% and non-technical at 16.3%. The total projected losses as a percent of dispatched power are included below, along with the forecasted split: The Company expects to achieve these targets at end of the respective years.					
		2015	**2016**	**2017**	**2018**	**2019**
	Technical (%)	13.30	13.10	12.90	12.60	12.60
	Non-Technical (%)	16.30	15.50	14.70	14.00	13.10
	Overall (%)	29.6	28.6	27.6	26.6	25.7
Average Availability	The Availability Target is based on the ratio of declared capacity and available hours to installed capacity and hours in the period. Availability = Available capacity x Total Available Hours / Installed capacity x Hours in the period					
		2015	**2016**	**2017**	**2018**	**2019**
	Availability	80%	80%	80%	80%	80%

5. DEVELOPMENT AND EXPANSION PROGRAMME 2015 - 2019

5.1 Demand Forecast

The demand forecast is premised on the median forecast done for the Amaila Falls hydro project. This forecast used an annual growth of 4.7 to 4.9%, except in 2019 when Linden consumers and 25% of the forecasted demand from self-generators were included from July 1st. GPL has modified the Mercados forecast between 2015 and 2019 to reflect a more accurate loss position, connection of new consumers every year and the other indicators explained below:

- **Natural growth**

GPL used Mercados' median forecast which forecasted natural growth of between 4.7 and 4.9% per year. The forecast for 2019 includes the demand in Linden for half of the year and 12.5% of the forecasted demand from all the major self generators in Demerara and eighty former (Pre-2003) large GPL customers.

- **New Customers**

Net customer growth over this planning period has been projected at 26,500. This includes additions from recently served areas, from new housing developments and another Un-served Areas Electrification Programme to benefit 4,200 consumers, to be implemented in 2015. Average monthly use of 90kWh has been estimated for each new customer.

With improved service quality and stable tariffs the customer base and demand will grow steadily.

- **Loss Reduction**

Progress in loss reduction and demand side management should result in reduced demand and increased sales. In the forecast, 40% of the recovery resulting from meter replacements and electricity theft and all the reductions resulting from billing errors are flowing to increased sales while the other 60% recovery from meter replacements and electricity theft and all the technical loss reduction will result in reduced demand. 5% of all technical loss reduction (0.095%) is projected to come from demand side management initiatives.

- **Tariff rebalancing**

It has been established that Tariff A is being subsidized by almost 33% and that Tariffs B, C, D and all Government tariffs are providing this cross-subsidy. With progress on loss reduction been projected for each year of the programme, GPL intends to use the additional cash flow to continue to invest in loss reduction and to ensure any reasonable escalation in fuel prices above the forecasted annual increases can be met without recourse to tariff increases.

It is intended however that when hydropower is available commercially (July 1st 2018), that a complete rebalancing will be done (actually all categories are expected to be reduced, but disproportionately) to reflect the actual economic tariff for each category. GPL will also, in 2019 (When commercial operation of the hydro commences) introduce a new tariff category; called a High Voltage Industrial (HVI) category, which will target users with a demand above 2.5 MVA.

- **Reduction in un-served energy**

A reduction in energy not served associated with generation shortfall and network unavailability. This will be achieved by having:

- Adequate reserve generation capacity to cater for planned maintenance and emergency repairs;

- More reliable distribution system, more localized fault isolation, faster identification and response to network faults and shorter repair times;

- Shorter feeders with multiple alternative feeds and enhanced maintenance planning and execution;

- **Reduction in parasitic power consumption**

The use of new generating plants for base-load operation would reduce the dependency on older plants using up to 5% (The new 36.3MW Kingston 11 Plant is using 1.5%) of their generation for auxiliaries.

The results of this forecast for the entire system are included in the table below.

Table 5.1.1: Projected Demand and Energy.

	2012	2013	2014	2015	2016	2017	2018	2019
Net Generation (MWH)	666,838	694,540	720,526	770,600	819,035	870,058	924,793	1,033,081
Sophia Aux. (MWH)	617	635	15	15	15	15	10	0
Converter losses (MWH)	4,209	3,925	-	-	-	-	-	-
Station Auxilary (MWH)	20,476	20,712	20,404	15,458	15,593	15,880	16,880	18,945
%	3	2.9	2.75	1.97	1.87	1.79	1.79	1.80
Gross generation	690,155	710,962	741,584	786,423	834,954	886,259	942,013	1,052,407
% Growth	5.6	2.98	4.31	6.05	6.17	6.14	6.29	11.72

Table 5.1.2: Regional Forecast

ESSEQUIBO	2014	2015	2016	2017	2018	2019
Net Energy	37,725	40,371	42,932	45,626	48,480	51,532
LF	0.67	0.67	0.67	0.67	0.67	0.67
Peak	6.73	7.20	7.50	7.85	8.34	8.87
Gross Energy	39,482	42,252	44,032	46,087	48,970	52,052
Aux use	4.45%	4.45%	2.50%	1.00%	1.00%	1.00%
DEMERARA	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Net Energy	566,198	605,528	643,571	683,647	726,790	822,683
Peak	85	89	94	98	103	115
LF	0.78	0.79	0.80	0.81	0.82	0.83
Sop. Aux Use & Converter Losses	15	15	15	15	15	15
Gross energy	584,031	617,901	656,720	697,614	741,637	839,487
Aux Use	3.05%	2.00%	2.00%	2.00%	2.00%	2.00%
BERBICE	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Net Energy	116,603	124,700	132,533	140,784	149,523	158,866
Peak	22	21	23	24	25	27
LF	0.62	0.68	0.68	0.68	0.68	0.68
Gross Energy	118,071	126,271	134,202	142,557	151,406	160,867
Aux use	1.24%	1.24%	1.24%	1.24%	1.24%	1.24%
Total	**741,584**	**786,423**	**834,954**	**886,259**	**942,013**	**1,052,407**

Table 5.1.3: 15-Year Forecast

Year	2014	2015	2016	2017	2018	2019	2020	2021
Growth	4.3072	6.0463	6.1711	6.1446	6.2910	11.7189	4.745	4.745
Gross Energy (MWH)	741,584	786,423	834,954	886,259	942,013	1,052,407	1,175,736	1,231,528
Year	2022	2023	2024	2025	2026	2027	2028	2027
Growth	4.779	4.779	4.779	4.779	4.779	4.779	4.779	4.779
Gross Energy (MWH)	1,290,385	1,352,054	1,416,671	1,484,376	1,555,317	1,629,649	1,707,532	1,789,138

The forecasted load factors are based on historical trends and the expectation of an accelerated growth in industrial demand, particularly when hydropower is available. The addition of Linden,

which has more residential Consumers, in 2019, to the national grid would cause a reduction in the overall load factor.

The DBIS peak demand is projected to grow to 148MW by 2019 while the Essequibo non-co-incident peak is forecasted to be 8.9MW. It should be noted that the Off-Grid demand informing the demand forecast for 2019 is adding 12MW to the peak.

5.2 Planned Retirements and Generation Expansion, DBIS

The formation of the DBIS (Demerara Berbice Interconnect System) in 2014 has allowed not only an optimum merit order dispatch to be derived from available generating capacity in the systems but also for reserve capacity to be shared thereby reducing both operating cost and capital expenditure. The integrated system coupled with the installation of new substations has improved system management, stability and overall reliability and service quality, particularly voltage regulation.

The criterion for reserve capacity used is the size of the two largest units, resulting in a reserve of 15.6MW (15MW is being used the plan below) in the DBIS. By July 1st, 2019, with the availability of 140MW of hydropower capacity, consisting of four (4) 51.6MVA turbines, GPL considers it more prudent not to use the two largest machine criteria to determine the reserve requirement but to use 50MW, as this would be adequate to power all the essential services and provide some basic level of supply (in addition to what can be dispatched from GuySuCo. Realistically, GPL will maintain all its generating capacity, where feasible.

Table 5.2.1: Capacity Forecast without Additions, DBIS

Existing Capacity, MW	2015	2016	2017	2018	2019
DEMERARA					
Garden of Eden Power Station	12.0	12.0	12.0	12.0	12.0
Demerara Power (Kingston 1)	22.0	22.0	22.0	22.0	22.0
Demerara Power, (Kingston 11)	36.3	36.3	36.3	36.3	36.3
Demerara Power 1 (GoE)	22.0	22.0	22.0	22.0	22.0
Vreed En Hoop Power Station	26.0	26.0	26.0	26.0	26.0
Mobile Units	6.0	6.0	6.0	6.0	6.0
Total Demerara	**124.3**	**124.3**	**124.3**	**124.3**	**124.3**
BERBICE	**2015**	**2016**	**2017**	**2018**	**2019**
Canefield					
No.3 Mirrlees Blackstone	4.5	4.5	4.5	4.5	4.5
IPP	8.0	8.0	8.0	8.0	8.0
Total Berbice	**12.5**	**12.5**	**12.5**	**12.5**	**12.5**
Total DBIS	**136.8**	**136.8**	**136.8**	**136.8**	**136.8**
Reserve Capacity	15.00	15.00	15.00	15.00	50.00
Net Capacity	**121.8**	**121.8**	**121.8**	**121.8**	**86.8**
Peak Demand	110.0	116.0	122.0	129.0	148.0
Excess (Shortfall)	**11.8**	**5.8**	**(0.2)**	**(7.2)**	**(61.2)**
Diesel Fired Capacity (DFC)	**18.0**	**18.0**	**18.0**	**18.0**	**18.0**

The forecast indicates that there is a need for 61.2MW of additional generating capacity by 2019, (Note that with hydro the reserve capacity has been increased to 50MW in 2019 and that peak has been projected to grow by 12MW due to self generators and Linden being served by GPL). The proposed addition is included in Table 4.2.2 below.

Table 5.2.2: Proposed Generation Addition, DBIS

Capacity Additions, MW	2015	2016	2017	2018	2019
Hydro IPP	-	-	-	-	140.0
Vreed-en-Hoop	0.0	-	-	-	-
Total New Additions	0.0	0.0	0	0	0
Total Accumulated Available new Capacity	0.0	0.0	0.0	0.0	140.0
Excess (Shortfall) – DBIS	11.8	5.8	(0.2)	(7.2)	78.8
Diesel Fired Capacity to be used for peak	18.0	18.0	18.0	18.0	18.0

The plan indicates that by 2018 GPL would have to use machines normally held in reserve to meet 7.2MW of the peak requirements.

With the integration of the Demerara and Berbice systems in 2014, no additional generating capacity is planned for the Berbice system. It is expected that GPL will contract Wartsila to undertake the O&M for the 10MW Wartsila capacity at the Skeldon plant and that GuySuCo will continue to improve the 30MW co-generation operation by further investments in plant improvement and Bagasse availability. The 5MW Mirrlees capacity at Canefield and transfers from Demerara (the link will be further reinforced by 2018) together with the improvements at Skeldon will adequately meet all generation needs until hydropower is available.

