INDEPENDENT STATE OF PAPUA NEW GUINEA

ELECTRICITY INDUSTRY POLICY

NOVEMBER 2011
Electricity is a key enabling factor of production in achieving socio-economic development objectives, and as such has been accorded high development priority for the current Government.

For far too long the electricity industry in Papua New Guinea has been operating without a proper policy framework that guides its development. The provision and availability of electricity throughout Papua New Guinea has been unreliable and inadequate to meet the growing demand. The issues of access, reliability and affordability in electricity supplies for the bulk of the population living in rural areas as well as for many urban dwellers have been long outstanding. As a result, national socio-economic development has suffered.

The situations in regard to production and consumption of electricity have changed along with the changes in the economy and the resulting changes in the electricity markets. There now emerges the necessity for new policies for the electricity sector to guide its development and contribution to sustainable development for Papua New Guinea, in harmony with other policies of the Government.

To address this challenge, the National Executive Council called for the establishment of an Electricity Industry Policy Task Force to develop and recommend an appropriate electricity policy that will provide a clear direction and guidance on how electricity services can be provided equitably and efficiently throughout Papua New Guinea. This Policy is the outcome of the work of this Task Force, following extensive consultations with the public and private sectors.

The underlying approach of this Policy builds on recent progress made in the electricity sector. It provides further opportunities for private sector investments in, and the development of the sector, to fast-track infrastructure expansion by overcoming limitations in investment by the State. There are many challenges ahead for the electricity industry. In particular, generation capacity and reliability need to be adequately addressed in major urban areas, as well as the provision of electricity services in rural areas.

The new Policy provides a framework that will assist the Government to achieve the goal set out in the PNG Development Strategic Plan 2010-2030 for “A high quality of life for all Papua New Guineans” with its Vision that “Papua New Guinea will be a prosperous middle-income country by 2030”. Through the provision of improved electricity services the achievement of other key national development priorities such as improved health and education services will become a reality. The new Policy for the electricity industry is also aligned to the PNG Vision 2050 as the enabler to implement its seven-(7) Pillars under the Vision.
It is an honour and pleasure for us to dedicate this Policy to the people of Papua New Guinea for a better, prosperous and electrified nation in the next two years and beyond. It is our steadfast conviction and hope that together we will realize the noble intentions of this Policy.

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Minister for Petroleum and Energy

HON. SIR MEKERE MORAUTA, MP
Minister for Public Enterprises
ACKNOWLEDGEMENTS

The Electricity Industry Policy Task Force was established in 2007 by National Executive Council Decision 271/2006, and the finalisation of the Electricity Industry Policy in 2011 has been the result of a remarkable level of commitment towards the policy development process. Membership of this Task Force includes the Department of National Planning and Monitoring who has the role of Chair of Task Force, Department of Public Enterprises whose role is Deputy Chair, Treasury Department, Department of Prime Minister and National Executive Council, Department of Petroleum and Energy, Independent Consumer and Competition Commission, National Insurance Commission, PNG Power Limited, Independent Public Business Corporation.

Former Secretary for the Department of National Planning and Monitoring - Valentine Kambori, OBE, and Secretary for the then Department of Public Enterprises, Information and Communication - Henao Iduhu, have together provided a sustained leadership and commitment towards facilitating all the processes, with the support of their respective Departments, in ensuring that the development of this Policy was on track.

Commendation is also extended to technical officers from the agencies instituting the Task Force for their invaluable contribution in progressing the Policy formulation process. This is not to mention the important strategic roles the Strategic Advisor - Frontier Economics of Australia - played in the whole formulation process, in particular laying the foundation through its Final Report.

In addition, acknowledgement is made on the important contributions provided by other key stakeholders at the 8-9 November 2007 stakeholders’ workshop.

Finally, the perseverance and commitment of the Drafting Team of the Technical Working Group, led by the Department of Petroleum and Energy, for practically developing the Policy under extreme circumstances basing on the Frontier Economics’ Report is highly commendable. The Drafting Team included Henao Iduhu, Vore Veve, Rohit Singh, Winston Rodriguez, Amanda Robbins, Max Jackson, Rosemary Isicar, John Hera, Flierl Shongol, Kila Gare and Nelson Tai.

The greater challenge that lies ahead of this Policy Framework is that of making this Policy work for the greater good of Papua New Guinea and its people.
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<tr>
<td>BOT</td>
<td>Build-operate-transfer</td>
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<tr>
<td>CCI</td>
<td>Chamber of Commerce and Industry</td>
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<td>CDM</td>
<td>Clean Development Mechanism</td>
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<td>CER</td>
<td>Certified Emission Reduction</td>
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<td>CSO</td>
<td>Community Service Obligation</td>
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<td>CSTB</td>
<td>Central Supply and Tenders Board</td>
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<tr>
<td>DAL</td>
<td>Department of Agriculture and Livestock</td>
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<td>DCI</td>
<td>Department of Commerce and Industry</td>
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<td>DEC</td>
<td>Department of Environment and Conservation</td>
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<td>DICPE</td>
<td>Department of Information Communication and Public Enterprises</td>
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<td>DMPGM</td>
<td>Department of Mineral Policy and Geo-hazard Management</td>
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<td>DNPM</td>
<td>Department of National Planning and Monitoring</td>
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<td>DoE</td>
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<td>Department of Treasury</td>
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<td>DPE</td>
<td>Department of Petroleum and Energy</td>
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<td>DPEnt</td>
<td>Department of Public Enterprises</td>
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<td>EIA</td>
<td>Environment Impact Assessment</td>
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<td>EIP</td>
<td>Electricity Industry Policy</td>
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<td>EMC</td>
<td>Electricity Management Committee</td>
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<td>ETF</td>
<td>Electricity Trust Fund</td>
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<td>ESI</td>
<td>Electricity Supply Industry</td>
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<tr>
<td>ICCC</td>
<td>Independent Consumer and Competition Commission</td>
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<tr>
<td>IEEE</td>
<td>Institute of Electronic and Electrical Engineers</td>
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<tr>
<td>IPBC</td>
<td>Independent Public Business Corporation</td>
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<td>IPP</td>
<td>Independent Power Producer</td>
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<td>IRC</td>
<td>Internal Revenue Commission</td>
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<td>km</td>
<td>kilometre</td>
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<td>LLG</td>
<td>Local Level Government</td>
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<tr>
<td>MTDS</td>
<td>Medium Term Development Strategy</td>
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<tr>
<td>MW</td>
<td>Mega-watts</td>
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<td>NEC</td>
<td>National Executive Council</td>
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<td>NFA</td>
<td>National Fisheries Authority</td>
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<td>NISIT</td>
<td>National Institute of Standards and Industrial Technology</td>
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<td>OLPLLG</td>
<td>Organic Law on Provincial and Local Level Governments</td>
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<td>PNG</td>
<td>Papua New Guinea</td>
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<td>PNGFA</td>
<td>PNG Forest Authority</td>
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<td>PNGSEL</td>
<td>PNG Sustainable Energy Limited</td>
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<td>PPA</td>
<td>Power Purchase Agreement</td>
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<td>PPL</td>
<td>PNG Power Limited</td>
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<td>PPP</td>
<td>Public-Private Partnership</td>
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<td>SOT</td>
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INTRODUCTION

Electricity is an important input to production and is the most versatile form of energy available. It therefore is an essential ingredient to sustain economic and social growth and well-being. It triggers and supports growth in various areas of development and improves living standards. The provision of electricity services, hence, is a key enabling factor in achieving the objectives set out in the PNG Development Strategic Plan (PNG DSP) 2010 – 2030. The Goal of the PNG DSP is to achieve “A high quality of life for all Papua New Guineans”, and ultimately achieving its vision that “Papua New Guinea will be a prosperous middle-income country by 2030”. Over the duration of the first PNG DSP, the goal for energy development is for all households to have access to a reliable and affordable energy supply, with sufficient power generated and distributed to meet future energy requirements and demands. The policy for the electricity industry is also aligned to the Vision 2050 as stipulated in its seven (7) Pillars: 1. Human Capital Development; 2. Wealth Creation; 3. Institutional Development and Service Delivery; 4. Security and International Relations; 5. Environment Sustainability and Climate Change; 6. Spiritual, Cultural and Community Development; and 6. Strategic Planning, Integration and Control.

In PNG, approximately eighty seven per cent (87%) of the population still lacks access to electricity services, and the progress in rural electrification process has been slow. Achievement of increased access through the operations of PNG Power Limited (PPL) – the State-owned electricity utility – has not been satisfactory despite the Government having its Community Service Obligations (CSOs) vested with the electricity monopolist. “C” centres, mainly District Administration Centres, that used to be under the responsibility of PNG Electricity Commission (now PPL) are now operating under the oversight jurisdiction of the provincial governments with the passage of the Organic Law on Provincial and Local Level Governments (OLPLLG) 1995. The level of electricity services at these centres has since deteriorated due to lack of routine maintenance to generation and distribution assets and the lack of the knowledge and skills to discharge the task of providing these services.

Reliability is still a problem, particularly in Port Moresby, and to some extent in Madang and Lae, largely on account of the poor state of generation plants which is a result of long term neglect of routine maintenance. Private sector firms report significant costs incurred in relation to plant and equipment owing to the unreliability of power. Unpaid electricity bills also create incapacities for PPL to finance its activities, and this appears to be a particular problem in relation to accounts with Government Departments.

Furthermore, a significant proportion of generation capacity is reaching the end of its economic life, e.g. the Kanudi power station, which supplies PPL with electricity to serve Port Moresby. Replacement generation capacity needs to be provided to sustain the current demand. Additional capacity is also needed to sufficiently match growing and future demands.

These specific problems reflect wider problems stemming largely from the current policy framework and incentives that arise from it. There are limited external disciplines on PPL to manage its costs and seek efficiencies.

Moreover, the multiplicity of objectives the Government seeks to achieve through PPL’s activities imposes constraints on PPL that are not easily managed. Consequently, it serves to weaken PPL’s effort to exercise commercial discipline, hence complicates the management of the business. For example, it seeks to follow a policy of price discrimination in respect of large customers (particularly
resource projects) as a de facto industrial policy to encourage investment in these activities, on behalf of the Government; while at the same time it is required to adhere to uniform pricing under the national tariff (which is the anti-thesis of price discrimination and cost recovery principles). In addition, PPL claims to deliver CSOs that conflict with its commercial objectives, although the nature and extent of such CSOs are not apparent.

