

PUBLIC UTILITIES REGULATORY COMMISSION



ANNUAL REPORT 2005

Mission Statement

PURC is committed to the development and delivery of the highest quality of utility services to all consumers, while building a credible regulatory regime that adequately responds to stakeholders' concerns and ensures transparency, reliability and equity in the provision of utility services in the country.

Vision

To become a model institution which ensures the delivery of the highest quality utility services to all consumers at fair prices.

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1. PURC IN BRIEF

The Public Utilities Regulatory Commission was established in 1997 under Act 538 to regulate and oversee the provision of utility services. Public utilities are defined in the Act as bodies engaged in the supply, transmission or distribution of electricity or water for a fee, whether directly or indirectly. Act 538 however makes provision for the extension of PURC's mandate to cover other utility services through a Legislative Instrument recommended by the Minister with responsibility for a particular sector.

Currently, the Commission regulates electricity and urban water services provided by the Volta River Authority (VRA), the Electricity Company of Ghana (ECG), the Northern Electricity Department of VRA (NED) and the Ghana Water Company Limited (GWCL) to their customers. Operations of community water systems are excluded from the Commission's purview.

The nine members of the Commission are appointed by the President in consultation with the Council of State. The Commission consists of a Chairman, an Executive Secretary, four persons with knowledge in matters relevant to the functions of the Commission, and a representative each of the Trades Union Congress (TUC), the Association of Ghana Industries (AGI) and Domestic Consumers. In 2005, a member of the Commission resigned to take up an appointment as Deputy Northern Regional Minister. He is yet to be replaced, and the vacancy kept the number of members at eight. The Commission is supported by a Secretariat which includes engineering/technical, financial, customer service and other professionals.

The Commission works through Committees comprised of both Commissioners and Secretariat staff, which deliberate on matters and submit recommendations on all policy issues to the Commission for approval. The Committees are: Administrative, Legal & Consumer Affairs, Finance and Technical & Tariffs.

The mandates of PURC include: approving rates chargeable for provision of utility services, protecting the interests of consumers and providers of utility services, monitoring the compliance of utility companies with standards of performance established by licensing authorities, and promoting fair competition among public utilities. The Commission also receives and resolves complaints related to the provision of utility services. The Commission has rule making powers and has issued a couple of Subsidiary Legislation to inculcate greater civility in service provision.

By virtue of section 4 of Act 538, the Commission is an independent body and is not subject to the direction or control of any person or authority in the performance of its functions. The Commission is however statutorily required to submit audited statements of accounts and reports of its operations yearly to Parliament. In addition to the institutional representation on the Commission of AGI and TUC, PURC consults stakeholders extensively. Indeed, the Commission is enjoined by law, its regulatory policy and good regulatory practice to take reasonable account of representations made to it by consumers before approving any rates.

2. THE COMMISSION

Commissioners are by statute appointed for five year terms which may be renewed. The current term commenced in January 2003. Some Commissioners are serving a second term. The Commission comprises:

Mr. Kwame Panim – Chairman. Mr. Panim is an Economist and Investment Consultant. He was at one time the Chief Executive of the Ghana Cocoa Marketing Board, and a member of the National Petroleum Tender Board. He is also the Chief Executive of New World Investments Limited.



Mr. Stephen Nyante Adu - Member and Executive Secretary. Mr. Adu is a Finance Expert. He was the Acting General Manager and Financial Controller of Ghana Leasing Company Ltd, and worked briefly with Price Waterhouse as an Associate Consultant. Mr. Adu has been the Chief Executive of the Commission since its inception in 1997.



Mr. Mohammed Amin Adam – Member. Mr. Adam is an Economist and Financial Manger of the Financial Monitoring Directorate of the Ministry of Energy. He is a member of the Board of the National Service Scheme and the Residency Board of the University of Cape Coast.



Mr. Alex Bonney - Member. Chairman of the Trades Union Congress (TUC) appointed to represent that organization as one of the two key institutional representatives on the Commission. Mr. Bonney is by profession an Accountant. He has served on the Commission since September 2001.