5.3 Essequibo Generation Expansion

Anna Regina: By Q3, 2016, it is proposed to complete a 5.2MW, 60Hz HFO fired Unit at Anna Regina while in Q4, 2017, frequency conversion of the existing two 2MW units is expected to be completed.

Wakenaam: In Q3, 2018 a 1.2MW HFO fired Unit is expected to be in commercial operation, which will reduce production cost by over 40%.

Bartica: In Q3 2016, the first phase of a new 5.1MW (3 x 1.7MW), HFO fired power plant should be commissioned at a new location (to deal with noise and pollution complaints from residents) to improve service and reduce production cost by at least 40%. By 2018, it is expected that a third additional 1.7MW, HFO fired Unit will be added to the plant. The generating Units will be the containerized types to allow easy installation.

5.4 Use of Renewable Sources of Energy

5.4.1 Co-generation

It is known that GPL has been receiving small amounts of power from the Skeldon cogeneration facility since 2008. The co-generation facility has experience severe operational challenges since it's commissioning but GuySuCo has been investing additional sums to correct design deficiencies and upgrade equipment. There is no doubt that all the difficulties would not be totally overcome

but certainly the reliability of the facility has improved significantly from its inception. The improvement in cane flow to allow sustained periods of operation is certainly a plus and this should get better. Unseasonal rainfall however continues to have a negative impact on harvesting and therefore, operations.

GuySuCo has investing in a baling machine to allow Bagasse to be transported from its other factories to Skeldon and expects to use trucks to transported cane that is mechanically harvested for the field to the factory. These initiatives will certainly boost the operations of the co-generation facility by improving Bagasse availability.

5.4.2 Hydropower

The 165MW Amaila Falls Hydroelectric Project is expected to achieve commercial operation by the end of June 2019 with a total of at least 140MW becoming available at the delivery points (Linden and Sophia). This project should provide a least 80% of all GPL's energy requirements by 2019 considering the guaranteed annual production of 1,037.5 GWh would have seven (7) months of sub-par output due to water availability.

Amaila's development has suffered a setback with the withdrawal of Sithe Global in September 2013 but the Government has assured that while it would continue to try to achieve political consensus in respect of the project and hopefully keep Sithe Global interested, it would look for other development partners just in case. GPL has been advised to assume that Amaila would still happen, but that financial close would be delayed until Q2 2015. It's being assumed that the construction period would still be about forty-two months.

The annual guaranteed energy is expected to be 1,037.5GWh. GPL will implement initiatives to develop the market to realize the best tariff as an annual cash flow has to be guaranteed to the IPP.

While it is critical that GPL employ initiatives to expand the market leading up to commercial operation of the hydro, such expansion has to be managed to ensure available thermal generation and network capacity remain adequate and the Company is not forced into expensive short term fixes.

5.5 PLANS TO MEET GENERATION NEEDS OVER 15-YEAR FORECAST

GPL's strategic long term generation plan is premised on the continued use of renewable sources of power to meet base-load generation needs. There continues to be interest in the development of a 25MW wind farm, grid scale PV farms and co-generation from biomass. While proposals have been submitted and reviewed for the wind farm, the project has not been able to progress to financial close. A number of preliminary proposals have been submitted for grid scale PV farms but the estimated selling price is still above GPL's current generation cost using HFO. As the infrastructure costs continue to fall, it is expected that proposals would become competitive. Guyana does have available biomass in the rice, sugar and forest products industries to co-generate up to 10MW of power close to the fuel source. While no serious proposal has been developed to date, there is an acceptable level of interest in this pursuit. It is not contemplated therefore that there would be any expansion of the Amaila project beyond 165MW when this capacity becomes inadequate; projected by 2022.

It would be recognized that the changes in global weather patterns would impact water availability for any hydropower development, both positively and negatively. GPL would therefore continue to maintain a minimum of 50MW of fossil fuel capacity to fill capacity gaps. Hydro will remain the main source of power generation over the next fifteen years.

5.6 GENERATION MAINTENANCE PLAN – 2015

5.6.1 GPL Owned – Wartsila Operated & Maintained

# 1DG GOE											
Date		15-Feb-15	30-Apr-15	18-May-15	3-Jul-15	18-Aug-15	3-Oct-15	18-Nov-15			
Expected R/H		163826	164826	165826	166826	167826	168826	169826			
Maint. Type		11000	12000	1000	2000	3000	4000	5000			
Duration (Hrs)		8	386	8	10	8	12	8			
# 2DG GOE											
Date			1-Mar-15	29-Mar-15	14-May-15	29-Jun-15	14-Aug-15	29-Sep-15	14-Nov-15	30-Dec-15	
Expected R/H			165368	166368	167368	168368	169368	170368	171368	172368	
Maint. Type			12000	1000	2000	3000	4000	5000	6000	7000	
Duration (Hrs)			386	8	10	8	12	8	10	8	
# 3DG GOE											
Date		8-Jan-15	23-Feb-15	10-Apr-15	26-May-15	11-Jul-15	26-Aug-15	11-Oct-15	26-Nov-15		
Expected R/H		22022.5	23022.5	24022.5	25022.5	26022.5	27022.5	28022.5	29022.5		
Maint. Type		10000	11000	24000	1000	2000	3000	4000	5000		
Duration (Hrs)		10	8	386	8	10	8	12	8		
# 4DG GOE											
Date		15-Jan-15	2-Mar-15	17-Apr-15	2-Jun-15	18-Jul-15	2-Sep-15	18-Oct-15	3-Dec-15		
Expected R/H		144060	145060	146060	147060	148060	149060	150060	151060		
Maint. Type		2000	3000	4000	5000	6000	7000	8000	9000		
Duration (Hrs)		10	8	12	8	10	8	12	8		
#1 DG Kin1											
Date			20-Jan-15	7-Mar-15	22-Apr-15	7-Jun-15	23-Jul-15	7-Sep-15	23-Oct-15	8-Dec-15	
Expected R/H			133458	134458	135458	136458	137458	138458	139458	140458	
Maint. Type			3000	4000	5000	6000	7000	8000	9000	10000	
Duration (Hrs)			8	12	8	10	8	12	8	10	
#2 DG Kin1											
Date			2-Apr-15	18-May-15	3-Jul-15	18-Aug-15	3-Oct-15	18-Nov-15			
Expected R/H			125751	126751	127751	128751	129751	130751			
Maint. Type			6000	7000	8000	9000	10000	11000			
Duration (Hrs)			10	8	12	8	10	8			
#3 DG Kin1											
Date	13-Jan-15	28-Feb-15	15-Apr-15	31-May-15	16-Jul-15	31-Aug-15	16-Oct-15	1-Dec-15			
Expected R/H	113112	114112	115112	116112	117112	118112	119112	120112			
Maint. Type	5000	6000	7000	8000	9000	10000	11000	60000			
Duration (Hrs)	8	10	8	10	8	10	8	336			
#4 DG Kin1											
Date	13-Jan-15	28-Feb-15	15-Apr-15	31-May-15	16-Jul-15	31-Aug-15	16-Oct-15	1-Dec-15			
Expected R/H	123452	124452	125452	126452	127452	128452	129452	130452			
Maint. Type	7000	8000	9000	10000	11000	12000	1000	2000			
Duration (Hrs)	8	12	8	10	8	336	8	10			
#1 DG Kin2											
Date			15-Jan-15	2-Mar-15	17-Apr-15	2-Jun-15	18-Jul-15	2-Sep-15	18-Oct-15	3-Dec-15	
Expected R/H			42945	43945	44945	45945	46945	47945	48945	49945	
Maint. Type			2000	1000	8000	1000	2000	1000	12000	1000	
Duration (Hrs)			8	6	12	6	8	6	336	6	
#2 DG Kin2											
Date			16-Jan-15	3-Mar-15	18-Apr-15	3-Jun-15	19-Jul-15	3-Sep-15	19-Oct-15	4-Dec-15	
Expected R/H			42149	43149	44149	45149	46149	47149	48149	49149	
Maint. Type			1000	2000	1000	8000	1000	2000	1000	12000	
Duration (Hrs)			6	8	6	12	6	8	6	336	
#3 DG Kin2											
Date			21-Mar-15	6-May-15	21-Jun-15	6-Aug-15	21-Sep-15	6-Nov-15	22-Dec-15		
Expected R/H			42764	43764	44764	45764	46764	47764	48764		
Maint. Type			2000	1000	8000	1000	2000	1000	12000		
Duration (Hrs)			8	6	12	6	8	6	336		
#4 DG Kin2											
Date	6-Jan-15	21-Feb-15	8-Apr-15	24-May-15	9-Jul-15	24-Aug-15	9-Oct-15	24-Nov-15			
Expected R/H	27260	28260	29260	30260	31260	32260	33260	34260			
Maint. Type	1000	4000	1000	2000	1000	8000	1000	2000			
Duration (Hrs)	6	10	6	8	6	12	6	8			
#5 DG Kin2											
Date	14-Jan-15	1-Mar-15	16-Apr-15	1-Jun-15	17-Jul-15	1-Sep-15	17-Oct-15	2-Dec-15			
Expected R/H	27719	28719	29719	30719	31719	32719	33719	34719			
Maint. Type	1000	4000	1000	2000	1000	8000	1000	2000			
Duration (Hrs)	6	10	6	8	6	12	6	8			

Vreed en Hoop Maintenance Plan 2015								
# 1DG								
Date	12-Nov-14	7-Jan-15	4-Mar-15	29-Apr-15	24-Jun-15	19-Aug-15	14-Oct-15	9-Dec-15
Expected R/H	1000	2000	3000	4000	5000	6000	7000	8000
Maint. Type	1000	2000	1000	4000	1000	2000	1000	8000
Duration (Hrs)	8	10	8	12	8	10	8	12
Booster Unit Overhaul								
# 2DG								
Date	14-Nov-14	9-Jan-15	6-Mar-15	1-May-15	26-Jun-15	21-Aug-15	16-Oct-15	11-Dec-15
Expected R/H	1000	2000	3000	4000	5000	6000	7000	8000
Maint. Type	1000	2000	1000	4000	1000	2000	1000	8000
Duration (Hrs)	8	10	8	12	8	10	8	12
Booster Unit Overhaul								
# 3DG								
Date	16-Nov-14	11-Jan-15	8-Mar-15	3-May-15	28-Jun-15	23-Aug-15	18-Oct-15	13-Dec-15
Expected R/H	1000	2000	3000	4000	5000	6000	7000	8000
Maint. Type	1000	2000	1000	4000	1000	2000	1000	8000
Duration (Hrs)	8	10	8	12	8	10	8	12
Booster Unit Overhaul								