There is no explicit CSO framework for the supply of electricity to rural areas, which is generally unprofitable due to lack of sufficient demand to access economy of scale and the limited purchasing power of rural residents.

Constraints on access to capital have, historically at least, been a problem for PPL, which its owner – the Independent Public Business Corporation (IPBC) – has sought to alleviate by raising finance, on concessional terms, on the back of State guarantees. The current situation is one where the State injects funds into the State-owned service provider, namely PPL, with monopoly supply rights in an exclusive supply area, to correct for a lack of investment by PPL. With insufficient external discipline on PPL, services are still well below acceptable minimum standards and required for economic development.

State funding and loan guarantees raise some significant public policy issues, including the contingent external liabilities incurred by the State; the level of national debt; the impact of debt servicing obligations on the national budget; and the impact this arrangement has on performance incentives for PPL.

As a result of the above problems, significant issues of access, reliability and affordability with electricity supplies prevail.

This Policy intends to address the above issues and problems by improving the performance of the electricity industry so that it becomes efficient and supports the objectives for achieving the overarching development goals and objectives of Papua New Guinea.

The Policy is consistent with the existing legal framework for the electricity sector and is intended to be in effect for the next two years (2011-2013), following which a comprehensive review will be instituted on the Policy and the legislative framework. The resources of the State are limited. A range of pressing development needs, such as improvement of health and education services mean that the limited resources available to the State need to be proportionately shared between such competing priority areas. To the extent that private sector resources can be enlisted to increase investment in electricity infrastructure, that would relieve the State from funding such investment and redirecting funds to other priority areas. This Policy, therefore, is intended to stimulate the development of the electricity industry by also utilizing market mechanisms; encouraging the involvement of the private sector; and, thereby, accelerating expansion of electricity infrastructure and increasing efficiency.

It is recognized that the electricity sector has additional potential benefits to those of economic growth and improved living standards to provide to the nation and the investors in the sector under the Clean Development Mechanism (CDM) of the Kyoto Protocol. The Policy promotes the use of CDM to add value to investments by the private sector and to develop the electricity sector.

In the succeeding chapters, the aim, goals and objectives of this Policy are defined; the regulatory framework and industry structure are examined; policy measures to achieve the aim, goals and objectives are identified; an implementation plan is laid out; and mechanisms to monitor and review the implementation of this Policy are outlined. Appendices to this Policy refer to technologies and various power sources, and the institutions that will be involved in the policy implementation process and in the industry.
2
AIM, GOALS AND OBJECTIVES

2.1 AIM AND GOALS

The aim of this Policy is to put in place structures and processes to achieve the Government’s goals of equity and efficiency in the supply of electricity and, thereby, assisting in attaining the overarching development goals of Papua New Guinea.

The goal of equity requires an electricity industry that provides affordable power to as many citizens as possible.

The goal of efficiency requires the supply of electricity in PNG in the most reliable, cost-effective and expeditious manner, to enhance affordability for low-income consumers; reduce cost for business which use electricity as an input; and, thereby, encourage broad-based economic growth to improve living standards at grass-roots level in Papua New Guinea.

2.2 STRATEGIC OBJECTIVES

The Policy is designed to address three strategic objectives of the Government:

- Improving access in the provision of electricity services;
- Improving reliability of electricity supply; and
- Ensuring that power is affordable for consumers.

2.2.1 Access

Access to electricity services in PNG is very low and essentially limited to major load centres only, which are mostly urban areas. On the contrast, about eighty-seven per cent (87 %) of PNG’s population live in the rural areas, with very limited access to electricity.

Access has been further constrained with the once long standing power regulation that mandated only PPL to sell electricity commercially. As a monopolist, PPL had little incentive to improve efficiency and increase output which has implications on accessibility, reliability and affordability.

Auto-producers of electricity could only supply their own needs, and not go into electricity retail business. The Electricity Industry Act 2000 and the ICCC Act 2002, represented the initial steps to put in place a workable regulatory framework, and in May 2007 PNGSEL was issued the licences to generate, distribute and retail electricity. This was the first concrete step forward in the industry, introducing new and more players to cause competition in the retail markets.

Increasing the provision of electricity will contribute to reducing poverty, partly because the lack of access to electricity is a dimension of poverty in its own right. It is also partly because of the triggering effects it will have on other determinants of living standards, e.g. learning opportunities (through electrification of rural schools and dwellings), adequate health services (through powering of health centres), and increased income-earning opportunities (which are often dependent on access to power).

Access to electricity has urban and rural elements, and both of these are addressed through this Policy.
Rural electrification is a key enabling factor to the achievement of the Government’s priorities outlined in the PNG DSP 2010-2030 with the aim to increase access to electricity. A fundamental test of this Policy is the extent to which it is capable of delivering a sustainably increased level of rural electrification.

Access to urban electricity has regulatory, economic and policy constraints. The issue of unavailability of power in some urban areas is a serious problem. Regulation on qualifications for access to electricity and the lack of the ability of low income consumers to pay, contribute to limited access to electricity in some urban areas or for a proportion of urban residents. In addition to these general regulatory and economic factors are lack of efficiency in supply and generation; planning and managerial inefficiencies in the operations of PPL; and the lack of incentives created by its monopoly rights in its areas of exclusivity that combine to exacerbate the problems of access (and affordability) of electricity in urban areas.

This Policy will complement the urbanization policy of the Government in improving electricity access in urban areas.

Increasing access to electricity in both rural and urban areas seeks appropriately functional policy measures that stimulate and facilitate increased investment in the industry, removes barriers to investment and ‘incentivises’ or instils discipline on service providers to seek efficiencies in their operations.

The Government’s intention through this Policy and the PNG DSP 2010 – 2030 is to increase the share of the population having access to electricity to at least seventy per cent (70%) by the year 2030. This policy objective is tied strongly to the level of general infrastructure development - roads and bridges, schools, aid posts and health centres, business investments, and so forth. Ultimately, this Policy in contributing to the PNG DSP will progress towards realizing the overarching goals in PNG Vision 2050.

2.2.2 Reliability

Current supply outages to customers are high by international standards at major load centres. Along with affordability and access, reliability is critical in enabling the environment conducive for economic activity (particularly commercial decisions about investment in enterprises requiring reliable power supply). Improving reliability, therefore, can be expected to pay significant dividends indirectly in terms of national economic growth.

There is a lack of investment to maintain infrastructure and to do operational maintenance on existing generation, transmission and distribution assets. Lack of generation, management, network and financial capacities have also impacted negatively on reliability and therefore accessibility. In addition to these, established regulations have not been fully enforced by the appropriate regulator to bring sufficient discipline on PPL to perform.

Improving reliability requires substantial new investments in power generation and network capacity, primarily to reduce the incidences of outages. It also means augmenting supply capacity to meet unmet demand. These prerequisites apply to both urban and rural electricity supply. Pertinent regulations in the industry need to be fully enforced on one aspect of improving reliability.

It is not only the aggregate time of unavailability of supply, but also the number of outages that matter. Frequent outages, even for short periods of time, affect industrial and consumer equipment, shortening their lives and imposing costs for customers. Unreliability also imposes costs in terms of the need to maintain auxiliary generation equipment and the use of high-cost fuel.
This Policy sets a minimum reliability benchmark at 98.5 per cent for electricity supplies in PNG. The benchmark represents PPL’s normal performance for reliability across the system before the level of reliability fell in recent times.

Unreliability of supply, which is factored on frequency and duration of interruptions to power supply in a given year, includes both planned (scheduled) and unplanned (unscheduled) outages. Frequency of interruptions and duration of interruptions will each be appropriately regulated by the appropriate regulator with defined limits that minimizes outages.

2.2.3 Affordability

Demand for and utilization of electricity is a function of price. It is necessary to take into account the low ability to pay amongst large sections of the population. This is a central issue regarding electrification in both rural and urban areas.

Inefficient operation by power companies is one reason making power less affordable. There is an essential need to decrease costs in the operations for supplying electricity by power companies through improved efficiency. Uneconomic areas, particularly rural areas, are naturally high cost areas for investments, and therefore power companies would naturally set high prices to recover costs. However, this is suppressed by the Government’s regulation of maintaining uniform tariffs.

Incentives that make electricity undertakers seek efficiency measures to minimize their costs and an enforceable and suitable price mechanism should alleviate the situations that bring about unaffordable prices of electricity. In the Government’s identified priority areas that are uneconomic for private investments, appropriate measures should ensure that the objective of affordability is achieved.

This may include funding CSO’s, considered later in this Policy, but also requires the adoption of appropriate price mechanisms to attract investment and promote efficient delivery of electrification services.

This approach to price regulation is currently being implemented by the ICCC, and will be maintained under this Policy, whereby the ICCC has the flexibility to adjust prices to reflect the higher cost of delivering services in some areas. Such an approach has been adopted with the pricing of services delivered by the PNG Sustainable Energy Limited in the Western Province. Flexibility in price regulation encourages investments in remote areas, improving accessibility, but also ensures efficient operations, and consequentially more affordable operators, are encouraged to invest in remote areas where the cost of service may be higher. This Policy primarily seeks to encourage more efficient investment by the private sector and competition as avenues to improving affordability, thus, making efforts to overcome current challenges.

It is the intention of this Policy to address the problems of inefficiency and high costs of service delivery in making electricity supplies affordable for all citizens and consumers of electricity in PNG.
3
CURRENT REGULATORY FRAMEWORK AND INDUSTRY STRUCTURE

3.1 REGULATORY FRAMEWORK

The current regulatory framework consists of the following features:

- It provides exclusive service areas for PNG Power Limited (PPL) (defined as within 10 kilometres of the distribution network operated by PPL as at the date of commencement of the licence) for loads under 10 megawatts (MW);
- It allows for third party producers to generate and supply PPL for the latter's sale to customers. PPL has entered into contracts with Independent Power Producers (IPPs) with the terms and conditions not made public.
- It allows for free entry to serve large customers (i.e. with loads of 10 MW or more);
- It provides for regulated third party access to PPL's wires in circumstances where the supplier can lawfully supply, e.g. for supply to customers of loads of 10MW or more;
- It allows for third party investment in generation, retailing and network activities in areas outside current PPL exclusive areas, which include rural areas;
- It uses a system of postage stamp pricing in the shape of the national single tariff (which charges the same price for customers within a particular category, regardless of location). The inherent cross-subsidies are necessary to maintain the affordability of electricity access in high cost (largely rural) areas; and
- An independent regulator of the electricity industry, the Independent Consumer and Competition Commission (ICCC), established by the Independent Consumer and Competition Commission Act 2002, is responsible for regulating the price and other aspects of electricity supply operation of PPL, under a regulatory contract. The ICCC implements a form of revenue cap price regulation in relation to PPL, and sets licence conditions for PPL and other market participants.