Dr. Mrs. Mary Chinery Hesse – Member. Dr. Mrs. Chinery Hesse graduated in the disciplines of Sociology, Economics and Development Studies and was at one time a Principal Secretary of the Ministry of Finance. She worked with the United Nations and was appointed the first woman Deputy Director General of



the International Labour Organization, first African woman Resident Co-ordinator of the UN System and Resident Representative of UNDP in New York, Sierra Leone, Seychelles and other countries.



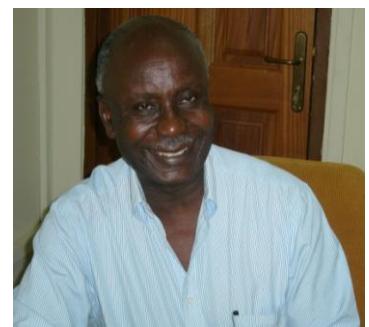
Mr. Andrew Lawson – Member. Mr. Lawson is the representative of the Association of Ghana Industries of which he was the Executive Director. He is an Engineer and ex-Integration Manager of British American Tobacco Company Ltd (BAT). He is also an immediate past member of the Board of Directors of BAT and of Mechanical Lloyd Company Ltd.



Nana Kobina Nketsia V – Member. Nana Nketsia is the Omanhene of Essikado in the Western Region. He is also a lecturer at the University of Cape Coast. He currently serves as the Chairman of the Museums Board and Chairman of the Ghana Broadcasting Corporation.



Mr. Kwame Osei – Poku - Member. Mr. Osei-Poku is a Water Consultant and former Deputy Managing Director of the Ghana Water and Sewerage Corporation, now Ghana Water Company Ltd. (GWCL) Mr. Osei-Poku is an Engineer. He is serving his second five-year term on the Commission, having first been appointed in 1997.



Mr. Andrew E. Quayson –Member. Mr. Quayson is an Engineer by profession and the Chairman of the Energy Foundation. He was formerly the Managing Director of Juapong Textiles Ltd. and Ghana Textiles Printing Co. Ltd, and also the Executive Director of the Association of Ghana Industries. He is also serving a second five-year term.

3. HIGHLIGHTS OF 2005

DATE	EVENT
■ February 1, May 1, August 1, November 1 2005	Tariff Reviews Electricity and Water tariffs, reviewed in accordance with PURC Act 538 and the Automatic Adjustment Formula, were published in the Gazette and Newspapers. The reviews were carried out for the quarters February – April 2005, May – July 2005, August – October 2005 and November 2005 - January 2006. The End-User Tariff paid by consumers did not change during the year.
■ 24 February 2005	Consumer Education Programmes PURC held its second workshop for District Managers and District Commercial Managers of ECG and GWCL for the northern sector of the country in Kumasi. It was aimed at improving the customer care orientation of utility company staff. The first was organised for the southern sector of the country in Accra in 2004.
■ 3-14 March 2005	Participation in INDUTECH 2005 The Commission participated in the 6 th Ghana Industry and Technology Fair organised by the Association of Ghana Industries from 3 rd - 14 th March 2005. The participation formed part of PURC's public awareness programme and also offered the public the opportunity to speedily submit complaints against the utilities.
■ 11-15 April 2005	Regulatory Partnership with the PUCO, Ohio, USA PURC entered into a Regulatory Partnership with the Public Utilities Commission of Ohio, USA (PUCO). The Partnership is being implemented by the National Association of Regulatory Utility Commissioners, USA (NARUC) through the cooperation and funding from the United States Agency for International Development (USAID). The first activity of the partnership took place in Accra, from 11 th -15 th April 2005 during which the partnership agreement was signed.
■ 19 April 2005	Visit by the Hon. Minister for Water Resources, Works and Housing The Minister for Water Resources, Works and Housing Hon. Hackman Owusu Agyeman paid a courtesy call on the Commission to acquaint himself with PURC's activities especially within the water sector and also to discuss some of the challenges confronting the Commission.
■ 15-16 July 2005	Commission holds Workshop at Elmina with some Members of Parliament PURC organised a retreat at Elmina for the Parliamentary Select Committees on Mines and Energy, Works and Housing, Legal and Constitutional Affairs and Finance to discuss issues relating to regulation and activities of PURC as well as challenges facing the Commission.