5.6.2 GPL – Owned & Operated – Schedule of Major Services

5.6.2.1 Demerara

		January	February	March	April	May	June	July	August	September	October	November	December
No.1 CAT	Type Expected R/H Present Hours Remaining (Hrs)		Major Overhaul 17,627 Hours 17,596 Hours Over-Run										
No.2 CAT	Type Expected R/H Present Hours Remaining (Hrs)												Major Overhaul 23,892 Hours 18,492 Hours 5,400 Hours
No.6 CAT	Type Expected R/H Present Hours Remaining (Hrs)							Top Overhaul 19,999 Hours 18,095 Hours 1,904 Hours					
No.9 CAT	Type Expected R/H Present Hours Remaining (Hrs)												Top Overhaul 23,134 Hours 17,449 Hours 6,635 Hours
No.5 NIG	Type Expected R/H Present Hours Remaining (Hrs)				Major Overhaul								
No.6 NIG	Type Expected R/H Present Hours Remaining (Hrs)								Top Overhaul 86,863 Hours 83,790 Hours 2,893 Hours				
No.6GM	Type Expected R/H Present Hours Remaining (Hrs)						Top Overhaul 30,391 Hours 29,535 Hours 865 Hours						
No.7 GM	Type Expected R/H Present Hours Remaining (Hrs)	Overhaul Not likely during 2015											

5.6.2.2 Berbice

			January	February	March	April	May	June	July	August	September	October	November	December
C-FIELD	No.3 DG	Type Expected R/H Present Hours Remaining (Hrs)										Top Overhaul 129,400 Hours 123,364 Hours 6,036 Hours		
	No.10 CAT	Type Expected R/H Present Hours Remaining (Hrs)	Major O-haul Not likely during 2015											
	No.11 CAT	Type Expected R/H Present Hours Remaining (Hrs)							Top Overhaul 20,900 Hours 19,279 Hours 1,621 Hours					
	No.13 CAT	Type Expected R/H Present Hours Remaining (Hrs)	Top Overhaul Not likely during 2015											

5.6.2.3 Essequibo

Anna Regina Wartsila Units

			January	February	March	April	May	June	July	August	September	October	November	December
A-REGINA	No.1 DG	Type Expected R/H Present Hours Remaining (Hrs)								Top Overhaul 131,702 Hours 124,921 Hours 6,781 Hours				
	No.2 DG	Type Expected R/H Present Hours Remaining (Hrs)						Top Overhaul 130,927 Hours 124,663 Hours 6,261 Hours						
	No.3 CAT	Type Expected R/H Present Hours Remaining (Hrs)	Top Overhaul Not likely during 2015											
	No.4 CAT	Type Expected R/H Present Hours Remaining (Hrs)	Top Overhaul Not likely during 2015											

Wakenaam Power Station

			January	February	March	April	May	June	July	August	September	October	November	December
W-NAAM	No.1 CAT	Type Expected R/H Present Hours Remaining (Hrs)		Major O-haul 46,744 Hours 124,663 Hours 6,261 Hours										
	No.2CAT	Type Expected R/H Present Hours Remaining (Hrs)	Overhaul Not likely during 2015											
	No.3 CAT	Type Expected R/H Present Hours Remaining (Hrs)	Overhaul Not likely during 2015											

Leguan Power Station

			January	February	March	April	May	June	July	August	September	October	November	December
LEGUAN	No.1 CAT	Type Expected R/H Present Hours Remaining (Hrs)	Overhaul Not likely during 2015											
	No.2CAT	Type Expected R/H Present Hours Remaining (Hrs)	Overhaul Not likely during 2015											
	No.3 CAT	Type Expected R/H Present Hours Remaining (Hrs)	Overhaul Not likely during 2015											

Bartica Power Station

			January	February	March	April	May	June	July	August	September	October	November	December
BARTICA	No.6 CAT	Type Expected R/H Present Hours Remaining (Hrs)	Overhaul Not likely during 2016											
	No.9CAT	Type Expected R/H Present Hours Remaining (Hrs)							Major Overhaul 58016 Hours 61,155 Hours 3,139 Hours					
	No.10 CAT	Type Expected R/H Present Hours Remaining (Hrs)					Top Overhaul 6,922 Hours 12,506 Hours 5,584 Hours							

In 2015 GPL intends to discontinue generation operations at the Versailles and Onverwagt Power Plants. Serviceable equipment from these two locations will be consolidated at the Garden of Eden Power Plant. GPL will therefore only operate and maintain the Canefield Power Plant in Berbice and the Garden of Eden Power Plant in Demerara.

In Essequibo, three new 510Kva Caterpillar Units would be providing 24/7 service in Leguan while the existing 325 KVA Caterpillar Unit at Leguan will be moved to Wakenaam.

5.7 T&D Expansion and Modernization Plan

Expenditure over the life of this Programme on T&D expansion and modernization is expected to be US$93.65 million and will realize the following:

- Construction of 95Km of 69kV transmission links between:
  - Vreed-En-Hoop substation and new Canal No. 2 substation (10.5Km).
  - Edingburg substation and new Parika substation (16.5Km).
  - Garden-of-Eden substation and new substation at Linden Highway / Soesdyke junction (12.5Km).
  - Sophia and Kingston (new double circuit) (10Km total length).
  - Sophia to Good Hope to Columbia (second link totaling 39.5Km).
  - From Bamia to Linden (6Km).

- Completion of new 69/13.8 Kv substations at the following locations:
  - Parika (17MVA).
  - Canal No. 2 (17MVA)
  - Linden Highway/ Soesdyke Junction (17MVA)
  - Linden (50 MVA).
  - Williamsburg (17MVA)

- Expansion of the following substations:

    - Edingburg (Additional bay).
    - Vreed-En-Hoop (Additional bay).
    - Garden-of-Eden (Rebuild former L2 bay).
    - Kingston (Additional bay).
    - Sophia (Additional two bays).
    - Good Hope (Additional two bays).
    - Columbia (Additional bay).
    - No. 53 (Additional two bays).

- Replacement of power transformers as follows:
    - Two 16.7 MVA at Sophia substation.
    - Two 16.7MVA at GoE.
    - 16.7 MVA at No. 53 substation.

- Installation of automatic capacitor banks the following locations:

    - 20 MVAr at Columbia
    - 15 MVAr at Onverwagt
    - 25 MVAr at Canefield (13.8Kv)
    - 15 MVAr at No. 53 substation
    - 30 MVAr at Kingston (69Kv).

- Completion of the following, as part of a technical loss reduction investment plan:

    - Replacement of 93Km of service lines.
    - Extension of 54Km of MV network to serve new transformers.
    - Upgrade of 229Km of MV network, including load balancing.
    - Upgrade of 876Km of LV network, including load balancing.
    - Replacing 196 inefficient transformers.
    - Right sizing 181 underutilized transformers.
    - Installing 333 additional transformers.
    - Upgrading 75 transformers, including load balancing.
    - Installing 63,913 INSULINK on Customer service connections.
    - Upgrading and crimping 6,520 transformer LV drops.
    - Upgrading and crimping 3,449 MV jumpers and connections.
    - Upgrading and crimping 7,156 LV jumpers and connections.

- Expansion of the distribution network to accommodate potentially 4,200 new customers in Regions 2, 3, 4, 5, 6 and 7.
- Implementation of GIS, including collection of field data to populate the database.
- New power tools and articulated vehicles to build capacity, particularly in Demerara and Berbice.

The construction of new substations at Parika, Canal No.2, Linden Highway/ Soesdyke junction and Williamsburg would allow for new distribution feeders to be deployed in those geographic

areas to serve projected loads efficiently. The new substation in Linden would be required to distribute hydropower from Amaila falls to Linden and its environs.

The expansion of various substations are required to deploy new 69Kv transmission links, either to power the new substations or to reduce transmission losses and improve reliability (Sophia to Kingston and Sophia to Good Hope to Columbia).

Upgrade of various substations is necessary to meet projected demand on the respective substations while the replacement of five 16.7MVA power transformers is based on the failure of one of these at Canefield in July 2012 after 37 years in service and the fact that all are of the same age. GPL has commenced closer monitoring of the condition of these transformers using oil analysis (furan and dissolved gas analysis).

73% of overall losses (21.6% of 29.6%) are occurring in Region 4 and a few parts of Region 3. It is intended that these geographic areas be the focus of a concerted effort to upgrade the distribution network and the metering infrastructure to address losses. The Technical Loss Reduction Plan below details the activities, not only for the geographic areas of prime focus but other areas as well.

The cost of the proposed expansion of the T&D System is included in the following table:

Table 5.7: T&D Expansion Programme, Capital Cost – US$ '000

T&D Capital Investment Summary -US$'000	2015	2016	2017	2018	2019	Total
Transmission Lines	$ -	$ 4,688	$ 2,759	$ 2,808	$ 1,872	$ 12,128
Substations	$ 2,936	$ 13,122	$ 5,099	$ 5,929	$ 2,541	$ 29,626
Compensation	$ -	$ 1,782	$ 446	$ 891	$ -	$ 3,119
Distribution	$ 7,728	$ 12,104	$ 12,171	$ 4,515	$ 1,644	$ 38,162
Capacity building	$ 3,472	$ 1,840	$ 1,550	$ 1,170	$ 200	$ 8,232
Electrification	$ 1,575	$ -				$ 1,575
GIS	$ 15	$ 369	$ 423	$ -	$ -	$ 807
Total	$ 15,725	$ 33,905	$ 22,448	$ 15,313	$ 6,258	$ 93,648

GPL intends to award turnkey contracts for the construction of its transmission lines and substations while it would continue to award labor contracts for customer capital jobs. Local contractors were involved in the construction of the transmission lines under the Infrastructure Development Project but have only been involved in some civil works associated with the construction of the various substations.

GPL would continue to provide technical training to Contractor's personnel to improve their competence and validate their existing certification. This is necessary to ensure work is done to the standards specified in the Company's Construction Manual. The objectives of promoting private participation in the T&D activities of the Company are the following:

- Capital works can progress without compromising maintenance activities;
- Reduction of Capital Investments in specialized T&D tools and equipment.
- Significant resources can be concentrated during scheduled outages, this will:
  - Improve the reliability of the T&D system as the defects are corrected faster.
  - Reduce Energy not Served due to T&D faults and maintenance activities.
  - Improve SAIFI and SAIDI.

- Reduce maintenance cost.

Some of the main capital works that will be outsourced during the programme are the following:

- ❖ Rehabilitation of feeder backbone structures;
- ❖ Major network rehabilitation and system upgrades;
- ❖ Secondary network upgrade;
- ❖ Network expansion;
- ❖ Specific interventions targeting areas with high levels of emergency calls;
- ❖ Customer capital jobs;
- ❖ Vegetation management.

As a result of outsourcing these capital works, the Company will be able to find the resources to continuously upgrading the tools and equipment available to T&D crews to vastly improve productivity.

This will lead to the following benefits:

- Better training of remaining work force;
- Better equipped crews;
- Quicker responses to emergency calls;
- Improved efficiency.

The Company proposes to spend a total of US$6,592,126 over this programme, on T&D equipment and vehicles.