The regulatory framework is in need of strengthening. Information on PPL’s cost structure is insufficient – while the information asymmetry between a regulator and regulated entity is one that is observed around the world, it is exacerbated in PNG because of comparatively poor transparency of State-owned Enterprises.

A second issue in respect of regulation is the development of a third party access regime – current market participants have third party access obligations under the law, which is reflected in their licences, but there is little certainty as to the shape and content of access arrangements and this creates uncertainty for access seekers and providers.

A broader issue is the lack of an explicit and transparent CSO framework. Efforts are underway to address the lack of a CSO framework and this Policy will be implemented in a manner consistent with the outcome of that work for optimum benefits being accrued and enjoyed.
3.2 INDUSTRY STRUCTURE

PPL is a wholly Government-owned enterprise, of which the IPBC is the repository. The IPBC is a State-owned entity, formed to manage the assets of the State in the General Business Trust.

PPL has been granted exclusive rights to retail electricity in areas in which it supplied power together with a 10 km surrounding zone at the time of issue of its licence. PPL has supplied power largely in the urban centres. Activities by IPPs are limited. PPL has bilateral power purchasing arrangements with the owners of Baiune Hydro in Morobe Province and Kanudi Power Plant in Port Moresby, and partners in a joint-venture with the Hides petroleum development in gas fired generation.

The power purchasing arrangements are understood to have been negotiated on a party-and-party basis rather than through open and competitive processes. Consequently, it is not clear whether the terms and conditions of supply and the relative risks borne by the contracting parties are optimal for the State.

In May 2007, PNG Sustainable Energy Limited (PNGSEL and now Western Power) was granted a licence for electricity generation, distribution and supply activities in the Western Province.

While the regulatory framework allows competitors to supply individual customers with power loads of 10MW or more within PPL’s exclusivity area, and entitles them access to PPL’s networks (effectively requiring the latter to ‘wheel’ power for the former), this has not happened.

Clearly, competitive entry requires substantial investment and such investment would not be forthcoming without regulatory certainty. As part of the approach to achieve the objectives outlined in this Policy, it is intended to provide such certainty.

Attached also as Appendix C1 and Appendix C2 respectively are the schematic diagrams of the current industry structure and the proposed industry structure.
POLICY MEASURES

The following policy measures are adopted by the Government to accomplish its strategic objectives for the electricity industry enunciated in this Policy, namely, to improve access to electricity and its reliability and affordability for Papua New Guineans and the consumers of electricity in general:

1. State provisions for community service obligations;
2. Regulation;
3. Competition in the electricity industry; and
4. Private sector participation.

These policy measures are overtly inter-related. For instance, competition in the electricity sector is contingent on a comprehensive access regime which makes the entry of new investors into the electricity sector possible. Nor will the State be able to finance and deliver all CSOs, without drawing on the financial capital, skills and efficiencies of the private sector. This Policy therefore requires coordinated implementation efforts if its objectives are to be realized.

The general approach taken in this Policy is to reconcile conflicting economic principles by trade-offs which optimize gains for the national economy by minimizing costs and inefficiencies while maximizing efficiencies and economic benefits through the employment of these policy measures.

4.1 STATE PROVISIONS FOR COMMUNITY SERVICE OBLIGATIONS

It is the aim of the Government to ensure that the cost of usage by consumers in terms of tariffs is affordable, and that the cost of new connections, as a result of network extensions is also affordable. This requires both the taking into account of higher cost areas of investments through suitable price regulation by the price regulator and the need for a clear CSO framework. Some rural areas in PNG may not present a prospective outlook for commercial investments and cannot attract investors, thus would normally be bypassed and left out in the provision of and from the benefits of electricity services.

A community service obligation is defined, in generic term, in one of the two categories of definitions adopted from a Commonwealth study in 1994, as:

1) Provision of service, to some customers at least, at a price less than the cost of production;
2) Doing things, for reason of government policy, which commercial enterprises operating in a competitive environment and subject to normal government regulations, would not do.

This definition will be further clarified in a specific CSO policy to be developed by the Government. However, for current purposes, these generic definitions will be adopted for the electricity sector in PNG. For the electricity sector, the Government will need to provide incentives to encourage investments in rural areas and utilize the private sector including through the procurement option of public-private partnership (PPP) to deliver CSOs on its behalf with the consideration of not jeopardizing their commercial interests.

CSOs may be in the form of functions performed, services provided and the allowance made for concessions that should entail greater private sector participation. CSOs are purchased from or
facilitated through private entities operating on commercial interests by the Government for its targeted constituents.

In line with the underlying approach of this Policy and consistent with the current regulatory framework that this Policy basically retains, the targeted constituents for CSOs would be the small loads (less than 10 MW by individual demand for power) in, especially, rural areas. There is a need to clearly define, identify, and cost out possible CSOs as part of the implementation of this Policy, and prioritize those CSOs in accordance with the funds available to implement this Policy.

4.1.1 Tariff Regulation in delivery of Community Service Obligation

The current price regulation includes a uniform tariff for customers within a particular category, regardless of location; and this is regarded as an elemental form of CSOs for the electricity sector, and a hands-off and costs-saving measure taken by the Government to achieve the outcome of affordable prices for consumers in higher cost areas of investment.

This regulation, however, suppresses the growth of the electricity sector in PNG by foreclosing investments that seek to charge the true costs on electricity commercially. The higher cost areas of investments, especially rural areas, have been effectively neglected of the provision of vital electricity service as a consequence. While the uniform tariff regulation of the Government may be to the benefit of the users of electricity services (in the form of avoided high prices) in commercially higher cost areas of investments in electricity supplies, it does not give the incentive to service providers, let alone the State-owned utility - PPL, to take up commercial investments in these areas.

PPL has been delivering CSOs, by internally cross-subsidizing its operations in areas that are unprofitable. It is a rational policy consideration that such types of internal cross-subsidies would not constitute a commercial objective of power companies that operate purely on commercial interest. Most IPPs would not be keen on cross-subsidizing any of their operations; and they are not required to do so.

Under this Policy, the ICCC (as the regulator of electricity price) will implement a commercial price regulation model that features price flexibilities reflecting on the costs of investments to ensure the incentives exist in both higher cost and lower cost areas of investments.

Where a CSO is identified, costed and delivered by the Government, through capital subsidies under the competitive tender process, the ICCC will enforce a form of price cap regulation on the service provider delivering the Government’s CSO to achieve efficiency in the subsidy injection (by precluding the service provider from earning rents) whilst (at the same time) enabling it a healthy commercial operation.

4.1.2 Available Tax Incentives of the Government

The current tax provisions provide a range of rural development incentives that will be available to certain investors in relation to this Policy. The tax incentives include accelerated and flexible depreciation as well as income tax exemptions on the net income of new business set up in specifically designated under-developed areas that are not dependent on the exploitation of natural resources. New “rural development industries” as defined under the Income Tax Act exempt from income tax for ten years after the year the business commences operation.

Eligibility for these tax concessions are assessed and determined by the Internal Revenue Commission (IRC) and will depend on compliance with the specific provisions and conditions in the Income Tax Act.
4.1.3 State Financing towards Community Service Obligations through Competitive Tender

PPL has been required to operate as a commercial entity and simultaneously deliver CSOs. This complicates the management of these conflicting objectives (delivering CSOs is itself prohibitive to PPL’s commercial objectives), and can weaken or undermine PPL’s capability to be competitive in a contestable industry.

To date this conflict has been managed through the injection of State financing to PPL to fund CSOs. PPL has been receiving direct subsidies of State financing through the National Budget process and effectively through reduced dividends to the State. However, this arrangement has not been proved to be sufficiently effective in producing the desired outcome of greater rural electrification. Being a commercially driven entity, PPL is required to operate in a commercially-oriented manner rather than simply delivering CSOs. The arrangement of direct injections of State financing to PPL does not provide the incentive to PPL to seek efficiencies in its operations, given also that it is the dominant industry player and largely a monopolist.

A suitable mechanism is required for ensuring that this intervention of State financing by the government for CSOs is effective and efficient. State financing should thus be focused on clearly identified CSOs, appropriately costed and tendered to the lowest substantive bidder to achieve the lowest-cost delivery of the CSO.

A new CSO framework for the electricity sector in PNG should ‘incentivise’ the providers of electricity service to take up investments in high cost areas of investment by disposing of the cost burden on capital investment on service providers (targeted at the project capex of private sector investments) to enable them to comfortably recover the costs of investments and make healthy profits in an electricity price regime of uniform tariffs.

With the industry being opened up for competition, IPPs can take the opportunity to compete with PPL for the money that the State makes available for funding the Government’s CSOs. In this arrangement, the State will subsidize through competitive tender the most efficient bidder, particularly in terms of the tender for the lowest amount of subsidy, to develop, own and operate the electricity infrastructure in the market. This will enable the Government to obtain the best value for the money it expends on delivering CSOs. The successful bidder should win the right to build, own and operate the electricity infrastructure in the electricity market.

In the long run, the issue of inter-connectivity may emerge whereby separate service providers would need to interconnect as the only means for providing electricity services to consumers in areas contiguous with their networks. An access arrangement should therefore facilitate for this to occur.

4.1.4 Delivering Community Service Obligations

Delivering CSOs for the electricity sector is the sole responsibility of the government Department or a designated body responsible for managing the Government’s policy on these CSOs and their administrations. It is the responsibility of the government Department or the designated body to identify and prioritize the qualified target groups or areas that would benefit from the Government’s CSO delivery. Determining these issues will constitute a broader process under a CSO framework that will guide the implementation of this Policy. However, for the management of the CSO delivery and as part of its overall planning and implementation of this Policy it is necessary for the Government to come up with a national electrification roll-out plan, and identify and prioritize projects to be funded by the National Government for delivery on annual basis.
This will require establishing a system of criteria and processes for identifying and prioritizing candidate projects for National Government funding.