 24 March, 12 May, 17 August, 3 October 2005	<p>Seminars on issues within the Water and Energy Sectors</p> <p>In 2005 the Commission held workshops to consult with stakeholders and discuss issues relating to the energy and water sectors.</p> <p>One workshop was organised for the water sector on 12th May 2005 on the theme, Building Partnerships to Improve Water Supply.</p> <p>There were three energy sector workshops. The first was held on 24th March 2005 on the topic 'Open Access Transmission Pricing'. The second workshop held on 17th August 2005 was to discuss models created by PURC to carry out efficiency analysis and benchmarking of the utilities, while the third was organised on 3rd October 2005 and discussed draft Access Pricing Guidelines prepared by PURC for embedded generation and bulk customers in Ghana.</p>
 November 2005	<p>Visit to PURC by Delegates from the Federal Ministry of Water Resources, Nigeria</p> <p>Delegates from the Federal Ministry of Water Resources in Abuja, Nigeria visited PURC in November 2005 to undertake a study tour to broaden their knowledge on regulation of the water sector.</p>

4. CHAIRMAN's STATEMENT

In 2005, the Commission focused on critical regulatory issues associated with both the water and energy sectors and closely followed progress on the West African Gas Pipeline Project. The competitive nature of funds flow in the global economy and the economic challenges in 2004 resulted in a decline in the amount of capital available for investment in the utility sectors of developing countries. This led to Government's decision to explore options other than outright privatization of the sector.

The U.K. Department for International Development (DFID) continued to support the Commission during the year. There was however a change in the implementation of the assistance with the funds now being allocated to PURC through the Government. This new procedure led to a break in PURC's ability to access the funding and resulted in the stalling of key projects initiated by the Commission under the support, on pro-poor issues and water quality management. Funding from the World Bank is expected to continue the pro-poor pilot projects initiated by the Commission.

In an effort to expand the reliable supply of safe water in the urban areas and to support the introduction of the private sector into the management and operation of the water sector, the Government of Ghana adopted an arrangement which combined both public and private partnership in the operations, maintenance and management of the urban water systems. This was done in order to facilitate the efficient production and

distribution of potable water to reach a greater proportion of the consuming public. In 2004 Government took the decision to introduce private participation in the form of a Management Company to operate the water systems of the GWCL.

The position of the Commission throughout the initial policy debate comprising a lease arrangement has been that there must be an element of competition in the final model selected for the operation of the sector, be it publicly or privately owned. On private sector participation through a Management Contract therefore the Commission indicated its support for a minimum of two operators. This we believe would provide an opportunity for comparative competition where the output and performance of the Management Companies would be measured against each other.

The Commission appreciates that some of its contributions were taken into consideration in the preparation of the management contract document, which is now in operation.

We believe we have made significant strides in consolidating our position as a sufficiently strong and independent institution, which will help to ensure benefits for currently connected consumers of both electricity and water. Efforts are also being made to address the problem of non-access to utility services. In the case of water the Commission's Social Policy and Strategy for Water Regulation is expected to ensure enhancement of accessibility to the over 40% of the

urban population who do not have access to safe and affordable water supply. Similar initiatives undertaken for electricity, particularly by way of tariff structure modifications are designed to improve equitable access to the national grid.

In the course of the year, the Commission entered into a Regulatory Partnership with the Public Utilities Commission of Ohio as part of its capacity building program for natural gas. The knowledge and skills to be acquired in this exchange program would ensure the Commission's readiness for regulating the natural gas secondary market, which is expected to be developed some time after the arrival of natural gas from Nigeria through the West African Gas Pipeline. The anticipated arrival of the gas in 2007, initially for power generation would considerably reduce the cost of production of thermal power.

With regard to tariffs, the Commission undertook its quarterly review of electricity and water tariffs during the year, in accordance with the PURC Act 538 and the Automatic Adjustment Formula gazetted in July 2003. Towards the end of the year, the Commission initiated the process leading to a major tariff review. Stakeholder consultations are planned to be held in the National capital, Accra as well as two other regions (Ashanti and Northern) in 2006. This would be aimed at soliciting the views of consumers to take account of their concerns generally about the unsatisfactory levels of service and towards the final tariff design. The Commission hopes to expand the coverage of the consultation process in future with improved finances.

