

ROL UNIT 1  
1-2

# Information *Handbook*



**PNG POWER Ltd**



[www.pngpower.com.pg](http://www.pngpower.com.pg)



## OUR VISION

Making electricity services accessible and customer friendly

## OUR MISSION

We are dedicated to providing a reliable electricity service and in doing so;  
Promoting a profitable professional growing company offering employee fulfilment while contributing to the development and wellbeing of our present and future customers

## OUR VALUES

As Power People, we will:

Put our customer first

Strive to excel and work smarter

Foster respect and teamwork

Promote honesty and accountability

Take pride in and share our success

## OUR GOALS

### **Achieving Customer Service Excellence by:**

- Providing prompt, courteous and helpful advice
- Being attentive to needs
- Having open dialogue
- Undertaking informative education programs

### **Achieving Performance Excellence by:**

- Focusing on effective staff training and development
- Having a motivated and proficient workforce with pride in its achievements
- Being an organisation with high work ethics and responsible attitudes
- Providing a workplace environment conducive to personal and team fulfilment

### **Achieving Technical Excellence by:**

- Ensuring employee and customer safety at all times
- Meeting international quality and reliability standards
- The innovative but practical use of modern technology
- The pro-active implementation of preventive maintenance programs

### **Achieving Corporate Integrity by:**

- Promoting honest, professional and ethical conduct by employees
- Encouraging individual work commitment values
- Providing internal and external transparency in all procedures

### **Achieving Leaderships & Team Work by:**

- Fostering considerate and helpful attitudes among employees
- Fostering open and transparent dialogue amongst employees
- Encouraging pride in team performance and achievements
- Providing a cooperative work environment to achieve corporate goals
- Participating in community activities and services

### **Achieving Accountability By Being Responsible to:**

- Each other for work quality and outcomes
- Our customers for the quality of service provided
- Our stakeholders for transparent business management
- Our shareholders for successful commercial outcomes

### **Achieving Success by:**

- Exceeding customer expectations
- Meeting commercial targets
- Completing tasks on schedule
- Achieving corporate growth
- Having a motivated and fulfilled workforce

## **COMPANY PROFILE**

PNG Power Ltd (PPL) is a fully integrated power authority responsible for Generation, Transmission, Distribution and Retailing of Electricity throughout Papua New Guinea and servicing individual electricity consumers. PPL services customers in almost all urban centres throughout the country encompassing industrial, commercial, government and domestic sectors. Where possible, the services extend to rural communities adjacent to these urban centres.

PPL is also undertaking a regulatory role on behalf of the Independent Consumer and Competition Commission (ICCC). These responsibilities include approving licenses for electrical contractors, providing certification for models of electrical equipment and appliances to be sold in the country and providing safety advisory services and checks for major installations.

PNG Power Limited (Company No 1-44680) was corporatised under Section 3 (1) of the Electricity Commission (Privatisation) Act 2002 as the successor company to the Papua New Guinea Electricity Commission (ELCOM). All of ELCOM's assets, liabilities, rights, titles and personnel were transferred to PPL.

### **Company Ownership and Reporting**

PPL is a State Owned Entity (SOE). The Kumul Consolidated Holdings Limited (KCHL) holds the shares for corporatised state entities as trustee of the General Business trust. The KCHL acts as the sole shareholder on behalf of the Government. The Minister for State Enterprises recommends to the National Executive Council (NEC) for the appointment of the Board who report to KCHL. PPL, through the Board provides regular financial and operational reports and a Five-year Business Plan to KCHL on an annual basis.

### **PNG Power Ltd Board**

The PPL Board consists of 8 Directors appointed through KCHL. The Directors come from a diverse professional background whose task is to make policy decisions for the operations of PNG Power.

### **PNG Power Ltd Constitution**

PPL was established under the Electricity Commission (Privatisation) Act of 2000 to be the successor company taking over all assets, liabilities and personnel of ELCOM. PPL is also governed by another Act of Parliament, the Electricity (Amendment) Act which established a regulatory regime for the Electricity Industry. PPL as a corporatised entity, operates in accordance with the Companies Act of 1997. The Constitution of PPL has been established in compliance with this Act. The Constitution establishes the functions and responsibilities of the Board to the shareholders and the general administrative and reporting requirements.

# REGULATORY FUNCTIONS

## Regulatory Contract

The operations of PPL is governed by the Regulatory Contract signed between the ICCC and PPL in August 2002. ICCC is responsible for regulating competition, controlling prices and protecting consumers for a number of industries in PNG. As such, it is the regulating authority for the electricity industry.

The Regulatory Contract establishes a long-term formula for fixing tariffs, which takes into account the CPI, exchange rates, fuel prices and the capital expenditure program among other factors.

Under the Regulatory Contract, PPL is required to meet specified Minimum Reliability Standards for different defined service zones. The implication of the Minimum Reliability Standards is that various capital investments are required to meet the Standards.

Also under the Regulatory Contract, the ICCC has issued an Electricity Code which elaborates on the Customer Services to be provided by PPL and specifies the detailed requirements and standards for these service.