Costing CSOs will also be guided by the CSO framework to be developed by the National Government. This is the second step of the three-step process of implementing CSOs, namely defining and identifying CSOs, costing them, and paying for CSOs. It is not efficient for the Government to assume costs of CSOs and to pay for those CSOs on those assumptions, which is highly likely to be the current case given the usual uncertainty that prevails in costing CSOs.

In the case of market failure where there is an inability to achieve economies of scale, there would not be an interest from the private sector to deliver Government’s CSOs. For the Government to use PPL to deliver CSOs in this situation will have detrimental ramifications on PPL to operate as a commercial entity, hence undermining its capability to be competitive in the contestable industry. The rural electrification policy that the Government through the Department of Petroleum and Energy is currently developing should enable the Government to address its electrification objectives in this particular scenario.

Under the normal and practical circumstances, though, the inherent competitive tension provided through the competitive tender should drive the level of subsidy for developing electricity projects down to about the minimum amount of subsidy possible required to trigger investments in high cost areas. This provides the opportunity for an efficient bidder that mainly proposes to receive the lowest amount of subsidy from the State to win the competition to enter and operate in the market. It also gives the IPPs the advantage to apply and operate on the true cost of service provision in their investments, and simultaneously minimizes the leverage for earning rents. Other means of costing CSOs are deemed inferior to that which open competitive tender brings about.

CSOs are most appropriately paid for through the national budget. This will entail the application for budgetary allocations for CSOs in the electricity sector by the responsible Department to the Departments of Treasury and Finance. The responsible Department will identify electricity projects that would be financed through the Government’s CSOs, and cost each project based on the costs from PPL, then make the submission for budgetary allocations for the subsequent year for the Government to prioritize funding for.

### 4.1.5 Rural Electrification under Community Service Obligations

There is an inherent inability to recover costs on the provision of electricity services to rural areas in PNG broadly. The differential between the postage stamp price (which is a feature of the current regulatory framework) and the actual cost of service provision does not usually prove economic sense for private sector investments as it only makes the outcome of a rural electrification venture unprofitable or a loss.

The current practice of allowing flexible price regulation by the ICCC to allow investment in higher cost areas to take place, addresses this issue in some way. In addition to this, the policy measure of identifying, costing and funding CSOs should enable the extension of rural networks or building electricity assets in new and potential market areas. The government agency that is responsible for implementing CSOs in rural electrification will opt for whichever of these two options that is more efficient when executing the normal competitive tender process, and *subsidize* the most efficient bidder to develop the electricity project.
4.1.6 Urban Electrification under Community Service Obligations

State financing should not only be employed to progress rural electrification at the exclusion of urban areas, however, urban areas (or parts of them) need to be assessed against a CSO framework to ensure that the activity is actually a CSO before they are costed and financed.

4.1.7 Community Service Obligations in Electrification within PNG Power’s Exclusivity Zone

State financing towards these network extension projects will solely and independently be determined by the Government in line with its priority for electrification and not influenced by PPL’s request for assistance. All “profitable” ventures to PPL in this area of supply will not be subsidized by the Government as they do not qualify for State financing.

The economic regulator will require adequate access to information on PPL to assist the Government to properly assess and determine this.

4.1.8 Community Service Obligations in Electrification outside PNG Power’s Exclusivity Zone

Competition for the market will ensure IPPs “monopolizing” certain market areas. IPPs whose operations feature rural electrification should be favoured in large loads. Where rural electrification priorities of the Government in line with its CSOs warrant it, and as it deems efficient, the Government will continue to subsidize existing producers in the area to progress rural electrification. Otherwise, the Government will open up competition for fresh entry into the market and subsidize the construction of new electricity assets, through the appropriate process it administers.

4.1.9 Ownership of State-subsidized Electricity Assets

Where the State subsidizes a CSO, the State will not be the owner of the assets. Should the State retain ownership of these assets there would likely be a conflict of interest with PPL, being a state-owned entity. For the private investors, retaining ownership of assets would also provide an incentive to maintain the assets and ensure their efficient operation. It is intended that the developers of electricity assets that are developed with some State subsidy would own and operate these assets on commercial basis.

PPL could own and operate these assets if it tendered the best proposal to the Government.

4.1.10 State-ownership of the Transmission Infrastructure

The State may retain the right of ownership over all the electricity transmission infrastructure and networks in PNG.

The generation, distribution and retail segments of the electricity industry are open for private sector ownership.
4.2 REGULATION

A sound regulatory framework has been developed for the electricity sector. The existing regulatory framework is divided into technical regulation and regulation for economic discipline and efficiency.

The incumbent regulator, mandated by the ICCC Act 2002, of this regulated industry is the ICCC. The ICCC has since delegated the technical regulatory functions to PPL. This outsourcing arrangement in the face of the dawning contestable industry, and now with the entry of PNGSEL as an equal competitor, is no longer the appropriate model for regulation as it establishes the potential for conflicts of interest and creates accountability misgivings that can become serious obstacles to third party entry and competition. The impartiality of the position of PPL in the industry as a regulator is severely compromised when it retains this role whilst being a competitor itself. Despite that to date there has not been a serious concern with the technical regulation being managed by PPL, it is in the ultimate interest of competition and private sector participation that the Policy identifies this risk into the future.

Accordingly, technical regulation will be transferred progressively (in a phased approach) to the Department of Petroleum and Energy (DPE) to perform technical regulatory functions for the electricity industry.

The regulators of the electricity industry should enforce with pertinent penalties all regulatory functions in the industry. Enforcing regulation is imperative to keep the operations of the industry players up to the expectations of the Government for the industry so that its objectives are achieved.

4.2.1 Technical Regulation

The technical regulator will enforce all regulatory provisions governing the works and operations in generation, transmission and distribution of electricity. This will entail ensuring compliance with standards in generation and network assets.

Two aspects of the industry that are currently being technically regulated are the Electricity Supply Industry (ESI) and Electrical Installations.

**Electricity Supply Industry Regulation**

The technical regulator of the ESI will regulate works and operations in generation, transmission, and distribution of electricity. The technical regulator can adopt the framework used by PPL or ensure an alternative and appropriate framework for technical regulation in the ESI. Ensuring compliance with standards ensures that reliability and security of electricity supplies are highly maintained.

**Electricity Installations Regulation**

The technical regulator will regulate electrical installations using the framework of codes and guidelines currently used by PPL.

**Environment and Safety Regulation**

The technical regulator will enforce environmental and safety regulation in the electricity industry as an added component to its technical regulatory functions. This function will be carried out in close consultation with the Department responsible for general environmental regulation - the Department of Environment and Conservation (DEC).

This area of regulation expands over all the various aspects of exploiting indigenous sources of electricity generation including geothermal, hydro, gas, solar, wind, ocean tidal and currents, and of
generating, transmitting, and supplying electricity. Specific regulations may need to be developed in this regard to complement any existing and overarching regulation.

**Electrical Appliances and Components Regulation**
The technical regulator will also enforce the regulation of nationally accepted standards on electrical appliances and components in the consumption end of the industry. This function will be carried out in close collaboration with the national institution responsible for standards - the National Institute of Standards and Industrial Technology (NISIT).

**Regulation on Use of Indigenous Resources for Electricity Generation**
Ownership of indigenous resources that are exploited and utilized for electricity generation lies with the State as well as the local indigenous people. These resources include land, water, geothermal potential, ocean tidal and current potentials, natural gas, and other primary sources of energy that are sourced and extracted from within PNG’s national boundaries and used.

The State would be required to develop appropriate regulatory instruments to determine levies and taxes for the access to and use of these resources or establish alternative arrangements such as through purchases for the transfer of their ownership or payments for the lease of these resources.

For electricity projects that are registered as CDM projects under the Kyoto Protocol, the State will impose appropriate taxes on the amounts of Certified Emission Reductions (CERs) sold or transferred by alternative means of transactions from these projects.

4.2.2 Economic Regulation

The regulatory framework established by legislation of the ICCC Act 2002 allows for price regulation, regulation for consumer protection and monitoring of the conduct of regulated entities (electricity service providers).

The economic regulator will equally enforce all the three aspects of economic regulation stated to prevent misdemeanour, such as exercise of market power or collusion, by the regulated entities. This will be done through the enforcement of all the licence provisions for the industry on electricity undertakers who hold these licences.

An effective mechanism for accessing and assessing information that will enable it to enforce a better regulatory control the economic regulator will establish and enforce. This will be predicated on the principle and obligation of maintaining the confidentiality of information on the regulated entities that the economic regulator will have to adopt and operate on. Information on costs in the electricity industry should be disaggregated into generation, transmission, distribution and supply segments and presented to the economic regulator in such an accounting separation.

**Price Regulation**
The economic regulator will implement a robust price regulation to ensure that the industry is vibrant in all commercial ventures through profits earned, whilst ensuring that the objective affordability, hence accessibility, remains attainable.

It is its absolute responsibility for the economic regulator to adopt a specific kind of price regulation mechanism that will ensure that electricity service provision in both low-cost and high-cost areas of investments in the industry in PNG is sustainable. Considerations should be made on the situation of rural areas where prices applied in urban areas may turn out to be unaffordable. The economic regulator will consult the responsible Department or the body in charge of this policy when imposing tariffs in rural areas under a specific price mechanism it employs.
Service Standards Regulation

The economic regulator will enforce service standards in the electricity industry as an aspect of its mandated role. Reliability standard that is particularly not conformed to in the industry should be monitored and enforced using an index for measuring reliability defined in the IEEE Standard 1366, or an alternative framework appropriate.

Service standards contained in the regulatory contracts that the economic regulator signs with the industry players and in the provisions of their licences will be enforced with appropriate penalties imposed by the economic regulator.

Access Regime and Access Codes

Access arrangements are currently facilitated under the licences issued to electricity undertakers besides the relevant regulatory instruments.

The economic regulator will put in place an overall (third party) access regime. This regime should provide the overall framework that allows for and facilitates (third party) access arrangements in the electricity industry.