5.7.1 Network Maintenance Plan - 2015

TARGET INDICATOR		Total 2015				
		Q1	Q2	Q3	Q4	Total
POLE REPLACEMENT	PRI	289	404	303	243	**1239**
	SEC	499	481	414	417	**1811**
POLE PLUMBING	PRI	238	255	235	209	**937**
	SEC	251	223	232	290	**996**
POLE TREATMENT	PRI	1693	2025	1657	1414	**6789**
	SEC	2032	2035	1856	1720	**7643**
OLD POLE REMOVAL	PRI	269	404	290	256	**1219**
	SEC	470	479	393	417	**1759**
POLE STUBBING	PRI	203	129	148	123	**603**
	SEC	103	78	119	103	**403**
ANCHOR BLOCK REPLACEMENT	PRI	74	83	70	48	**275**
	SEC	77	60	69	76	**282**
GUY REPLACEMENT	PRI	102	107	71	52	**332**
	SEC	90	63	73	77	**303**
CHANGING DEFECTIVE CROSS ARM	PRI	330	430	305	317	**1382**
INSULATORS REPLACEMENT	PRI	338	414	346	344	**1442**
	SEC	251	235	271	243	**1000**
LINE HARDWARE TRANSFER	PRI	268	399	277	242	**1186**
	SEC	443	447	398	417	**1705**
LINE EXTENSION (KM)	PRI	1.58	1.1	0	0.4	**3.08**
	SEC	3.12	1.1	1	1.4	**6.62**
CONDUCTOR UPGRADE (KM)	PRI	3	3	1	1	**8**
	SEC	34.94	3.54	6.593	3.283	**48.36**
LINE RETENSION (KM)	PRI	19.86	20.9	12.73	13.64	**67.13**
	SEC	41.75	24.26	17.36	15.93	**99.29**
SERVICE LINE REPLACEMENT (m)	SEC	4842	4910	5477	5613	**20842**
INSTALLATION / REPLACEMENT (GAB)	PRI	11	12	7	6	**36**
INSTALLATION / REPLACEMENT (SPD)	PRI	10	15	3	0	**28**
INSTALLATION / REPLACEMENT RCO)	PRI	116	95	105	100	**416**
INSTALLATION / REPLACEMENT (PMCO)	SEC	189	160	156	165	**670**
TRANSFORMER MAINTENANCE	SEC	240	259	258	315	**1072**
INSTALLATION ADDITIONAL TRANSFORMERS	PRI	15	22	66	16	**119**
CAPICTOR BANK MAINTENANCE	PRI	5	4	4	2	**15**
JUMPER REPLACEMENT/SERVICING	PRI	372	371	320	276	**1339**
	SEC	365	362	343	409	**1479**
SERVICE CONNECTION @ CONSUMER	SEC	3556	3458	3730	3886	**14630**
INSTALLATION ADDITIONAL EARTHS	SEC	204	211	191	140	**746**
ROUTE CLEARING (KM)	PRI	39.63	51.81	41.81	27.63	**160.9**
	SEC	73.56	32.76	58.55	23.41	**188.3**
LINE INSPECTION (KM)	PRI	108.4	116.8	114	97.07	**436.3**
	SEC	135.2	128.4	133.5	104.4	**501.5**

The T&D maintenance programme is scoped to address known defects and defects reasonably expected to be uncovered in 2015. As mentioned before, outsourcing and investments to improved GPL's maintenance capacity and capability will serve to ensure that the targets are achieved.

In Demerara, network management is divided into four areas of control, Area Central is responsible for the network between Liliendaal and Rahaman's turn, South is responsible for the network south of Rahaman's turn, East is responsible for the network between Liliendaal and Bygeval (Mahaica) while West is responsible for the entire West Demerara.

West Berbice has responsibility for the network in west Berbice and upper East Coast, east of Bygeval. East Berbice has responsibility for the entire network in that area while the Essequibo office has responsibility for Essequibo Coast, Leguan, Wakenaam and Bartica.

In 2014, GPL established a Transmission Maintenance Unit which is based in Georgetown but has a presence in both east and west Berbice. This Unit is responsible for the maintenance of all transmission lines.

5.8 Loss Reduction

The sustained reduction of losses, both technical and non-technical, continues to be one of the key challenges facing the GPL. By the end of 2013 total losses (twelve-month rolling average of dispatched power less billed sales) was 30.9% and is projected to reduce to 29.6% by the end of 2014. The strategies which will be employed in our Loss Reduction programme are expected to reduce losses to at least 25.7% by the end of 2019.

5.8.1 Non-Technical Loss Reduction

Secure metering continues to be recognized as the key strategy to reduce non-technical losses and this Programme would employ Automatic Metering Infrastructure (AMI) technology to achieve this. GPL would use the knowledge gained in implementing a 2,000 meter pilot in Georgetown to inform its strategies as the technology is rolled out.

In an updated loss profiling of all feeders, it was found that 73% of overall losses (21.6% of the 30.9%) are accounted for in Region 4 and part of the West Bank (La Retrait to Free and Easy) and the West Coast (Edingburg to Roden Rust). There are just less than 82,000 consumers in this service area out of the Company's almost 177,000 total. This geographic area would therefore be focused on intently between 2015 and 2018 under the PUUP with all meters expected to be upgraded to AMI.

Over the life of this Programme over 102,000 AMI meters are expected to be installed. The single phase installations with be equipped with circuit breakers and a Customer Display Unit. The circuit breakers will allow remote disconnection and reconnection. GPL is still looking for a cost effective 15Kv class circuit breaker for its MD Customers.

AMI architecture engenders both upstream and downstream metering. The upstream metering is essentially a bulk meter that records the amount of power delivered to a geographic area while the downstream metering is actually Consumers' meters. Software is used to constantly compare power consumption recorded by the upstream and downstream meters and individual downstream meters to identify suspicious activity. This technology will greatly enhance GPL's capability to easily detect theft and therefore reduce losses.

The activities envisaged over the life of this Programme require a capital investment of US$35.4M and include:

- Installation of 102,230 AMI meters, including almost 99,000 single phase and 3,000 polyphase installations.
- Routine inspection of areas with new, reinforced networks to detect illegal connection efforts.
- Prosecution of all cases of illegal electricity extraction.
- Execution of a Social Management Programme to educate consumers on:
    - The threat to public safety from electricity theft.
    - Ways to reduce electricity consumption without impacting quality of life.
    - Impact on tariffs from electricity theft.
    - High level of resources that have to be directed to reduce theft.
    - The role they can play to influence a culture change.

5.8.2 Technical Loss Reduction

Investment in technical loss reduction will be US$83M over the life of this programme. The investment will address losses at the distribution level, within both the MV and LV network. An estimate of 0.7% reduction in technical losses is projected over the life of the programme. This could be considered a conservative estimate but must be viewed in light of growing demand. The US$41.8M investment in transmission lines and substations will also have loss reduction value and these have been included in the loss reduction estimate. It should be noted that new transmission lines, substations and an upgraded distribution network would improve supply quality which would have the effect of increasing demand. An increase in demand increases technical losses exponentially.

5.8.2.1 Distribution Upgrade Programme (Technical Loss Reduction Investment)

The distribution upgrade Programme shown below does not include the 830Km distribution upgrade to be completed under the PUUP but only the activities to be implemented by GPL's Networks Operations Department.

Activities		Quantity					
		2015	2016	2017	2018	2019	
							Total
SERVICE LINE REPLACEMENT (KM)		21	22	7	6	18	74
LINE EXTENSION (KM)	PRIM.	10	10	10	9	15	54
CONDUCTOR UPGRADE (KM)	PRIM.	6	6	11	8	7	38
	SEC.	77	50	11	10	35	183
REPLACING INEFFICIENT TRANSFORMERS		23	23	72	61	18	196
REPLACING UNDER UTILISED TRANSFORMERS		18	18	70	60	15	181
INSTALLING ADDITIONAL TRANSFORMERS)		55	57	98	85	39	333
REPLACING TRANSFORMERS (MV VOLTAGE UPGRADE) AND ASSOCIATED HARDWARE		75	0	0	0	0	75
SERVICE CONNECTION @ CONSUMER/INSTALLATION OF INSULINK		15593	11080	13960	8280	14000	62913
TRANSFORMER DROPS SERVICING/REPLACEMENT		394	486	1920	1520	2200	6520
JUMPER SERVICING/CRIMPING/REPLACEMENT	PRIM.	459	648	936	856	550	3449
	SEC.	1007	1348	2160	1440	1200	7156

Table: 5.8.3 Loss Reduction Projections

6 Operations

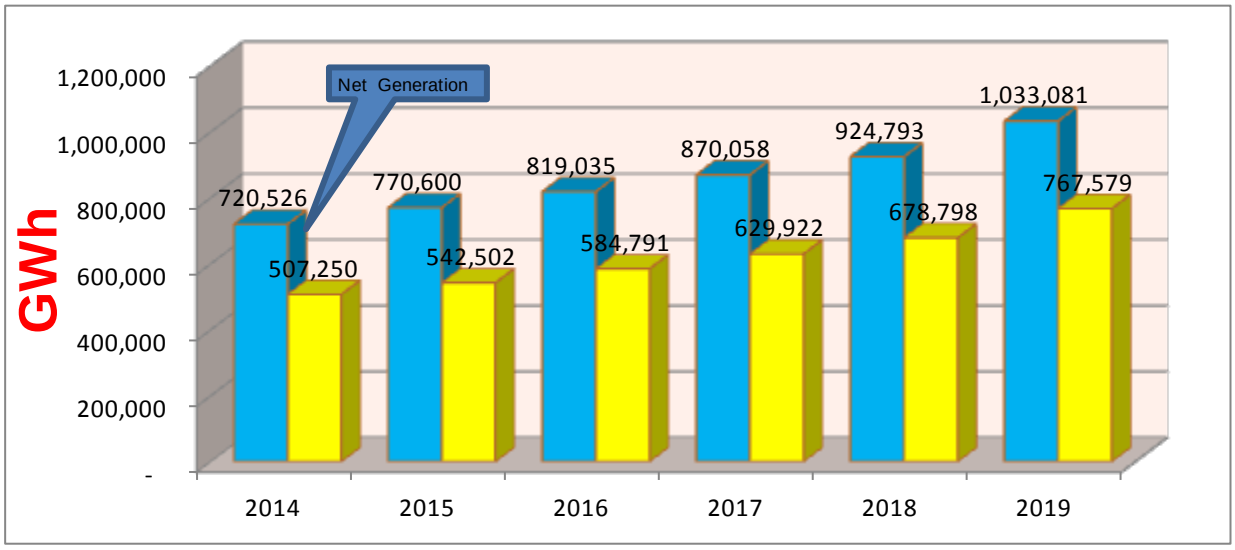
6.1 Sales and Revenue Collection

Sales growth from 2015 to 2019 shows an increase based on the expectation that losses will be brought down from 29.6% at the end of 2014 to 25.7% (3.9% reduction) by the end of 2019 and that 1.56% will translate fully into Sales, 26,500 new consumers will access GPL service and that normal growth will be between 4.7 and 4.9%.