In spite of increases in the world crude oil prices, favourable levels of generation from hydro sources as well as a relatively stable macroeconomic environment enabled us to make only minimal changes in the Bulk Supply Charge payable by the Electricity Company to the VRA with no changes in the end-user-tariff.

In order to raise public awareness generally, a number of workshops were held throughout the year to sensitize the public about their roles and responsibilities as regards the use of utility services. There was collaboration with other institutions such as the Energy Foundation and Energy Commission, which gave Technical inputs on a number of issues. A workshop was held in Elmina for the Parliamentary Select Committees on Mines and Energy, Works and Housing, Legal and Constitutional Affairs and Finance to bring them up, as representatives of the people, to speed on developments in the sector.

The Commission's modest public awareness programmes have emboldened consumers to approach the utility companies and PURC with their complaints. There is therefore a marked increase in consumer complaints which the Commission has had to deal with and resolve.

The Commission sponsored a training programme for utility company staff to be more customer oriented in their outlook. The Commission plans to intensify its efforts to secure and allocate resources for educating consumers on measures being taken to improve quality of service.

The Commission feels its effectiveness in discharging its responsibilities continue to be affected by its resource constraints. These constraints affect the Commission's ability to:

- (i) carry out effective monitoring of the utilities as mandated by the PURC Act
- (ii) implement critical pro-poor projects in the peri-urban and urban areas
- (iii) fill professional vacancies and retain staff by rewarding staff adequately.

Nevertheless, the Commission remains committed towards carrying out its mandates and in collaboration with other agencies create the adequate, efficient and reliable utilities sector we all yearn for.



Kwame Panim
Chairman

5. EXECUTIVE SUMMARY

5.1 Tariffs

In accordance with PURC's pledge to protect and maintain the real value of tariffs the Commission continued to implement the Automatic Adjustment Formula (AAF) introduced in 2003 throughout the fiscal year 2005. This was implemented to insulate the utility rates against exogenous factors over which the utilities have no control, but which could affect the value of the tariffs. The AAF, which is calculated on a quarterly basis, sought to correct changes in the hydro thermal generation mix, the world market crude oil prices, the consumer price index and the currency exchange rate between the US dollar and the cedi.

Although there were some movements in the above factors at various stages during the year, especially in the case of fluctuating crude oil prices, the Commission managed to maintain reasonable stability in the tariff levels. This was helped by favourable hydro levels which more than compensated for a volatile crude oil price. The US\$ to cedi exchange rate was remarkably constant throughout the year. Fluctuations in the rate of inflation were also minimal, recording marginal variations, thus having a positive impact on the tariffs leaving them relatively stable over the period.

The Commission's ability to maintain this price stability assisted all consumers, especially major consumers to plan their business activities more effectively.

Towards the end of 2005, after a period of approximately three years of applying the current tariff structure, the Commission initiated the process of undertaking a major tariff review which was to take effect in 2006. In that regard, the Commission is planning a number of open fora in various parts of the country to educate the public on the state of the utilities and elicit feedback on the public's perception of the utilities. This exercise would be aimed at seeking the views of the public towards improved water and electricity utility services provision. It is envisaged that the major tariff review will result in a more robust tariff structure which would also ensure a more equitable access to utility services.

5.2 Participation in West African Gas Pipeline Project Meeting (WAGP)

Discussions on the West African Gas Pipeline project were concluded during the year. Agreements and contracts have been signed thereby concluding the definition of the legal framework for natural gas operations. Currently, construction of the pipeline is progressing well and it is envisaged that first gas will arrive in the first half of 2007.

The Commission's interest in the project, in view of its potential impact on electricity tariffs is well known. As in previous years, the Commission was invited to and key staff participated fully in a number of core group and pre-negotiation meetings. PURC staff made contributions on areas of the project which had implications for cost of electricity generation for Ghana.