For specific arrangements, the economic regulator will put in place specific access codes. The economic regulator would use these access codes in its intervention within the framework of the overall access regime in the event an agreement could not be reached between the access seeker and access provider. Prior to the intervention by the economic regulator, and under normal circumstances, the access seeker and access provider have the scope to negotiate access on commercial terms within the framework of the overall access regime.

The specific access codes should facilitate the following aspects of operations in the industry:

(i) Access to PPL’s exclusive supply area, through feed-in tariff, to supply power to PPL to meet unmet demand;
(ii) Linking up contiguous networks of separate service providers;
(iii) Servicing the large loads market segment;
(iv) Accessing loads of 10MW and greater within the 10 km radius of PPL’s networks; and
(v) Servicing the small loads market.

It is the intention of the Government that the overall access regime and specific access codes that the economic regulator develops balance the investment incentives of access providers with the need to eliminate potential bottleneck effects on entry, articulate the rights and obligations of the access seeker and provider, and ascertain some level of efficiencies in the industry.

4.3 Competition

Papua New Guinea’s electricity industry is open for competition wherein appropriate rules and practices of contestability apply. Competition in PNG is not to be homogenous (of one type), but is of various types; and each type is determined by the particular segment of the market in or for which competition takes place. The Policy introduces models for competition based on the three market segments in PNG’s electricity industry. The existing provisions in the retail licence held by PPL up to 2012 within the framework of the Electricity Industry Act 2000 and the economic factor specified by the typical and existing market characteristics of the industry in PNG, as set against the objectives of this Policy, establish the boundaries around these market segments.
Competition is a measure this Policy promotes in order to instil discipline and bring about efficiencies in the performance of electricity service providers in the industry.

The defined electricity (supply) market segments in PNG are:

1. **PPL exclusive supply (retail) areas**: loads less than 10 MW, located within a radius of 10 km from its distribution network as at the date of commencement of PPL’s licence.

2. **Large loads**: loads of 10 MW and greater.

3. **Small loads**: loads less than 10 MW, located outside of PPL’s exclusive supply areas, especially in the rural areas.

Potential players of the industry will be allowed to fairly compete for success within and entry into a market segment. This also implies that competition for the market and competition within the market would be specific to and characteristic of each market segment of the industry.

Entrants to competitions for or within a market will compete openly and the successful contender can apply for the appropriate license to generate, transmit, distribute and supply electricity following the close of the competition. Competition will be opened when a suitable market has been identified or when the need for it arise, and is determined by the Government, in consultation with the relevant regulators.

The competition process will be transparent and as comprehensible as possible. Competitors can as well have access to information on those instruments that are used in the bidding process.

**4.3.1 Competition through Feed-in Tariffs in PNG Power’s Exclusive Supply Area**

This market segment precludes competition to supply existing demand against PPL by other players. Current policies allow for PPL to purchase electricity and this allowance will be further built upon to allow for competition only in generation of electricity in order to supply (sell to) PPL. This is the segment where competition within the market will take place, through the mechanism of feed-in tariffs. This would have implications on third party access, which this Policy addresses in the statement above on an access regime and access codes.

Within PPL’s exclusive supply zone, the generation and distribution segments are lawfully open for competition.

Competition within PPL’s exclusive service areas for supplying it through feed-in tariffs can only be opened when established arrangements signal the need for this to occur (or when it is more efficient for PPL to source power from third parties other than itself). These signals and their respective responses can take one of the following forms:

- **PPL’s own request to the facilitator of competition (regulator) requiring additional capacity**: Should PPL encounter shortfalls in its capacities to supply additional or growing demand, the Government, in consultation with the relevant regulators, would verify this need for capacity then proceed with opening and facilitating competition.

- **Urgency or need for additional power substantiated by the established arrangements**: Even without the request by PPL for additional generation capacity from sources other than itself, the Government, in consultation with the relevant regulators, can open up competition to address any shortfall in supply. This may occur if, for instance, the reliability of supply has dropped well below the minimum benchmark and becomes a chronic problem, or if PPL
continues to insist on tariff increases, which the economic regulator can take as a signal requiring competitive entry. This competition though would take place after PPL fails to comply with certain terms and directions given and enforced on it by the appropriate regulator to show cause or to address the malady within a specified time frame.

Where competition takes place as a result of either of the above situations, PPL cannot be allowed to compete against other competitors. This exclusion of PPL from the competition rules out the possibility of PPL making any attempt to stifle entry by other players through the undesirable allocation of its cost of generation to transmission and distribution.

PPL’s exclusive supply area envelops loads of less than 10 MW, located within the radius of 10 km of its existing network at the time PPL’s licence was issued. The economic regulator will access information on PPL to accurately map out the geographic boundaries encircling PPL’s exclusive supply area at the time the licence was issued.

4.3.2 Competition to Supply Large Loads

Loads with magnitudes of 10 MW and greater are defined to constitute a separate market. It is safe though to interpret the term “load” here in its stringent meaning of “individual load”, not load centres. It means loads of 10 MW and higher of demand of a single entity for electricity. In this market segment, competition for the market would take place as is currently allowed.

Large loads beyond 10 km of PPL’s existing wires would not merit a concessional feed-in tariff arrangement with PPL at this time. Intending suppliers of electricity can compete with PPL (from generation to distribution and retail) on equal terms to supply these loads.

Competition in this market seeks for models of the policy measures that organize contests (such as tender processes) between putative service providers at the point of entry. A process characterizing competition for the market should reflect the access code in this market. The most efficient supplier is selected in this process of competition to supply the market.

This market segment is identified as the potentially attractive entry point for IPPs and the Government intends to see that competition overwhelmingly penetrates this market segment.

It is its intention to have rural electrification ride on the back of these large markets, therefore the Government may subsidize where a CSO is identified and costed for the most efficient supplier to provide rural electrification services in parallel with supplying the large customer, in accordance with the CSO policy as discussed previously. Otherwise, the competition process will require awarding success to bids that feature rural electrification components or favour those bidders who already invested in rural electrification in PNG.

**Feed-in Tariffs in Large Loads**

Interested in IPPs to supply a large load within PPL’s exclusive geographic zone. Individual loads greater than 10 MW within the 10 km of the distribution network operated by PPL as at the date of commencement of its license do not fall within PPL’s exclusive area of supply. These loads come under the large-load market, and the process characterized by the access code of the large load-market segment will be employed. Competition will be opened up for IPPs to bid to supply the load through feed-in tariff and extended networking, where necessary.
4.3.3 Competition to Supply Small Loads

Loads less than 10 MW, located outside of PPL’s exclusive areas of supply, especially in rural areas, constitute this market segment. This is normally not an economically attractive market for new investments.

Competition in this market segment is not ruled out. An appropriate competition model will be established to facilitate competition in this segment of the market. Admittedly, competition within the market in small loads is likely to be limited; however, competition for the market is likely to achieve greater success.

An assessment of electrification needs will be undertaken by the Department responsible for electricity sector policy. Technical assistance for this work may be required. Where market failure is identified, this assessment will guide the CSOs of the State, to be delivered consistently with the policy on rural electrification.

Putative service providers will compete for the market in a manner similar to competition for supplying large loads. Intervention of State financing will come into play in this market segment to attract competition under the Government’s CSOs. Competition in this market segment should enable roll-out of new assets, and enable the successful service provider ownership of the market from generation to distribution and retail.

Electricity operations in all the three markets, other than auto-production, meaning those for retailing electricity to the public and revenue generation by the producer, will only be entered into through facilitation and regulation by the Government through its agency responsible for coordinating this Policy, and the economic and technical regulators. Where an area is identified for electrification, either by the Government or through the intention and interest of a private investor, this will go through a process of competitive tender. Competitive tender will be used as the competition mechanism, to select the best and efficient producer.

The successful entrants into the large-load and small-load markets will effectively “monopolize” these markets or areas of electricity supply while operating under the terms of the access code developed by the economic regulator that the Government through the responsible Department uses. It is therefore important to the Government that the access arrangement used at the point of entry must ensure that exercise of market power after entry is prevented, and that this arrangement does not “disincentivise” entry.

4.3.4 Exclusivity Provisions for Electricity Supply in Designated Markets

For retail market protection, which should be granted to participants in the industry after winning the competition into an identified market (in the competition for the market), exclusivity provisions will feature in the licences issued. Competition for the market infers that a single participant that wins the competitive tender will hold the licences for the industry in generation, distribution and retail. Where exclusivity provisions for the retail market are granted specifying the rights of industry participants, it will also specify their obligations in their operations within their exclusive retail areas.

The extent of the geographic coverage under any retail exclusivity provision in a market will be determined and approved by the relevant regulator. IPPs may be given the flexibility to apply for wider geographic coverage under licences.

Retail exclusivity provisions may mean that government policy does not warrant retail operations of all electricity providers outside of their exclusive supply areas. This means that the service providers will not hold any rights to supply or carry out retail operations beyond their exclusive supply areas.
(e.g. outside 10 km of PPL’s distribution networks operated as at the date of commencement of the license for loads less than 10 MW).

Market-specific licences with exclusivity provisions may create the occurrence of the needless (as it may seem) multiplicity of such licences issued for different markets identified by the Government, which can be a bottleneck to entry by IPPs. More importantly though, it acts as a subordinate regulatory mechanism that monitors the operations of licensees, and assists the Government to regulate competition and private sector participation more effectively and orderly.

All areas not subject to or covered under exclusivity provisions of power companies will reside in the Government’s control and jurisdiction. As such, all new projects for retailing electricity outside of exclusive supply areas will be facilitated by the Government through the appropriate Department or body that administers this Policy and through a registered or licensed permission of access from the appropriate regulators.

4.3.5 Market-driven Electricity Industry

It is the aim of the Government that market thrives and its mechanisms driving competition are active. The Government will strive to develop markets, particularly in rural areas, and allow market forces to operate in the delivery of electricity services. In an ideal situation, State financing for CSOs should not go on indefinitely in developing and sustaining rural electrification. It is intended that the industry be ultimately driven by the private sector on commercial basis while upholding the specific objectives of reliability, affordability and accessibility. Appropriate models and strategies for market development will be used by the Government. The respective government Department or body will assume the role of ensuring that market mechanisms are vibrant and active while addressing market failures.