ICCC has also issued a series of operating licenses for PPL to operate under. They include:

- Generation License
- Transmission License
- Distribution License
- Retail License

# CORPORATE OBJECTIVES STRATEGIES

## Corporate Objective

To enhance the economic and social development of Papua New Guinea through leading the development and expansion of electricity supply throughout the nation. This will be achieved through aligning, coordinating and utilising the resources of PNG Power, Government and the private sector.

## Strategies

PNG Power will be the primary provider of electricity to Papua New Guinea.

1. PNG Power has extensive electricity infrastructure across the nation that can be extended or expanded to develop and improve electricity supply to Papua New

Guinea.

2. PNG Power will establish strategic alliances with the private sector to deliver improved and expanded electricity supply to Papua New Guinea.
3. PNG Power will align its economic development plans and activities with Government development strategies and policies.
4. PNG Power will expand its program to provide electricity supply to rural areas through the development and implementation of a five year Rural Electrification Plan.
5. PNG Power recognises that the potential to provide low cost hydro electricity generation is a competitive advantage to the nation and will actively promote hydropower to the developers and operators of resource and industrial projects including possible expansion of downstream processing.
6. PNG Power will actively participate in and contribute to Government policy development and planning activities in areas such as economic development, energy and electricity policy and Rural Electrification.
7. In conjunction with Government and its agencies, PNG Power will promote the competitive advantages of hydro power to global investors.
8. PNG Power will establish relationships and strategic alliances with international providers of donor and concessional funding.
9. PNG Power will engage with other State owned enterprises, industry and community groups and other stakeholders to get input and feedback and to outline its electricity expansion and development programs.

## **ELECTRICITY SUPPLY**

PNG Power is responsible for the operation of 30 electricity systems at various centres throughout the country. Three of these systems are hydro based with generation capacity in excess of 10 Megawatts (MW). The other smaller systems are run by thermal or diesel generation.

PNG Power's main source of generation is hydro, which accounts for 70% of the total electricity generation. Generation by light fuel oil is 14% and an Independent Power Producer (IPP) with 16%. Current annual generation is over 800Gwh. Demand for electricity has grown by an average of 2.2% over the last ten years and this trend is



# PNG POWER LTD NETWORK IN PAPUA NEW GUINEA





expected to continue in the medium term. PNG Power has an installed generation capacity of over 300MW. Of this, hydro power stations account for 70% and thermal account for 30% of the total capacity. The transmission voltages are 132kV, 66kV and 33kV, while the distribution voltages are 11kV and 22 kV. The standard consumption voltages are 415 Volts and 240 Volts at 50 Hz.

## **SUPPLY AND DEMAND**

The demand for electricity in Papua New Guinea is constantly increasing and PNG Power has established a Ten Year Plan to cater for this demand.

PPL recognises the need to meet the community expectations for reliable power supply. The improved financial performance enables PPL to make the necessary investments to improve supply to existing customers and to build the infrastructure necessary to meet future demand as the PNG Economy realises rapid growth.

PNG Power forecasts that in 2030, electricity production would be 332 MW and Sales forecasts are for 2030 is 1,413 GWh

The generation capacity of PNG Power is expected to increase in the coming years as the company wants to improve service delivery to its customers.

### **The Easipay System**

A part of PNG Power's plan as a business entity is to introduce the Easipay system throughout the country so that consumers pay for the amount of electricity they use.

The rest of the consumers throughout the country who are on the credit meter system will have their credit meters replaced with the Easipay meters.

Easipay is a user-pay system where customers who buy power (kWh) receive a computer generated sixteen or 20 digit number, representing the information about the customer meter and the amount of power (kWh) purchased. The customer enters the digits on the meter, which has a keypad similar to the telephone keypad. If the numbers are entered correctly, the amount of electricity in kWh is registered on the meter.

A lighting system similar to the traffic light system will show green for sufficient power, amber for a week's supply and red for three days supply. When the light is red, the customer buys another lot of units and if not, the meter switches off. With this system, the customer does not owe PNG Power any debt and PNG Power does not disconnect the customer.

## **Future Renewable Energy sources**

A major emphasis has been put on the development of hydro power potentials in a number of provinces. Development of hydro power is important as this would replace thermal generation and thus reduce imported fossil fuel. Investigations of hydro power potentials in other areas of PNG is continuing.

Other indigenous sources of energy including oil and gas, solar, wind and bio-energy from sugar cane and oil palm waste will also be investigated to help reduce imported fossil fuels.

## **Independent Power Producers**

The participation of private enterprise in the supply of electricity will also be assessed and if found to be beneficial would be implemented. Currently PNG Power purchases power from Posco Daewoo Ltd, which supplies 24MW and from the ExxonMobil LNG Gas Plant which supplies 26 MW. From their power stations, they supplement the supply from PNG Power's stations at Rouna, Moitaka and Kanudi for the National Capital District's load demand.

## **Rural Electrification**

About 90 percent of the population of Papua New Guinea live in the rural areas and less than 4 percent of the rural population have access to electricity.

The current Rural Electrification projects are mainly funded by Members of the Parliament and mainly involves the extension from the existing distribution network.

PNG Power will continue to supply electricity and support the government in carrying out more rural electrification projects through out the country to assist in the development of the country.