5.3 Pilot Projects for Community Involvement in Water Supply Improvement

During the year, the Commission published its policy documents on Tariffs and Social issues. The Commission has always felt that its social obligations/responsibilities particularly towards the poor section of the society must be tackled through its own regulatory policies which would ensure improved access to potable water at affordable prices for the entirety of the population.

In this regard, the Commission in collaboration with GWCL and WaterAid, put forward proposals to undertake two (2) pilot projects towards drawing lessons in the provision of water supply to poor and low income households. These lessons will inform PURC's social policy, offer GWCL options for supply of water to poor communities and provide opportunities for enhancing community involvement in water supply arrangements. A number of deprived communities in the Greater Accra Region have been visited and a few selected for undertaking these pilot interventions. These interventions will test community-management of both bulk water supply and supply through standpipes as well as involvement of women in water delivery to deprived households. Other objectives expected to be achieved include improved quality of water delivered through secondary suppliers and the elimination of illegal connections, which exacerbate the plight of the poor.

5.4 Participation of Private Sector in Water Delivery

During the latter part of the year, the Government signed the agreement for a management contract which will allow the implementation of the Urban Water Project for which the World Bank is contributing the bulk of US\$120m as a funding grant. The Commission has been given the opportunity to contribute to the management contract being developed for the five-year project. The Commission has to a large extent been able to ensure that, although it would not be a signatory to the management contract, a good deal of operational/performance and efficiency standards have been incorporated into the contract to ensure that important regulatory objectives are taken into account.

5.5 Quality of Service Measures

During the year the Commission maintained its programme of holding quarterly meetings with the management of the utility companies. These meetings are designed to provide the opportunity for the Commission to review the utilities' performance and obtain explanations for operational shortcomings. Future programmes for improving the performance of the utility companies and sustaining adequate levels of services are also discussed.

In addition, the meetings address the utilities' level of achieving quality of service targets set which are critical for consumer satisfaction, as well as their financial performance.

As a further step towards increased efficiency and responsiveness to customers, the Commission outlined proposals for instituting guaranteed standards of service and

penalties. The scheme will be adopted following an extensive consultation process and is designed to motivate the utilities to improve their quality of service to customers if they are to avoid penalties and ensure sustainability of service delivery.

5.6 Consumer Service Activities

Pursuant to the PURC Act, the Commission carries out its statutory obligation of ensuring protection and fair treatment of consumers by utility service providers through the work of the Bureau of Consumer Services (BCS). These include regular communication with consumers and the utility providers, effective monitoring of standards of service, expeditious handling of consumer complaints, and supervision of preparation of consumer charters by the utility companies.

Monitoring of performance of Customer Service Centres

In the year 2005, the Bureau consolidated its quest for efficient and effective utility service delivery to consumers. PURC focused on the monitoring of Customer Service Centres (CSCs) and District Offices (DOs) of the utility companies, namely ECG, GWCL and NED, to ensure their compliance with quality of service standards set by the Commission.

The performance of a total of 36 CSCs and DOs were monitored in eight operational regions of the utilities in the reporting period. Discussions were held with the Officials of the utility providers to explain pertinent issues.

Management of Consumer Complaints

The BCS also mediated and settled 230 out of a total of 287 complaints lodged against the utility companies. The complaints were lodged against ECG and GWCL. The BCS did not receive any complaint against NED.

Public Awareness and Education

The BCS embarked on an intensive public awareness programme in the electronic media as well as providing interactive fora for the Commission and the general public engagement as part of efforts to create awareness about the activities of the Commission.

The BCS in collaboration with other departments of the Commission participated in the interactive programme with members of the Select Committees of Parliament at Elimina during the year under review. Issues discussed included tariff setting, consumer services and public awareness, building partnership to improve water supply as well as PURC legislations, which provided the Parliamentarians useful insights into some aspects of the Commission's work.

Customer Service workshop for utility staff

A workshop was conducted by a consultant in Kumasi for the staff of the utilities to sharpen their communication skills and make them more effective and efficient in dealing with customer service delivery. Feedback from the utilities was very positive.

Consumer Charters

Discussions on Ghana Water Company's Consumer Charter were finalised. The Company is in discussion with the new operators regarding the launch of the Charter. Reminders have been sent to ECG and VRA to submit their Consumer Charters for review by the Commission.