4.4 PRIVATE SECTOR PARTICIPATION

It is intended that the direct role of the Government as the developer and owner of electricity infrastructure, and in all works relating to these, would eventually become replaced through increased participation by the private players in the electricity industry. The role of the Government will ultimately be only as a facilitator and regulator of private sector participation.

While private sector participation can be conflated with competition in certain respects, for the purpose of this Policy it is segregated from the latter and recognized as a separate measure to achieve the policy objectives. Competition does entail participation by IPPs, and it is efficient to see competition to feature in all forms of private sector participation.

In private sector participation, the role of the regulator becomes paramount to vet and keep in check any occurrence of opportunistic behaviour, and also to keep in check the freedom that can be abused in the exercise of market power. Regulatory arrangements for the safeguard against abuse of market power will be separated by and specific to each segment of the electricity industry. This means that generation, transmission, distribution and retail will each have a safeguard mechanism.

The ideal form of private sector participation would be through a vibrant, fair and open competition, driven purely by market mechanisms. A homogenous electricity market that is conducive for vibrant competition should sustain a uniformly fair and healthy participation from the private sector in all markets.

Appropriate mechanisms of State intervention will be required to attract and guide (facilitate and regulate) private sector participation to pursue the objectives of this policy. The intervention by the State should manifest in:
• An appropriate enforceable regulation (or some regulatory arrangement), and
• A mechanism for ensuring an appropriate level of certainty in the yields of such participation.

These should be contained in the access arrangements stated about above for each market segment and for situations requiring private sector access and participation.

4.4.1 Modes of Private Sector Participation

The Government recognizes private sector participation to occur in and through the following forms and means:

• **Open Competition**

  Competition is a healthy process that should be featured in all forms of private sector participation. For this reason, the preceding section on competition isolates markets and defines the various forms in which competition would take place in these markets. Open competition driven purely by market mechanisms should take utter precedence over any other form and means of private sector participation.

• **Public-private partnerships**

  Apart from market-driven open competition, the Government recognizes private sector participation to occur in the form of service contracts lasting between 1 and 2 years, management contracts of a 3-5 year term, leases from 8 to 15 years, concessions which duration range from 25 to 30 years, and other forms (models) of public-private partnerships (PPPs) such as service-operate-transfer (SOT) or build-operate-transfer (BOT) that should have a term of between 20 and 30 years.

  Whilst divestiture of an asset or part of it by PPL might become a trigger for eventual complete privatization of the State-owned utility, privatization is not the policy direction of the current Government. As such, any private sector participation should not entail PPL divesting any part of its (existing) assets.

  All PPPs formed should be the outcome of a competitive bidding process, and vetted by the relevant regulator. The State currently has a National PPP policy to guide such decisions, and the Electricity Industry Policy will be implemented in a manner consistent with that policy.

  PPPs are however deemed by government policy to be subsidiary in stature to normal market-driven open competition. The Government recognizes and concedes through contractual arrangements in PPPs which to a certain extent relinquish some level of the expected efficiencies that vibrant open competition delivers.

4.4.2 Role of the State in Public Private Partnerships

In PPPs the State will take up a twofold role, firstly as the instigator and facilitator of PPPs and secondly as their regulator. The latter role is paramount to keep in check any abuse of freedom in the exercise of market power and opportunistic behaviour by service providers, and will be overarching and necessary for all forms and instances of PPP dealings. Its role as the instigator of PPPs will limit the State only to those areas of electricity supply that are not enclosed under (supply or retail) exclusivity provisions of the IPPs as well as PPL.

The regulatory role of the State in PPPs is imperative to ensure that any arrangement entered into does not disadvantage any of the parties involved, the consumers and the industry in general. It
would be reasonably irresponsible for the State not to maintain any safeguard against exercise of market power and opportunistic behaviour by power companies. In spite of this, the industry players have the scope and liberty to enter into certain business negotiations with each other purely on commercial grounds in isolation from State involvement. The State will increase the degree of its role of maintaining scrutiny, intervening or becoming a party proportionate with increasing level of private participation in all the various forms of PPPs stated. A service contract would not warrant a more profound (if not any) State (regulatory) intervention than a longer term PPP model such as an SOT or BOT.

All concession arrangements and PPPs should be appraised and approved by the relevant regulator and the PPP Centre.

4.4.3 Role of the State-owned Utility

The State-owned utility - PPL - is the carrier of State interest in PPPs with IPPs. In PPL’s exclusive areas of supply, the role of the State will be limited only to that of the regulator. The State will allow, and require or not, PPL, as grantor of contract, to negotiate contractual arrangements with putative IPPs. The terms of the contractual arrangements, however, should be scrutinized and approved by the relevant regulator to ensure that the outcome of contracts are optimal for the State before the contracts are given effect.

4.4.4 Role of the Independent Power Producers

All putative service providers in the electricity industry entering the market will be allowed an even and fair playing field to participate. In their exclusive retail areas, which should be accorded by the State, IPPs would have the scope to enter into contractual arrangements with other service providers as the grantors of contract. This however is deemed as an anticipated government policy in the current state of affairs of the industry, in particular for short-term contracts than those having longer terms.

For the present situation however, IPPs will be the concessionaires to all concessional arrangements that the State through PPL as grantor enters into in the form of PPPs. It is the expectation of this Policy that all entry by IPPs either through open competition or concession arrangements occur through a vibrant process that selects highly efficient and successful service providers that already have the capability to overcome capital, capacity and skills constraints – the main elements the lack of which would call for the establishment of concessions and contracts.

All contractual and concession arrangements between IPPs should still be vetted and approved by the relevant regulator.

4.4.5 Participation by Landowners

Electricity service providers have the scope to establish arrangements that seek participation from the landowners. The Government will facilitate all arrangements that are aimed at involving participation from the landowners in ventures with IPPs. Such participation can harness and draw the benefits from the industry to the landowners, and ascertain an appropriate level of their involvement in business partnerships for enhanced security and reliability of electricity services.
5

IMPLEMENTATION

The following sections set out the implementation plan for this Policy. Given the inter-related nature of the objectives of this Policy, namely accessibility, affordability and reliability, it is integral that the Policy be implemented in its entirety if the objectives are to be fully achieved. To this end, a high-level committee, clear funding arrangements, and appropriate frameworks are proposed to ensure that the Policy is implemented efficiently.

5.1 INSTITUTIONALIZING ELECTRICITY SECTOR PLANNING

Electricity sector planning and policy hinges on the institutional capacity of the relevant Department with the vested or mandated responsibility over the electricity sector. The Department of Petroleum and Energy through its Energy Division has this mandate, and has been assessed of its capacity to perform the stated functions as part of this policy direction of the Government.

The immensity and urgency of the task of planning and implementation of this Policy combined with the need for an effective and efficient approach to policy implementation that should lead the electricity industry in this new policy direction requires a better and more feasible mechanism.

To ensure proper planning and implementation of this Policy, an Electricity Management Committee (EMC) is to be set up, consisting of representatives of relevant key agencies and departments, together with the representative of the private business sector.

5.1.1 Electricity Management Committee

The EMC will be established by the Government to be the overarching coordinating body to achieve the objectives of this Policy. Membership of this Committee will consist of the Secretaries, or their respective senior delegates, of the Department of Petroleum and Energy (DPE), Department of Treasury (DoT), Department of National Planning and Monitoring (DNPM), Managing Director Independent Public Business Corporation (IPBC) and the President of the Chamber of Commerce and Industry (CCI). The inclusion of the CCI signifies that the Government is cognisant of the role and interest of the private sector which is equally important in the electricity industry.

The Chair of the EMC will be the Secretary for DPE or his delegate.

5.1.2 Secretariat of the Electricity Management Committee

The work of the EMC will be supported and facilitated by a Secretariat established within the DPE. The EMC Secretariat will report to the Chairman of the EMC and provide services to meet the requirements of the EMC.
5.1.3 Scope of Work of the Electricity Management Committee

The EMC will oversee EIP implementation. The operational functions and responsibilities of the EMC will be led by the DPE, with the involvement of the organizations represented in the Committee. These functions and responsibilities will include in particular, the following:

- Develop a National Electrification Roll-out Plan, which identifies needs both in rural and urban areas. This Plan will be brought to National Executive Council (NEC) at the earliest opportunity for approval;

- Based on the National Electrification Roll-out Plan, prioritize projects under CSOs to be funded by the National Government and delivered on annual basis according to Government's priority;

- Ensure the widest possible input in the way of suggestions for projects, including from investor-proponents of projects;

- Work with the Provincial or Local Level Governments (LLGs), individual Members of the National Parliament seeking assistance with the delivery of electrification projects, should they be seeking to utilize their provincial funds, district support grants or Parliamentary discretionary funds and development funding, for electrification purposes. Such resources could be used as counterpart funding to prioritize projects identified as priorities for rural electrification;

- Identify opportunities for PPP in generation activities and make recommendations to the NEC in this regard, consistent with the National PPP policy;

- Where PPPs are to be proposed, the PPP Centre is to handle this process consistent with the PPP Law and guidelines, and in consultation with the EMC;

- After ranking bids, ensure that the best bid meets minimum requirements of the State and, if not, negotiate a contract which does so, or terminate the process;

- Identify large-scale, new power development projects required to meet the needs of new industries, where surplus power is likely to become available and design and implement competitive tendering systems which ensure the most efficient and least cost use of such surplus power for electrification of contiguous rural communities;

- Identify CSOs and estimate the cost of such CSOs included in the annual work plan and ensure they are consistent with the budget allocation for rural electrification and the Government’s broader policies on CSOs as per the proposed CSO Policy;

- Publicize the annual work plan of electrification projects and make public call for bids on electrification works;

- Manage a public tender process and screen proposals for electrification investment projects under CSOs in accordance with the rules of the Central Supply and Tenders Board (CSTB);

- Where economically feasible, and in all the circumstances desirable, require the incorporation of latest technologies, including renewable energy sourcing; and complementary technology such as an optic-fibre element in power cables to enable the use of communication facilities associated with recovery of tariff charges for electricity from users;
• Coordinate and monitor the implementation of projects following successful tendering process, to ensure timely and effective delivery of services;
• Oversee the administration of an electricity trust fund;
• Monitor and evaluate the achievement of the stated policy objectives and report to Ministers responsible for organizations represented on the EMC;
• Vet and facilitate competition in all the three market segments in the industry;
• Develop and implement appropriate models for market development in rural areas;
• Facilitate private sector participation;
• Develop in detail and administer, in collaboration with the economic regulator and the CSTB, instruments and processes for executing competitive tender for: outsourced functions and procured works; supplying electricity in small markets; supplying large loads outside PPL’s exclusive geographic zone; feed-in tariffs in large loads within PPL’s exclusive geographic zone; and feed-in tariff in PPL’s exclusive supply area.
• Maintain a close consultation with other organizations, and the PPP Centre regarding PPP projects, that have a role to play in the electricity industry in working towards achieving the objectives of this Policy.