# **OPERATIONAL SYSTEMS**

## **Ramu System**

Lae, Madang, Yonki, Kainantu, Goroka, Kundiawa, Mt Hagen, Mendi, Wabag, Gusap, Minj/Banz

## **Port Moresby System**

National Capital District and surrounding areas

## **Gazelle System**

Kokopo, Rabaul, Kerevat

## **Other Centres**

Vanimo, Aitape, Maprik, Wewak, Madang, Lorengau, Finschaff, Wau, Kimbe, Bialla, Kavieng, Buka, Arawa, Ialibu, Tari, Popondetta, Alotau, Kerema, Daru

## **PORT MORESBY SYSTEM**

The Port Moresby system serves the National Capital District, the commercial, industrial and administrative centre of Papua New Guinea. The Port Moresby system also serves surrounding areas in the Central Province.

The main source of generation is the Rouna system consisting of four hydro stations on the Laloki River, controlled water storage in the Sirinumu Reservoir and a small generating set at the toe of Sirinumu dam. The total generation capacity from the Rouna Power Stations is 63MW.

PNG Power also operates a thermal power station at Moitaka, outside of Port Moresby which is used to supplement the supply from the Rouna Power Station and has a generation capacity of 30MW.

PNG Power also purchases electricity from privately owned power stations at Kanudi and at the LNG Gas Plant. The Posco Daewoo Kanudi Power Station (24MW) and the ExxonMobil LNG Gas Plant Power Station (26MW) sell power to PNG Power Ltd and add 60 MW to the Port Moresby system generation capacity and is being utilised as base load. The load demand for the Port Moresby System is 158MW in 2016.

PNG Power also owns the Kanudi Power Station which consists of Gas Turbines.

The Port Moresby hydro generation is transported by three 66kV lines and a 33kV feeder and the Moitaka thermal generation output is delivered to the system at Boroko via a single and a double circuit 66kV lines which also supplies the Waigani Substation. There is also a 66kV circuit line from Moitaka to Kanudi to improve the security of power supply.

## **RAMU SYSTEM**

The Ramu system serves the load centres of Lae, Madang and Gusap in the Momase Region and the Highlands centres of Wabag, Mendi, Mt Hagen, Kundiawa, Goroka, Kainantu and Yonki. The economy of the regions supplied by the Ramu system is based on mining, oil, gas, coffee, tea, timber and industrial productions.



The main source of generation is the Ramu Hydro Power Station with an installed capacity of 75MW, comprising of five units of 15MW each. This station which was previously a run-of-river scheme, became a storage scheme when the Yonki dam was commissioned in February, 1991. Additional hydro energy is supplied by Pauanda, a run-of-river station in the Western Highlands Province with 12MW.

Power is also purchased when required from the privately owned Baiune Hydro Power Station at Bulolo, Morobe Province and varies between 1-2MW depending on availability.

Transmission line outages, energy and peak demands are met by diesel plants at Madang, Lae, Mendi, Wabag, Kundiawa and Goroka. These plants serve as stand-by units.

Three radial lines originating from Ramu Hydro Power Station switchyard serve Lae, Madang and the Highlands centres. Currently Madang and the Highlands Region are supplied at 66kV and Lae at 132kV. The Highlands line interconnects with Pauanda hydro station and supplies the townships of Kainantu, Goroka, Kundiawa, Mt Hagen, Wabag and Mendi.

## **GAZELLE PENINSULA SYSTEM**

The Gazelle Peninsula system serves the townships of Rabaul, Kokopo and Keravat to service Gazelle's economy based on copra, coconut oil, cocoa, timber and fishing.

The Gazelle Peninsula system is powered by a 10MW hydro power system at Warangoi, Ulagunan Diesel Power Station with 8.4MW, and 0.5MW from Kerevat Diesel Power Station. A 66kV line linking Warangoi to the Rabaul, Kokopo and Kerevat zone substations delivers hydro power from Warangoi Power Station to these load centres.

## **OTHER CENTRES**

The Kimbe system is supplied by the Ru Creek Mini hydro system and the Bialla system by the Lake Hargy mini hydro scheme, while the other centres are served by diesel generating stations. PNG Power continues to take over the supply of electricity to district centres as its Rural Electrification program expands to connect these centres.

## **TOTAL NUMBER OF CUSTOMERS**

PPL's total number of customers is about 116, 242 including 85, 611 customers on Easipay.

## **BUSINESS PLANS**

### **Rehabilitation of Aging Equipment**

PNG Power has put in place plans to replace and rehabilitate all power stations and machines throughout the country. Rehabilitation work has been completed on the Rouna 2 Power Station in Port Moresby. Work is progressing at the Lae Power Station and the Ramu 1 Hydro Power Station rehabilitation has commenced.

## **MANPOWER**

PNG Power employs around 2050 employees. These staff operate under thirteen business units;

- Operating & Maintenance
- Asset Development
- Performance Engineering
- System Operations
- Strategic Planning & Business Development
- Project Coordination
- Inventory Management
- Rural Services
- Human Resource Management
- Finance
- General Counsel
- Corporate Affairs





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