It is projected that the customer base will increase from a projected 176,000 at the end of 2014 to around 202,500 by the end of 2019. The projected increase in the customer base is largely as a result of new connections in recently served areas and the planned electrification programme in 2015.

The active campaign to reduce Receivables will continue and a cash collection rate of 99.5% (cash collections as a percentage of sales) has been assumed for the life of the Programme. The target is based on 100% of Government and 99% of non-Government sales being collected.

Table 6.1 Net generation & Sales (GWh)



6.2 PLANS TO REGAIN INDUSTRIAL CUSTOMERS

There is no doubt that industrial consumers expect:

1. A reliable and efficient service.
2. Competitive tariff.
3. Power of acceptable quality and
4. Available capacity to meet their growing needs.

The investments in generation, transmission, sub-stations and loss reduction are all geared towards providing a quality, reliable, least cost service. GPL expects to rebalance its tariffs once power is commercially available from the hydro to remove the cross subsidy currently being provided by non-residential tariffs.

Before hydro, industrial consumers would be able to access power that is not only of higher quality but more reliable but the tariff reduction which many will be looking for would not come until 2019. GPL is not projecting to lose industrial consumers as the Government's has firmly taken a position to stabilize tariffs.

6.3 PLANS FOR PROVIDING ELECTRICITY FOR DEVELOPMENT AND REDEVELOPMENT PROJECTS IN URBAN AREAS

Georgetown - The frequency standardization project in Georgetown has resulted in increased feeder capacity because of the higher distribution voltage. The new Georgetown substation which came into commercial operation in May 2014 has made an additional eight (8) feeders available for service in Georgetown. The new 26MW power plant at Vreed-En-Hoop is positioned to deliver bulk power to Georgetown via 69Kv transmission.

New Amsterdam - New Amsterdam is served from Canefield and the completion of the interconnection between the Demerara and Berbice Interconnected Systems allows consumers in New Amsterdam to also access power from multiple sources. The two 13.8Kv feeders servicing the 2.8 MW peak load in New Amsterdam has capacity to accommodate a further 5.2MW.

Rose Hall - The new substation at Williamsburg (which is contiguous to Rose Hall) will provide a vastly improved quality of service for consumers in Rose Hall. The new feeders will allow GPL to meet growth in the Town for at least ten years.

Corriverton - Corriverton is being served by a feeder (AH1) emanating from GuySuCo's new Skeldon factory. This allows access to generation and network capacity that can potentially deliver 5MW. The current peak is 0.7MW for Consumers between No.76 Village and Moleson Creek. An alternative supply is also available from the No.53 Sub-station.

Through the life of this programme, the base-load generation needs of Berbice in general and its Towns in particular would be met from GuySuCo's Skeldon facility and from generation capacity in Demerara via the new transmission link.

Anna Regina - GPL's power plant on the Essequibo Coast is located at Anna Regina. In 2016 an additional 5.2MW Power Plant will be in commercial operation at the site. This Programme also provides for the frequency conversion of the existing 4MW capacity to 60Hz by 2017. This conversion would also entail an electrical upgrade of the plant and a replacement of the pneumatic suspension system. The 9.2MW that would therefore be available at Anna Regina would be reliable capacity, capable of meeting the needs of the Town in particular and the Coast in general, through the life of this Programme. The current peak demand on the Essequibo Coast is 4.6MW.

6.4 SUMMARY OF WORK PLAN

2015	2015
Generation	5MW HFO Unit for Anna Regina
	2x1.7MW HFO Units for Bartica
Substations	Williamsburg sub-station (17MVA)
	Extension & upgrade of No.53 Substation
Distribution	Distribution upgrade
DSM -	Demand Side Management , energy efficiency Initiative
Non Tec Loss Reduction	AMI upgrade (9,815 Minor meters)
	Replace 3,000 defective meters with AMI type
	MD & Large Tariff A and B AMI upgrade (1,000 Meters)
	AMI upgrade - Tampered meters (2,000 Minor meters)
	Public Education & Social Management Programme
Electrification	Provision of electricity to 4,200 potential consumers
New Services	6,000 new services
Buildings	New Vreed-En-Hoop Commercial and T&D Office
	New Williamsburg Commercial Office
	New Generation Office - Canefield
	Security Facilities
Capacity Building	Office Equipment, motor vehicles and computer hardware
	T&D Tools & Equipment
	Management Strengthening Programme
ICT	GIS Application and collection of field data
	implement a Document Management computerized System
	Procure and Implement a Human Resource and Payroll computerized System
	Procure, install and configure a modern PABX to support the consolidation of the Emergency and Customer Call Centres
	Extend Fibre from ADSS Backbone in East Bank Berbice to GPL Locations
	Oracle Business Intelligence Tool

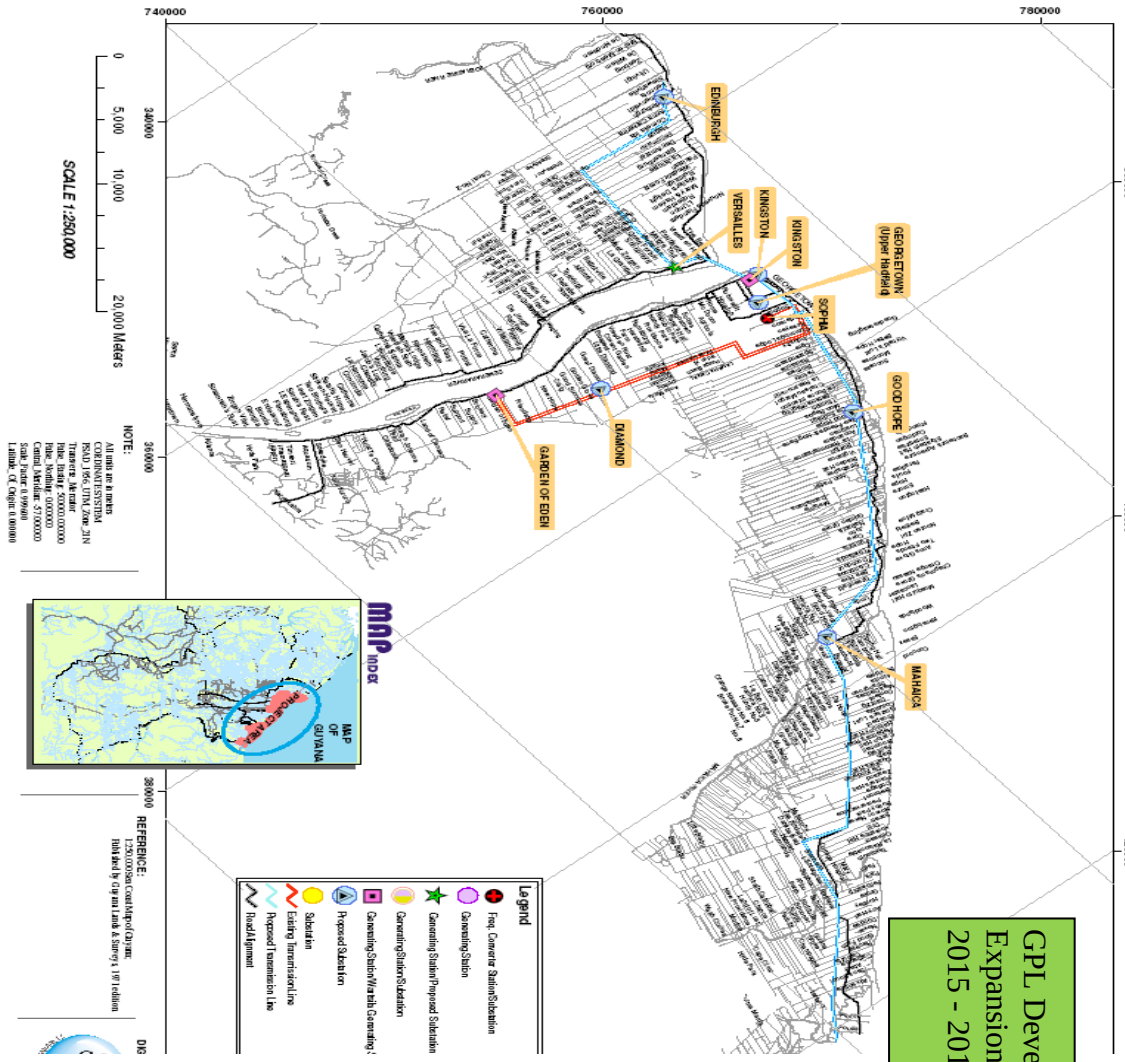
2016	2016
Generation	5MW HFO Unit for Anna Regina
	2 x 1.7MW HFO Units for Bartica
	60Hz Frequency conversion Anna Regina 4MW 50Hz Plant
Transmission Lines	Vreed-En-Hoop to Canal No. 2 extension
	Edingburg to Parika extension (18Km)
	GoE to Linden Highway Junction.
	New transmission line - Kingston - Sophia (Double cct. on steel towers)
Substations	Canal No.2 17MVA Substation
	Extend Vreed - En - Hoop Substation
	GoE Substation - Rebuild Former L2 Bay
	GOE Substation - Upgrade 17MVA transformer to 35MVA
	Linden Highway Junction 17MVA substation
	Replace 2 old 16.7MVA transformers, one each at No. 53 and Sophia Substations
	Extend Edingburg Substation
	Parika 17MVA Substation
	Williamsburg sub-station
	Extension & upgrade of No.53 Substation
	Expand Kingston sub-station
	Expand Sophia sub-station (2 bays)
SCADA	Expansion to old switchgear and distribution
Distribution	Distribution upgrade
Compensation	20 MVAr Capacitor Bank - Columbia (69Kv)
	15 MVAr Capacitor Bank - Onverwagt (69Kv)
	25 MVAr Capacitor Bank - Canefield (69Kv)
	15 MVAr Capacitor Bank - No. 53 Substation (69Kv)
DSM	Demand Side Management
Non Tec Loss Reduction	AMI Upgrade (20,882 Minor meters)
	Replace 3,000 defective meters with AMI type
	MD & Large Tariff A and B AMI upgrade (1,000 Meters)
	AMI upgrade - Tampered meters (2,000 Minor meters)
	Public Education & Social Management Programme
New Services	5,500 new services
Buildings	New T&D Building New Amsterdam
	New Building Middle Street
Capacity Building	T&D Tools and special equipment
	Management Strengthening Programme
	Office Equipment, motor vehicles and computer hardware
ICT	GIS Phase 11
	Procure and Implement a Computerized Maintenance Management System (CMMS)
	Procure and Install a video conferencing system
	Procure and Implement a Vehicle Tracking system
	Procure and implement an Asset Management System
	Oracle Business Intelligence Tool