The EMC will seek to disburse CSO funds to developers whose proposals best match Government’s objectives that are reflected in a set of principles and criteria it uses.

5.1.4 Financing Mechanism for Electrification under Community Service Obligations

An Electricity Trust Fund (ETF) will be established and the monies in which will be held in trust by the Departments of Finance and Treasury. Funds will only be released on the recommendation of the EMC and subject to the terms of the trust instrument.

The National Budget is presently the most appropriate mechanism to fund CSOs. Donors may also be keen to support electrification programs (preferably on a grant basis or through technical support). It should also be noted that the model introduced above, whereby the private sector can bid for proposed work under the criterion of lowest subsidy opens the opportunity for greater private sector investment in electrification ventures.

Whilst a levy can be appropriate in some circumstances, the introduction of a levy effectively increases the tax burden on electricity users and any decision on the appropriate level of taxation needs to be taken in the context of the broader fiscal strategy. Furthermore, increasing the tax-take reduces the incentive for the Government to improve the effectiveness of the current allocation of funds. This is contrary to the current Medium Term Fiscal Strategy which emphasizes the need to reprioritize recurrent expenditure, rather than grow expenditure. Hence, this Policy does not currently recommend such levy. A levy also inevitably increases the costs of electricity for current consumers and works against the objective of affordability. The Policy therefore recommends allocation of funds through the National Budget.

The ETF will be funded through an annual provision in the National Budget. The DPE will seek funding to be allocated to the ETF as part of its Budget Submission, and based on the costing of CSOs in the annual work plan agreed on by the EMC. The money that is allocated to the ETF for a given year is expected to be fully exhausted in that year, and will be held in trust otherwise and utilized in the subsequent year.
The disbursement and draw-down of funds from the ETF will be strictly assessed and scrutinized by the EMC to ensure that funds are efficiently utilized to attain the core objectives of this Policy.

5.2 DEPARTMENT OF PETROLEUM AND ENERGY AS THE TECHNICAL REGULATOR

The technical regulatory functions will be transferred from the ICCC to DPE, in a process that will ultimately establish DPE as the mandated technical regulator of the electricity industry. This transfer of regulatory arrangements will be undertaken in a planned manner, and progressively, in consultation with PPL, the ICCC and the DPE, and the process should take place over 2-3 years.

The ICCC and the DPE will consult on any technical regulatory decision that may affect any issued licences.

The two components of the technical regulatory regime that are currently regulated, namely ESI and Electrical Installations, will be inherited from PPL and institutionalized in the DPE. The DPE will additionally regulate Environmental and Safety aspects on electricity, standards on Electrical Appliances and Components and perform the function of regulation on the Use of Indigenous Resources.

5.3 INDEPENDENT CONSUMER AND COMPETITION COMMISSION AS THE ECONOMIC REGULATOR

The ICCC will retain and perform all economic regulatory functions in the electricity industry, as economic regulator.

The role of the ICCC will be particularly necessary in PPP arrangements as the means for maintaining regulatory control on opportunistic behaviour and abuse of market power by power companies.

The role of the ICCC is paramount in pricing issues, access arrangements, maintaining service standards and other general economic regulatory functions.

5.4 ARRANGEMENTS WITH PROVINCIAL GOVERNMENTS

The OLPLLG mandates the LLGs to venture into electricity operations and service provision within their precincts. Any arrangement that the National Government establishes with LLGs for the supply of electricity under the National Government’s CSOs may impinge or have implications on the ambit of the OLPLLG. All such arrangements should be done within the provisions of this mandate, and therefore done through the provincial governments, who would be the channel for this national government intervention.

On the grounds of national interest, the National Government can have an important role to play with regard to electricity supplies and other related objectives of the national government policy. The pressing issues of lack of access to electricity, unaffordable electricity prices and unreliability in electricity supplies impact much on the National Government's agenda and are prevalent in the provincial and local government jurisdictions. This seeks for the national government intervention for the sake of national interest with a clear role to play.

The National Government therefore will have to establish appropriate arrangements to carry out its policy on electrification, both under CSOs and for facilitating commercial investments. The details of this working arrangement should seek to clearly define the roles of these two levels of
government in the provision of electricity. The demarcation of roles should ensure that the resources of the two tiers of government complement each other fittingly, and do not overlap to cause duplications amounting to inefficiency, or leave behind voids that could render any such arrangement ineffective.

Rather than having to duplicate the financial resources and other resources of the provincial governments, the National Government will enter into arrangements with provincial governments that best satisfy and align with the goals and objectives and the approach of the Electricity Industry Policy of the National Government.
6
MONITORING AND REVIEW

6.1 MONITORING
The EMC will monitor and evaluate the performance of this Policy. As part of the EMC’s initial mandate, it will develop a full implementation, monitoring and evaluation framework, including specific performance indicators, which will guide the biennial reviews on the Policy to be undertaken by the Electricity Industry Policy Task Force. The role of the EMC, in contrast, will be specific on administering EIP implementation.

6.2 REVIEW
The Electricity Industry Policy Task Force, established by the Government through the NEC Decision No. 271/2006, will have a continued role in supporting the work on this Policy in terms of its review.

6.2.1 Review on Policy Implementation
An independent review will be undertaken once every two years on the implementation of the Policy. The EMC will decide on how this independent review will be instituted and progressed. The review should ascertain whether the stated policy goals and objectives are or have been achieved during the implementation process.

The EMC will report to the Electricity Industry Policy Task Force following the biennial review of policy implementation.

The biennial reviews will progressively and pragmatically chart the way forward in Papua New Guinea’s electricity industry.

6.2.2 Comprehensive Policy Review
The EIP will be comprehensively reviewed independently in the year 2013, by an independent policy reviewer. This will encompass a review of the electricity industry overall, the goals and objectives of the Policy, policy measures and provisions, and the implementation mechanism and framework.

The Electricity Industry Policy Task Force will require the EMC to address the findings of this independent review and make necessary adjustments or recommendations to the NEC to ensure that the Policy is realizing its stated objectives.
Appendix A
Technologies, Sources and Means for Providing Electricity

The State here states clearly its position in relation to choice and preference on the technologies and sources of electricity that are to be used or developed and the approach to generating electricity in PNG.

**Economically-viable Technologies**
Economic viability precedes every other criterion for technologies and sources of electricity that will be employed and utilized in the PNG electricity industry. In situations of vibrant competition where market mechanisms are active, it is expected that the competitive forces alone are sufficient to see that this criterion is met.

**Environmentally-sound Technologies**
Technologies those are friendly to the human and natural environment are promoted to be used in the PNG electricity industry. The human environment can never be allowed to be sacrificed for the purpose of economic gains. Where economic reasons assume greater importance on the Government's developmental agenda, the industry may not see it fit to resort to technologies that do not impact significantly on the natural environment. Where control measures are available and can be used, these should be used in concert with the use of the selected technologies.

**Indigenous Resources**
This Policy promotes use of indigenous resources and sources of electricity to the extent of maximizing these resources.

- **Hydro**
  It is estimated that a 15000 MW potential of hydro in PNG remains not harnessed. This Policy promotes the use of hydro for electricity generation.

- **Geothermal**
  Geothermal potential exists in the country, and only one geothermal project has been developed in PNG at the Lihir gold mine. This Policy promotes the exploitation of geothermal potential in a manner that conforms to accepted international engineering and economic best practices.

- **Solar**
  Solar PV is identified as a potential source of electricity that can be used in the country. The geography and topography of PNG make solar PV a possible electricity source.

- **Wind**
  The Government will continue to support and facilitate the use of wind technology in the provision of electricity services, especially to the rural communities.

- **Gas**
  In line with its policy for downstream processing of its natural gas, the government promotes the utilization of the country's indigenous gas as one of the main sources of electricity generation. Indigenous gas may have the potential to become the predominant source of electricity generation in PNG.
**Ocean currents**

Potential for exploiting ocean currents is vast in PNG despite no trailblazing developments of such projects in the country. It is the intention of the Government to see the electricity industry venture into this new area and yield the benefits of this existing potential.

**Energy-efficient Technologies**

Energy efficient technologies are promoted by the Government for their use in the electricity industry. The Government will ensure that electricity users are not allowed to pay the high price of inefficient technology usage.

**Compatibility with existing Standards**

Technologies used in the provision of electricity services in PNG must be compatible with existing and approved standards in the country. In the view of the Government, this can be compromised for economic gains of the undertakers of electricity or importers and manufacturers of these technologies, which it will guard against.

**Clean Development Mechanism**

The Government will support and facilitate for appropriate electricity projects in PNG to qualify and become registered under the Clean Development Mechanism (CDM) of the Kyoto Protocol. This will enable service providers to acquire Certified Emission Reduction (CER) credits from the CDM Executive Board, which they can sell at their disposal on international carbon markets.

**Renewable Energy Technologies**

The Government promotes the use of renewable energy in the electricity sector.

Renewable energy technologies should enable the industry to allay the concern of energy security and sustainability of electricity supplies.

**Proven Technologies**

Experimental technologies and obsolete technologies are not allowed to be used in the electricity industry. Only proven and current technologies are accepted. The Government intends that PNG be not used as test grounds for experimental technologies, neither dumping grounds for obsolete technologies.
## Appendix B
### Institutional Roles in Policy Implementation

### DEPARTMENT OF PETROLEUM AND ENERGY

**Oversight on Policy**
The DPE will have a strong focus on energy policy and will chair the EMC. Other relevant departments and agencies of the Government and the private sector, which form part of the EMC, will need to be consulted extensively on proposed change to policy or new initiatives which impinge on the implementation of this Policy. It will additionally “house” the operations of the EMC through the EMC Secretariat.