2017	2017
Generation	Frequency conversion Anna Regina 4MW 50Hz Plant
	1.2MW HFO Unit - Wakenaam
Transmission Lines	Vreed-En-Hoop to Canal No. 2 extension
	Edingburg to Parika extension
	GoE to Linden Highway Junction.
	New transmission line - Kingston - Sophia (Double cct. on steel towers)
Substation	Replace 2 old 16.7MVA transformers with 17MVA Units, one each at Sophia and GoE
	Canal No.2 17MVA Substation
	Extend Vreed - En - Hoop Substation
	GoE Substation - Rebuild Former L2 Bay
	Linden Highway Junction 17MVA substation
	Extend Edingburg Substation
	Parika 17MVA Substation
	Expand Kingston sub-station
	Expand Sophia sub-station (2 bays)
Distribution	Distribution upgrade
Compensation	20 MVAr Capacitor Bank - Columbia (69Kv)
	15 MVAr Capacitor Bank - Onverwagt (69Kv)
	25 MVAr Capacitor Bank - Canefield (69Kv)
	15 MVAr Capacitor Bank - No. 53 Substation (69Kv)
DSM	DSM - Demand Side Management
Non Tec Loss Reduction	AMI Upgrade (21,560 Minor meters)
	Replace 3,000 defective meters with AMI type
	MD & Large Tariff A and B AMI upgrade (1,000 Meters)
	AMI upgrade - Tampered meters (2,000 Minor meters)
	Public Education & Social Management Programme
New Services	5,000 new services
Building	Complete new building Middle Street
	New T&D Building New Amsterdam
Capacity Building	Management Strengthening Programme
	T&D Tools & Equipment
	Office Equipment, motor vehicles and computer hardware
SCADA	Distribution and AGC
ICT	Procure, install and configure reputable Business Intelligence (BI) software.
	Upgrade Corporate Relational Database Manangement System from Standard to Enterprise
	GIS (Phase 111)

2018	2018
Generation	1.2MW HFO Unit - Wakenaam
	1.7MW HFO Unit for Bartica
Transmission	New transmission line - Sophia - Good Hope
	New transmission line - Good Hope - Columbia
Substations	Linden Substation & inteconnection
	Extend Good Hope Substation (2 bays)
	Extend Columbia Substation
Distribution	Distribution upgrade
Compensation	3 x 10MVAr capacitor bank - Kingston (69Kv)
Non Tec Loss Reduction	AMI Upgrade (7,973 Minor meters)
	Replace 3,000 defective meters with AMI type
	MD & Large Tariff A and B AMI upgrade (1,000 Meters)
	AMI upgrade - Tampered meters (2,000 Minor meters)
	Public Education & Social Management Programme
New Services	5,000 new services
Capacity Building	Management Strengthening Programme
	T&D Tools and special equipment
	Office Equipment, motor vehicles and computer hardware

2019	2019
Transmission	New transmission line - Sophia - Good Hope
	New transmission line - Good Hope - Columbia
Non Tec Loss Reduction	AMI Upgrade (10,000 Minor meters)
	Replace 5,000 defective meters with AMI type
	MD & Large Tariff A and B AMI upgrade (1,000 Meters)
	AMI upgrade - Tampered meters (2,000 Minor meters)
	Public Education & Social Management Programme
New Services	5,000 new services
Substations	Extend Good Hope Substation (2 bays)
	Extend Columbia Substation (1 bay)
	Linden Substation & inteconnection
Distribution	Distribution upgrade
ICT	Upgrade Customer Information System (CIS) from a Client Server platform to a Web Based platform
Capacity Building	Office Equipment, motor vehicles and computer hardware

6.5 Geographic Representation of Transmission Facilities - Demerara



GPL Development & Expansion Programme 2015 - 2019

7 OPERATING COSTS AND CAPITAL EXPENDITURES

7.1 Accounts Summaries

Table 7.1: Profit & Loss Account

	Yr 2014	Yr 2015	Yr 2016	Yr 2017	Yr 2018	Yr 2019
	G$'000	G$'000	G$'000	G$'000	G$'000	G$'000
OPERATING REVENUE						
Sales	31,168,247	34,298,145	37,064,114	40,053,776	43,307,916	42,206,790
GoG Subsidy						
Miscellaneous Income	572,783	584,239	595,923	607,842	619,999	632,399
	31,741,030	**34,882,384**	**37,660,037**	**40,661,618**	**43,927,914**	**42,839,189**
OPERATING COSTS						
Generation Expenses						
Fuel	22,904,259	23,635,843	25,481,772	27,954,696	30,741,282	18,239,534
Operations & Maintenance contract	1,874,931	2,390,489	2,583,270	2,791,641	3,018,446	1,470,850
Repairs & Maintenance	493,557	670,462	697,280	725,172	754,179	784,346
Purchased Power	335,850	254,621	370,138	377,540	385,091	11,611,688
Rental of Equipment	262,757	-	-	-	-	-
	25,871,354	**26,951,415**	**29,132,459**	**31,849,049**	**34,898,998**	**32,106,418**
GROSS INCOME	**5,869,676**	**7,930,969**	**8,527,578**	**8,812,569**	**9,028,917**	**10,732,771**
Other Expenses						
Employment costs	2,977,061	3,144,752	3,270,542	3,401,364	3,537,418	3,678,915
IDB Institutional strengthening Loan (OPEX)		391,236	794,180	633,966	636,885	454,622
T&D Repairs and Maintenance	188,378	531,593	552,857	574,971	597,970	621,889
Depreciation + Amortization	2,894,607	4,171,793	4,925,123	5,547,456	6,005,476	6,294,058
Administration	1,403,754	1,774,987	1,845,986	1,919,826	1,996,619	2,076,484
Rates & Taxes	32,000	42,000	43,680	45,427	47,244	49,134
Bad debts	146,543	168,003	463,301	500,672	541,349	527,585
Loss on Exchange						
PUC Assessment & Licence	50,099	51,000	51,000	51,000	51,000	51,000
	7,692,442	**10,275,364**	**11,946,670**	**12,674,682**	**13,413,961**	**13,753,686**
Total Operating Costs	***33,563,796***	**37,226,779**	**41,079,129**	**44,523,731**	**48,312,958**	**45,860,104**
Operating Profit/(Loss)	**(1,822,766)**	**(2,344,396)**	**(3,419,092)**	**(3,862,113)**	**(4,385,044)**	**(3,020,914)**
Finance Charges						
Interest	475,839	-	-	-	-	-
Net profit before taxation	(2,298,605)	(2,344,396)	(3,419,092)	(3,862,113)	(4,385,044)	(3,020,914)
Taxation	87,000	320,218	379,611	410,570	425,149	471,569
Net profit/(loss) after taxation	**(2,385,605)**	**(2,664,614)**	**(3,798,703)**	**(4,272,683)**	**(4,810,193)**	**(3,492,483)**
Remeasurement of defined benefit						
Related Tax						
	-					
Net Comprehensive Loss	**(2,385,605)**	**(2,664,614)**	**(3,798,703)**	**(4,272,683)**	**(4,810,193)**	**(3,492,483)**
Accumulated deficit b/f	**(15,600,863)**	(17,986,468)	(20,651,082)	(24,449,784)	(28,722,467)	(33,532,660)
ACCUMULATED DEFICIT C/F	**(17,986,468)**	**(20,651,082)**	**(24,449,784)**	**(28,722,467)**	**(33,532,660)**	**(37,025,144)**

In accordance with GPL's Licence the Shareholder is entitled to a target rate of return on equity of 8% per annum.

Table 7.2: Cash Flow Statement

	Yr 2014	Yr 2015	Yr 2016	Yr 2017	Yr 2018	Yr 2019
	$'000	$'000	$'000	$'000	$'000	$'000
Cash flows from operating activities						
Net comprehensive loss before taxation	**(2,298,605)**	**(2,344,396)**	**(3,419,092)**	**(3,862,113)**	**(4,385,044)**	**(3,020,914)**
Adjustments for:						
Depreciation & Amortization	2,894,607	4,171,793	4,925,123	5,547,456	6,005,476	6,294,058
Deferred Income	7,753	5,448	5,180	4,911	4,899	4,829
Defined pension benefit liability	-	(188,060)	(188,060)	(188,060)	(188,060)	(188,060)
Interest expense	475,839	-	-	-	-	-
Amortisation of customer finance project	(429,587)	(438,179)	(446,943)	(455,881)	(464,999)	(474,299)
Gain on remeasurment of pension liability	-					
	2,948,612	**3,551,003**	**4,295,300**	**4,908,425**	**5,357,316**	**5,636,528**
Operating profit/(loss) before working capital chan	**650,007**	**1,206,607**	**876,208**	**1,046,312**	**972,272**	**2,615,613**
Working capital changes						
Receivables	678,296	(44,007)	(341,010)	(368,588)	(401,195)	135,755
Inventories	1,081,869	(220,109)	(231,115)	(242,670)	(254,804)	(267,544)
Payables	364,099	(2,095,003)	160,154	113,005	140,423	(102,851)
Related parties -Payables	(1,945,323)	-	-	-	-	-
Related Parties - Receivable	769,599	(137,120)	(129,862)	(122,460)	(114,909)	(253,850)
	948,540	**(2,496,240)**	**(541,832)**	**(620,714)**	**(630,485)**	**(488,489)**
Net cash outflow from operating activities	**1,598,547**	**(1,289,633)**	**334,376**	**425,598**	**341,786**	**2,127,124**
Cash flow from investing activities						
Purchase of fixed assets	(5,928,234)	(6,790,719)	(11,257,001)	(8,094,480)	(6,573,338)	(3,929,443)
Interest capitalised		-	-	-	-	-
Increase in deposit	-	47,131	-	-	-	-
Net cash outflow from investing activities	(5,928,234)	(6,743,588)	(11,257,001)	(8,094,480)	(6,573,338)	(3,929,443)
Cash flow from financing activities						
Non-current related parties	(29,449,631)	-	-	-	-	-
Net movement in loans	(25,927)	-	-	-	-	-
Taxation	(33,774)	(347,048)	(351,368)	(380,350)	(392,814)	(436,970)
Conversion of Debt to Equity	32,722,300					
New Equity in the year		6,810,361	11,257,001	8,094,480	6,573,338	3,929,443
Interest paid	(475,839)	-	-	-	-	-
Customer deposits	81,084	89,471	93,945	98,642	103,574	108,753
Customer financed projects	127,236	150,000	150,000	150,000	150,000	150,000
Net cash inflow from financing activities	**2,945,449**	6,702,784	11,149,578	7,962,773	6,434,099	3,751,227
Net increase in cash and cash equivalents	(1,384,238)	(1,330,436)	226,953	293,891	202,547	1,948,907
Cash and cash equivalents - January 1	2,403,987	1,019,749	(310,687)	(83,734)	210,157	412,704
Cash and cash equivalents - December 31	1,019,749	(310,687)	(83,734)	210,157	412,704	2,361,611
Represented By:						
Cash on hand and at bank	1,019,749	-	-	210,157	412,704	2,361,611
Bank overdraft	-	(310,687)	(83,734)	-	-	-
	1,019,749	(310,687)	(83,734)	210,157	412,704	2,361,611

8. PROJECTED CAPITAL EXPENDITURE

It should be noted that the projected capital expenditure does not include interest but the financial statements above does.