**Member of the EMC**
This Department is a member of the EMC.

**Technical Regulation of the Industry**
The DPE will progressively assume the role of the technical regulator of the electricity industry, transferred to it over from the ICCC.

**Rural Electrification Works**
The DPE will support the EMC in developing a program of rural electrification which identifies, plans and prioritizes rural electrification works.

**Determining Generation Needs in Markets**
The DPE will provide advice to the EMC on generation needs in various markets.

**Making Annual Submissions for Funding as part of the National Budget Process**
The DPE will include the funding requirements for rural electrification and implementation of this Policy in its annual budget submission. The quantum of funding to be sought will be recommended to the DPE by the EMC based on the proposed annual work plan.

### DEPARTMENT OF TREASURY

**Member of the EMC**
The DoT is a member of the EMC.

**Costing on the Policy**
The DoT will assist the EMC with costing of policy options and annual work plans. Such information will form the basis of the DPE’s request for funding as part of the National Budget process.

**Custodian of the ETF**
The ETF will remain in the custody of the DoT.
**Member of the EMC**
The DNPM is a member of the EMC.

**Development of an Implementation, Monitoring and Evaluation Framework**
The DNPM will lead other members of the EMC in the development of an implementation, monitoring and evaluation framework for this Policy. This framework will include specific performance benchmarks to be achieved.

**PNG CHAMBER OF COMMERCE AND INDUSTRY**

**Member of the EMC**
The PNG Chamber of Commerce and Industry (CCI) is a member of the EMC, representing the private sector.

**DEPARTMENT OF LANDS AND PHYSICAL PLANNING**

**Intervention on Land Issues**
The inherent land rights issues in PNG certainly have a negative impact on investments in that they impose additional costs on investments. This Department will be involved in land issues that relate to investments in electricity supplies.

**INDEPENDENT CONSUMER AND COMPETITION COMMISSION**

**Economic Regulation of the Industry**
The ICCC will directly perform all required economic regulatory functions in the electricity industry in PNG, in accordance with the existing legislated regulatory framework. The ICCC will work with the DPE towards the transfer of functions for technical regulation to the DPE.

**Participating in the Consultative Process to Determine Generation Needs**
The ICCC will provide advice to the EMC on generation needs to inform the EMC’s annual work plan and the generation requirements of the electricity sector. The ICCC will participate in consultations with the EMC in determining generation needs and the need for additional generation capacities.

**Enforcing Appropriate Price Regulation**
The ICCC will enforce its regulatory functions on an appropriate mechanism of electricity tariffs.

**Enforcing Access to Information from Regulated Entities**
The ICCC will enforce the provision of the regulatory contract (by the terms of licences issued) it has with the regulated entities in the electricity industry to access information with accounting separation on generation, transmission, distribution, and retail.

**Facilitating Access**
The ICCC will facilitate access in the industry and intervene in situations where the access seeker and the access provider are at loggerheads in third party access negotiations, using specific access codes, within the framework of the overall access regime for the industry.
Facilitating Competition and Participation by the Private Sector
The ICCC will work with the EMC to facilitate competition in specific markets in the industry and under special circumstances, and in facilitating and regulating participation by the private sector especially in establishing concessions or contractual arrangements and PPPs.

Monitoring and Enforcing Reliability Standards
The ICCC will monitor the reliability of electricity supplies in the electricity industry and enforce appropriate provisions of licence conditions to improve reliability.

INDEPENDENT PUBLIC BUSINESS CORPORATION

Monitoring PPL’s performance
Independent Public Business Corporation will monitor the performance of PPL, and in particular implement disciplines relating to reporting requirements and information disclosure. IPBC will ensure for PPL to exercise discipline and comply with its obligations in the industry.

DEPARTMENT OF ENVIRONMENT AND CONSERVATION

Conducting Environment Impact Assessment
Electrification projects and activities that will entail a significant environment impact will require an Environment Impact Assessment (EIA). All electrification activities that will require an EIA will seek approval of the Department of Environment and Conservation (DEC).

OFFICE OF CLIMATE CHANGE AND DEVELOPMENT

Utilizing Clean Development Mechanism
The Office of Climate Change and Development will assist the DPE in facilitating appropriate electrification projects to qualify for CDM status.

PROVINCIAL GOVERNMENTS

Identifying Electrification Needs
The provincial governments, under their Development Plans, will identify electrification needs and present such plans to the EMC, through the DPE and DNPM, to provide information towards the planning and prioritization of electrification works.

Maintaining Services at ‘C’ Centres
The provincial governments are responsible for maintaining electricity supplies at ‘C’ centres under the Organic Law on Provincial and Local Level Governments (OLPLLG). The provincial governments can put in place arrangements to work with the EMC to initiate competitive tendering for subsidized supply of electricity services to these centres by IPPs.

Providing Counter-part Funding for Electrification
The provincial governments may commit counter-part funding to electrification projects. Such commitments will be factored into electrification project planning by the EMC.
Identifying Rural Electrification Needs
The local-level governments (LLGs) may also identify rural electrification objectives and present such plans to the EMC, through the DPE and DNPM, to provide information towards the planning and prioritization of electrification works.

Employing Powers under the OLPLLG
The OLPLLG mandates LLGs to make laws in relation to operations of electricity ventures in their precincts.

Providing Counter-part Funding for Electrification
The LLGs may commit counter-part funding to rural electrification projects. Such commitments will be factored into electrification project planning by the EMC.

DEPARTMENT OF AGRICULTURE AND LIVESTOCK

Identifying Electrification Needs
The DPE will work in close consultation with the Department of Agriculture and Livestock (DAL) to identify agricultural and livestock projects to determine the necessity for supply of electricity or for opening up new electricity markets in line with these developmental projects. Such projects would be considered by the EMC to form a part of its electrification project planning.

DEPARTMENT OF MINERAL POLICY AND GEO-HAZARD MANAGEMENT

Identifying Electrification Needs
The DPE will work in close consultation with the Department of Mineral Policy and Geo-hazard Management (DMPGM) to identify mining projects to determine the necessity for supply of electricity or for opening up new electricity markets in line with these developmental projects. Such projects would be considered by the EMC to form a part of its electrification project planning.

DEPARTMENT OF COMMERCE AND INDUSTRY

Identifying Electrification Needs
The DPE will work in close consultation with the Department of Commerce and Industry (DCI) to identify commercial and industrial development projects to determine the necessity for supply of electricity or for opening up new electricity markets in line with these developmental projects. Such projects would be considered by the EMC to form a part of its electrification project planning.

NATIONAL FISHERIES AUTHORITY

Identifying Electrification Needs
The DPE will work in close consultation with the National Fisheries Authority (NFA) to identify fisheries projects to determine the necessity for supply of electricity or for opening up new electricity markets in line with these developmental projects. Such projects would be considered by the EMC to form a part of its electrification project planning.

PNG FOREST AUTHORITY

Identifying Electrification Needs
The DPE will work in close consultation with the PNG Forest Authority (PNGFA) to identify forest industry projects to determine the necessity for supply of electricity or for opening up new
electricity markets in line with these developmental projects. Such projects would be considered by the EMC to form a part of its electrification project planning.

**DEPARTMENT OF HEALTH**

**Identifying Electrification Needs**
The DPE will work in close consultation with the Department of Health (DoH) to identify health facilities of aid posts, rural clinics, health centres and hospitals in the country so that proper planning and prioritization of electrification works can be made to target these institutions under the government’s CSOs (social policy objective). Such projects would be considered by the EMC to form a part of its electrification project planning.

**DEPARTMENT OF EDUCATION**

**Identifying Electrification Needs**
The DPE will work in close consultation with the Department of Education (DoE) to identify schools and educational institutions in the country so that proper planning and prioritization of electrification works can be made to target these institutions under the government’s CSOs (social policy objective). Such projects would be considered by the EMC to form a part of its electrification project planning.

**CENTRAL SUPPLY AND TENDERS BOARD**

**Tendering on Electricity Works**
The EMC will operate in accordance with the rules and guidelines established for the tendering of work by the Central Supply and Tenders Board (CSTB) and liaise closely with the CSTB in implementing the competitive tender process.

**NATIONAL PUBLIC-PRIVATE PARTNERSHIP CENTRE**

**Administering Public-Private Partnership Transactions**
For electricity projects that should be developed under a PPP model, the EMC will trigger the process and work closely with the National PPP Centre who will lead in the whole process of PPP transaction to facilitate PPL’s partnership with potential service providers. The EMC will define and clarify on the scope for PPPs in the electricity industry, for example in transmission infrastructure projects and service of PPL’s existing ageing generation assets.

**NATIONAL INSTITUTE OF STANDARDS AND INDUSTRIAL TECHNOLOGY**

**Regulation of Electricity Standards**
The DPE, as the technical regulator, will consult with the NISIT to establish appropriate standards for the electricity industry in PNG. A comprehensive array of electrical standards and standards relating to electricity works from generation, transmission, distribution and consumption will be acquired and employed by the technical regulator.
Appendix C1
Current Electricity Industry Structure

ICCC  IPBC  DPE

PPL

KANUDI IPP  BAIUNE IPP  PNGSEL IPP  HIDES IPP

NOTE:
1. PPL REPORT TO ICCC THROUGH A REGULATORY CONTRACT.
2. PPL REPORT TO IBPC AS MANDATED BY IPBC ACT.
3. PPL DOES SEE GUIDANCE FROM DPE ON POLICY MATTERS OCCASIONALLY.
4. ALL OTHER PLAYERS IN THE INDUSTRY REPORT TO PPL ON REGULATION MATTERS.
Appendix C2
Proposed Electricity Industry Structure

NOTE:
1. PPL WILL REPORT TO ICCC ON ECONOMIC REGULATION MATTERS
2. PPL WILL REPORT TO IPBC AS MANDATED BY THE IPBC ACT.
3. PPL WILL REPORT TO DPE ON TECHNICAL REGULATION MATTERS
4._OTHER PLAYERS IN THE INDUSTRY WILL REPORT TO ICCC AND DPE ON ECONOMIC AND TECHNICAL REGULATION MATTERS RESPECTIVELY.