Table 8.1: Summary of Capital Expenditure, US$

Summary of Capital Expenditure (US$)						
	2015	2016	2017	2018	2019	Total
Generation	$ 9,590,000	$ 5,055,000	$ 2,184,000	$ 3,556,000		$ 20,385,000
Transmission Lines	$ -	$ 4,688,200	$ 2,758,800	$ 2,808,300	$ 1,872,200	$ 12,127,500
Substations	$ 2,935,625	$ 13,121,625	$ 5,098,500	$ 5,929,000	$ 2,541,000	$ 29,625,750
Compensation (69Kv)	$ -	$ 1,782,000	$ 445,500	$ 891,000	$ -	$ 3,118,500
Distribution	$ 7,727,559	$ 12,103,917	$ 12,171,410	$ 4,514,733	$ 1,644,469	$ 38,162,088
DSM	$ 145,000	$ 320,000	$ 255,000	$ -	$ -	$ 720,000
Non-Technical Loss Reduction	$ 5,035,857	$ 8,664,200	$ 9,264,780	$ 4,903,319	$ 7,492,990	$ 35,361,146
New services	$ 730,714	$ 1,512,500	$ 1,375,000	$ 1,375,000	$ 1,500,000	$ 6,493,214
Buildings	$ 390,000	$ 1,624,000	$ 1,016,000	0	0	$ 3,030,000
Capacity building	$ 4,782,126	$ 4,540,000	$ 4,550,000	$ 3,576,000	$ 700,000	$ 18,148,126
Electrification	$ 1,575,000		$ -	$ -	0	$ 1,575,000
IT & GIS	$ 357,517	$ 789,000	$ 862,400	$ -	$400,000	$ 2,408,917
SCADA	$ -	$ 840,000	$ 560,000			$ 1,400,000
Total	**$ 33,269,398**	**$ 55,040,442**	**$ 40,541,390**	**$ 27,553,352**	**$ 16,150,659**	**$ 172,555,241**

Table 8.2: Summary of Capital Expenditure, G$M

Guyana Dollar (Millions)	2015	2016	2017	2018	2019	
Exchange Rate	210	212	214	216	218	Total
Generation	$ 2,014	$ 1,072	$ 467	$ 768	$ -	$ 4,321
Transmission Lines	$ -	$ 994	$ 590	$ 607	$ 408	$ 2,599
Substations	$ 616	$ 2,782	$ 1,091	$ 1,281	$ 554	$ 6,324
Compensation	$ -	$ 378	$ 95	$ 192	$ -	$ 666
Distribution	$ 1,623	$ 2,566	$ 2,605	$ 975	$ 358	$ 8,127
DSM	$ 30	$ 68	$ 55	$ -	$ -	$ 153
Non- Technical Loss Reduction	$ 1,058	$ 1,837	$ 1,983	$ 1,059	$ 1,633	$ 7,570
New services	$ 153	$ 321	$ 294	$ 297	$ 327	$ 1,392
Buildings	$ 82	$ 344	$ 217	$ -	$ -	$ 644
Capacity building	$ 1,004	$ 962	$ 974	$ 772	$ 153	$ 3,865
Electrification	$ 331	$ -	$ -	$ -	$ -	$ 331
IT & GIS	$ 75	$ 167	$ 185	$ -	$ 87	$ 514
SCADA	$ -	$ 178	$ 120	$ -	$ -	$ 298
Total	**$ 6,987**	**$ 11,669**	**$ 8,676**	**$ 5,952**	**$ 3,521**	**$ 36,803**

9 FUNDING

9.1 Sources of Funding

Funding over the next five years will come primarily from equity contributions and grant. The funds coming the IADB would be via concessional loans which would then be converted to equity. The table below summarizes the sources and amounts of funding.

Table 9.1: Summary and Sources of Funding US$

Source of Funding (US$)	GPL	Equity	EU	IDB	GOG	Total
Generation	$ -	$ 20,385,000				$ 20,385,000
Transmission Lines	$ -	$ 12,127,500				$ 12,127,500
Substations	$ -	$ 29,625,750				$ 29,625,750
Compensation	0	$ 3,118,500				$ 3,118,500
Distribution Upgrade		$ 10,112,088	$ 13,435,000	$ 14,615,000		$ 38,162,088
DSM	$ 720,000	$ -		$ -		$ 720,000
Non- Technical Loss Reduction	$ 250,000	$ 18,661,145	$ 8,660,776	$ 7,789,225		$ 35,361,146
New services	$ 6,493,214	$ -				$ 6,493,214
Buildings	$ 3,030,000	$ -				$ 3,030,000
Capacity building	$ -	$ 10,942,126	$ 7,206,000.0			$ 18,148,126
Electrification	$ -				$ 1,575,000	$ 1,575,000
SCADA	$ -	$ 1,400,000				$ 1,400,000
IT& GIS	$ 1,616,517	$ 792,400		$ -		$ 2,408,917
Total	**$ 12,109,731**	**$ 107,164,509**	**$ 29,301,776**	**$ 22,404,225**	**$ 1,575,000**	**$ 172,555,241**
Percentage of overall expenditure	7%	62%	17%	13%	1%	

In 2015, all the Company's debt is expected to be converted to equity. This approach would be taken over the life of this D&E Programme.

Table 9.2 Debt / Equity Ratio

Year	Debt	Equity
2015	0%	100%
2016	0%	100%
2017	0%	100%
2018	0%	100%
2019	0%	100%

It should be noted that accrued losses have not been included in the formula to determine the Debt / Equity ratio. This is because the losses are as a result of GPL not implementing tariff increases allowed by the Licence. This is accumulated as foregone revenue which GPL can collect in the future by invoking it as a notional expense.

10. TARIFF TRENDS AND TARIFF REBALANCING

Tariff rebalancing is recognized as necessary in order for GPL grown its industrial customer category, specifically by attracting back former industrial consumers who operate the vast majority of self-generation capacity. An IADB financed tariff study done in 2010 confirmed that Tariff A is being subsidized by the other tariff categories to the tune of 33%. No tariff rebalancing will be done until Q2 of 2019, when hydropower is expected to be commercially available. At this time, complete tariff rebalancing will be done by disproportionately reducing all tariffs. Based on a marginal cost approach, the study indicates that Tariff A should be increased by 25% while Tariffs B, C and D should be reduced by 17%, 17% and 29% respectively.

In keeping with the recommendation of the tariff study, a new industrial tariff would be introduced in July, 2019 (Tariff F) for consumers using 2.5MVA and above.

The tariff rebalancing forecast is presented below and its sustainability is premised on:

- The projected loss reduction targets being achieved;
- Fuel prices not escalating significantly above forecasted annual increases.
- Exchange rates not materially exceeding the projected rates
- Hydro achieves commercial operation in Q2 2019.
- GPL expanding the market to maximize dispatch from the hydro.

The forecasted tariff rebalancing plan is premised on GPL tariffs at December 31st 2014 and reflects the recommendations from the tariff study, financed by the IADB in 2010. It should be noted that no tariff increases are forecasted except in Q3 2019 when hydropower is available.

Table 10.1 Tariff rebalancing plan

Average Selling Price - G$/kWh							
						Yr 2019	
	Yr 2014	Yr 2015	Yr 2016	Yr 2017	Yr 2018	1st Half	2nd Half
Tariff							
A	54.27	54.27	54.27	54.27	54.27	54.27	43.42
A	55.89	55.89	55.89	55.89	55.89	55.89	44.71
B	74.95	74.95	74.95	74.95	74.95	74.95	59.96
C	72.96	72.96	72.96	72.96	72.96	72.96	47.42
D	67.90	67.90	67.90	67.90	67.90	67.90	44.14
E	53.35	53.35	53.35	53.35	53.35	53.35	34.68
F							35.00
GA	51.25	51.25	51.25	51.25	51.25	51.25	43.42
GA	56.09	56.09	56.09	56.09	56.09	56.09	44.71
GB	74.02	74.02	74.02	74.02	74.02	74.02	59.96
GC	71.93	71.93	71.93	71.93	71.93	71.93	47.42
GD	69.10	69.10	69.10	69.10	69.10	69.10	44.14
GE	55.67	55.67	55.67	55.67	55.67	55.67	34.68

The advent of hydropower in 2019 would allow for Government tariffs to be aligned (reduced) with the corresponding non-Government tariff category. It would also provide opportunities for industrial tariffs C and D to be set at points which would attract large companies back to the grid with a price below their projected self generation cost.

11. DEMAND SIDE MANAGEMENT (DSM)

Demand Side Management (DSM) is the implementation of policies and measures which serve to control, influence and generally reduce electricity demand. DSM has been pursued internationally over the last two decades as an initiative to reduce demand growth while leveraging advantages to both Utilities and Consumers. It is recognized as a major solution in the fight against climate change and significant investment is being made by developed countries. In Guyana, it would support the Government's Low Carbon Development Strategy while allowing GPL to forego investments in generation and T&D.

DSM relies essentially on two pillars, behavioral change and technological intervention (Energy Efficiency). GPL has set the following objectives for DSM:

1. Education of customers to ensure electricity use is managed prudently, i.e. basic tips are employed routinely in the home, factory or office.
2. Ensure that various categories of customers are aware of the energy efficient appliances they can utilize and other technological investments that can reduce energy consumption.
3. The average school child is knowledgeable of what can be done to reduce electricity wastage.
4. Energy efficient appliances are more common on the local market.
5. More Customers are purchasing energy efficient appliances compared to those of traditional design.

The following are some of the initiatives that will be employed in the pursuance of DSM objectives.

- Continuing to provide information to consumers via flyers, radio, television and printed media regarding energy management and efficient use of electricity.
- Utilizing our Social Management Programmes to encourage more dialogue on DSM and energy efficiency (EE).
- Making the secondary school debating competition which focuses on energy efficiency and behavioral change and their impact on electricity use, an annual event.
- Continuing to interact with consumers and the public at large at trade fairs country-wide and discussing ways to use electricity efficiently.
- Working with the GEA on the public education campaign to encourage use of energy star rated appliances.
- Develop a street lighting standard, implement an energy efficient street lighting pilot project and develop a database to capture information that would facilitate future interventions.
- Introduce and expand the use of AMI to provide more consumers with the technology to inform more prudent use of power.
- GPL will develop a database, providing grant financing is available, and begin to populate it with the following information:

a) End-use equipment for consumers by tariff category -
    i) Power demand
    ii) Type of design – Energy efficient or traditional
    iii) Year of manufacture
    iv) Typical hours of use
    v) Operating Power Factor (where applicable)

b) Energy efficient equipment available on the market –

    1) Manufacturer, specifications, construction standard, energy consumption and guarantees.
    2) Prices and availability including names and addresses of local and Regional distributors.

c) Energy Efficiency Consultants / Service Providers available in the Region –

    1. Names and contact information.

2. Experience and availability

11.1 BENEFITS OF DSM

Demand Side Management is now universally accepted as an effective tool in countering unbridled demand growth. Since third world countries have the greatest potential for growth, DSM initiatives can derive multiple benefits including:

a) Deferral of investments in generation and networks.
b) Reduction in Technical losses.
c) Improvement in network reliability due to reduce load and associated failures.
d) Social benefits as Consumers can improve their standard of living and more can afford service if they can use power more efficiently.
e) Reduction of greenhouse gas emissions.

With the Guyana Energy Agency leading the national effort on Demand Side Management and Energy Efficiency, GPL will play a supporting role in public education.

12. HUMAN RESOURCES

Training currently being done under the Infrastructure Development Programme has highlighted how important maintenance of a requisite core of skills to manage the expanding electricity infrastructure that is heavily based on automation and ICT systems would be to GPL. While professional staff turnover has reduced significantly of late, the Company has serious skills gaps in almost all critical technical areas. The current strategy is to engage Experts on multiyear Contracts while ensuring that knowledge transfer is taking place and the Company is building indigenous capability.

Loss of skills is a severe challenge to successfully implement even the best of plans therefore the Company would maintain the Management Trainee programme on an ongoing basis to mitigate the loss of skills at the professional level. The GPL financed initiatives would be supplemented by capacity building initiatives under the new US$65M loan/grant being funded jointly by the IADB/EU which would see the engagement of Specialists on Contracts to mentor professional staff. The combination of all these efforts should ensure GPL has the skills to deliver an efficient and reliable service.

While GPL's remuneration to professional level staff is competitive and has attracted persons from both the public and private sectors, the majority of persons depart because of migration to North America. While every effort will be made to attract and retain the best and the brightest, GPL recognizes that most persons would honor their family commitments. The Company would continue to invest adequate resources to ensure that training is ongoing, timely, relevant and targeted to meet the direct needs of the company.

At the technician level, GPL would continue to invest in the apprenticeship programme and specialized 6-month and one year intensive programmes to provide the requisite number and level of skills. GPL has also been benefiting from national training being done through the Ministry of Labor, targeting unemployed youths and the efforts of various contractors.

In the non-technical areas GPL will continue to provide opportunities for Accountants by maintaining the trainee Accountant programme. The skill pool in the country involving basic computer and accounting skills is very large and GPL would not need to intervene in any way.

13. IMPACT OF PROGRAMME ON NATURAL & SOCIAL ENVIRONMENT

All new generating assets for Anna Regina, Wakenaam and Bartica would be in strict compliance with the Environmental Protection Act while older assets at Garden-of-Eden, Versailles, Canefield and Onverwagt are to be retired or relegated to occasional use. GPL expects a net reduction in emissions from the use of modern generators and the retirement of old, inefficient ones.

More importantly, the use of renewable resources, particularly in 2019 would have a net positive environmental impact. EPA approval will be pursued for the generation investments, which will be based on current technology for the largest units.

With respect to the social environment, GPL expects that the ready access to a legitimate supply of power for current un-served areas, the significant investments in generation and networks to improve power quality, customer service and planned reductions in tariffs would impact positively on the social environment.

GPL is however conscious that the removal of illegal services, prosecuting persons caught stealing electricity and taking prompt steps to collect revenues would have some social consequences. These measures are likely to generate some negative social impact, especially by the perpetrators of illegal activities. To address this, the social management plan, with its three-pronged approach (before, during and after) is expected to yield better results.

14. RISK AND MITIGATION

14.1 Loss Reduction

An unprecedented level of investment to reduce overall losses is planned through the tenure of this D&E Programme. These resources are already secured and would be managed by a Project Coordinating Unit. The projected loss reduction targets can be considered to be conservative based on the level of investment but GPL prefers to be cautious in its projections to ensure that its forecasted financial position is realized.

External resources, which are largely guaranteed, would finance the bulk of activities and therefore there is little risk, from this perspective, that progress would be frustrated. Where initiatives are financed by internal cash-flows, these are at risk of high fuel prices and to a lesser extent the Company not realizing its loss reduction forecasts despite implementing the various initiatives.

Despite being able to generate in excess of 90% of its power requirement from HFO fired units or renewable sources, GPL still has to contend with the volatility of fossil fuel prices for most of this Programme. No one can forecast the price of fossil fuel with high accuracy but the reality that internal cash resources would be utilized only minimally reduces the risk of failure.

The greatest risk of not achieving the projected level of loss reduction is therefore not related to financing but:

- Overcoming the challenge posed by a paucity of honest and competent contract resources to implementing the various sub-projects in keeping with the Programme.
- Ensuring that the Social Management Programme is effective and all Communities identified for intervention allow access and are supportive of GPL's actions.
- Inculcating a new culture among Consumers which reduces the inclination to steal electricity.

The Contracts to be awarded for the loss reduction intervention works would include both network and metering upgrade. This is a new approach and few local Contractors have this capability and GPL contemplates that major Regional contractors would be attracted and be encouraged to partner with local contractors to submit bids. This would result not only in a higher probability that all work will be done to industry standards but that the capacity of local contractors would be enhanced.

GPL's experience with the AMI pilot has revealed that use of advanced metering technology combined with a successful Social Management Programme can improve Customer service and deliver a favorable customer response. This should ensure GPL can access all communities as dialogue would be encouraged before, during and after the works are completed.

Improved customer service and power supplies, more dialogue and diligent public relations initiatives targeting all Consumers are expected to positively impact a culture change where electricity theft is concerned.

14.2 Fuel Prices

Over the last two years fossil fuel prices have been relatively stable but price volatility on the world market remains an ever present risk with very limited mitigating opportunities for a Company using a million barrels a year and relying on Consumer payments to meet its fuel bill every month. With limited storage and financial resources, GPL cannot take advantage of price drops or attempt to engage in a Forward Contract but is forced to use a Spot Contract and endure the price fluctuations.

Co-generation from GuySuCo would help, albeit minimally, to mitigate the high fuel prices in the short term, but the plan to rely heavily on HFO fired machines is the optimal interim arrangement until the advent of hydro in 2019, which would obviously mitigate this risk significantly. The use of modern, more efficient HFO fired equipment to meet over 90% of the Company's generation needs is the best interim plan to hydro. GuySuCo has invested in a Bagasse bailer and has used Bagasse briquettes in its quest to develop ways to improve the availability of co-generated power from Skeldon. GPL recognizes that these approaches are being used successfully in countries like India to consolidate Bagasse storage and co-generate electricity.

14.3 Market Size

The risk of not expanding its market size would result in GPL having to pay for energy and capacity that it cannot use when hydro comes on line in Q3 2019. Not being able to market all the energy would result in the full benefits of lower cost energy not being realized by customers. It is recognized that in the latest hydro financial model, power availability due to hydrology varies by as much as 55% from the worst to the best month and that projected generation for the seven sub-peak months is 71% of the five peak months. This increases the challenge immensely to utilize all the available energy every month.

GPL expects that with the advent of hydro, rebalanced and reduced tariffs (below the avoided cost of self generators) and stable supply, self generators will be attracted back to the grid. In particular, GPL will be making available, a new industrial tariff for Contracts 2.5MVA and above which would not be burdened by overall losses. It would be noted that GPL would invest in the network infrastructure necessary to deliver power to almost all load centers in Regions 2, 3, 4, 5, 6, 7 and 10.

15. CONTINGENCY

Financial Contingency

While significant load and grant resources have already been secured to fund loss reduction investments, additional concessional loans have to be contracted to fund this D&E Programme. It is understood that commitments from multilateral Agencies have already been secured for additional funding, particularly for loss reduction and capacity building.

It's a reality that if the necessary concessional loans to be contracted through the Government are not realized then GPL would have no option but to adjust its development plans accordingly.

GPL's ability to continue to fund its operating budget is contingent on fuel prices not increasing significantly from year to year and GPL continuing to reduce overall losses. It is expected that almost 98% of GPL's generation would be done using HFO fired capacity or Bagasse co-generation. This will help mitigate somewhat the risk posed by rapidly escalating fuel prices as diesel prices tend to be more volatile than HFO prices. Provision has been made in the financial projections for some capacity to absorb increased operating costs, particularly from fuel, without derailing the capital programme.

There is a limit to any contingency arrangement as while it has to pass the acid test of reasonableness it is always constrained by resources.

15.1 Hydro Delay & Short Terms Generation Capacity Shortfall

GPL would have to continue to rely on HFO capacity to meet demand and energy needs if the commercial operation of hydro is delayed beyond the projected Commercial Operation Date of July 1st, 2019. Obviously, there is no effective way to effectively mitigate the financial risk (Hydropower is expected to be about 40% cheaper that HFO fired production) of not having a 165MW renewable source. Since GPL will continue to maintain its current generation fleet, there is always an option to inject mobile generation units to address any sort term capacity

risk. Since there in no further investment in new HFO fired generation capacity proposed for the DBIS before hydropower becomes available, the only recourse to meet any short term capacity shortfalls would be mobile power modules.

15.2 Transmission & Distribution

Almost all the investments in new transmission lines, sub-stations and technical loss reduction would be financed through loans. Again, it's not possible for GPL to raise the required level of funding from internal resources if the loan is not realized. Having to depend on internal resources exposes the financing to the risks of higher than budgeted fuel prices, slower than expected loss reduction progress and priority being given to generation investment.

16. COST-BENEFIT ANALYSIS OF INVESTMENT PROJECTS

The transmission and sub-station projects have been grouped logically to calculate the cost-benefit analysis. The logical grouping is necessary as each group forms a compliment that is necessary to perform a desired function. The cost-benefit analysis has been done for a twenty-year period.

Project	Cost (US$M)	Benefit	
		NPV (US$M)	IRR (%)
5.2MW HFO Plant – Anna Regina	9.3	5.7	14%
Anna Regina 4MW Frequency Conversion	1.58	0.188	6
5.1MW HFO Plant – Bartica	7.29	2.7	29
1.2MW HFO Unit - Wakenaam	2.2	5.4	31%
Linden substation & Interconnection.	3.85	4.5	35
Williamsburg sub-station	2.52	0.84	8
Expand No. 53 substation	1.7	2.0	17
Transmission line Sophia – Kingston	2.2	1.7	18
Transmission line Sophia to Columbia	4.68	6.4	21
Parika substation & interconnection	4.1	0.43	4
Canal No.2 substation and interconnection	3.1	1.9	8
Linden Highway/ Soesdyke junction substation and interconnection	3.85	(0.8)	1
SCADA Expansion	1.4		
Technical loss reduction	41.28	2.5	9.4
Non-Technical loss reduction	35.36		