5.7 African Forum for Utility Regulators (AFUR)

The Commission has maintained a keen involvement in the affairs of the AFUR from the inception of the continental regulatory body in 2001. Since the inaugural meeting in Pretoria, South Africa, the PURC has held an executive position as the representative for Anglophone West Africa.

In the last 3 years the Executive Committee has steered the affairs of the AFUR towards fulfillment of its strategic objectives which are to:

- ◆ Enhance information sharing
- ◆ Facilitate capacity building among members
- ◆ Harmonize regulatory policies and regulation
- ◆ Promote the philosophy of autonomous utility regulation and good governance
- ◆ Support African initiatives, such as NEPAD
- ◆ Promote sound relationships with Governments and other stakeholders
- ◆ Ensure joint mobilization and utilization of donor funding.

5.8 Human Resources

Since its inception the Commission has maintained a policy of keeping staffing levels lean, and ensuring that key staff are well trained and exposed to relevant and current regulatory mechanisms. To this end, a crop of professionals comprising economists, engineers and others recruited over the period of the Commission's existence have benefited from various courses in regulation and also undertaken study tours to visit regulatory institutions in both developed and developing economies.

In the last few years, the Commission has began to notice that the level of motivation of its professional staff has began to wane. It has become obvious that the Commission's remuneration package has been surpassed by most of the comparable institutions and has therefore become less attractive to current staff. This has resulted in the loss of some well trained staff and made retention of existing professional staff difficult.

It has become imperative to take measures to improve significantly the staff conditions of service including the staff remuneration package, if the commission is to succeed in retaining its core staff.

To this end, the Commission has recommended a consultancy to review the Secretariat's Remuneration package and carry out a job evaluation. The consultancy

which would be commissioned in 2006 is expected to recommend comparable and appropriate remuneration packages for staff.

The concept of utility regulation is relatively new in our part of the world and knowledge and expertise in the field are both rare and expensive. Due to a decline in staffing terms of employment, retaining the professionals is becoming a major challenge. It has become critical therefore to arrest the trend of high turnover as well as improve conditions to adequately compensate a hardworking but dwindling and restive workforce.

5.9 Resource Centre for Energy Economics and Regulation (RCEER)

The RCEER initiated by PURC with inter-conceptual support from University of Houston was established in September 2004 with very important collaboration: Energy Foundation, Energy Commission, Ministry of Energy, and ISSER. ISSER with its important linkage with the University of Ghana and its impressive faculty of academicians currently hosts the Centre.

Mission

The Mission of the Resource Centre is to become an independent resource for data, research, policy analysis, training and public education on energy and utility economics, regulation, and energy sector policy and development in Ghana and, ultimately, the greater region of West Africa.

Core Activities

- ◆ Collect, store, process and disseminate energy and utility sector data and knowledge;
- ◆ Conduct research to support energy and utility sector development and governance;
- ◆ Develop energy and utility economics curriculum for both university and professional audience; and
- ◆ Educate the public on energy economics, policy and socioeconomic development issues by publishing reports and holding educational outreach activities.

As part of its programme for 2005, the centre published a Natural Gas Primer as well as a Guide to Electric Power in Ghana, to provide basic information and data on natural gas and electricity to key energy sector operators and to the general public.

The Commission has maintained its keen interest in the development of the Centre. Currently the Chairmanship of the Centre's Advisory Body is held by Mr. Kwame Pianim, the PURC Chairman and the Executive Secretary is a member of the Steering Committee which initiates and ensures the implementation of the Centre's programmes and activities.

With regards to the publications mentioned above, key technical staff of PURC made contributions to specific topics for the “Guide to Electric Power in Ghana”. The publications were officially launched after they had been completed.

6. ADMINISTRATION

The PURC Senior Management is made up of the Chief Executive and the heads of the four existing Bureau namely, Bureau of Technical Operations and Regulatory Economics, Drinking Water Inspectorate, Consumer Services, as well as Legal Services and Administration.



Stephen Nyante Adu
Executive Secretary



Emmanuel Sekor
**Director, Legal Services
&Administration**



William Kwasi Gboney
**Director, Technical Operations
&Regulatory Economics**

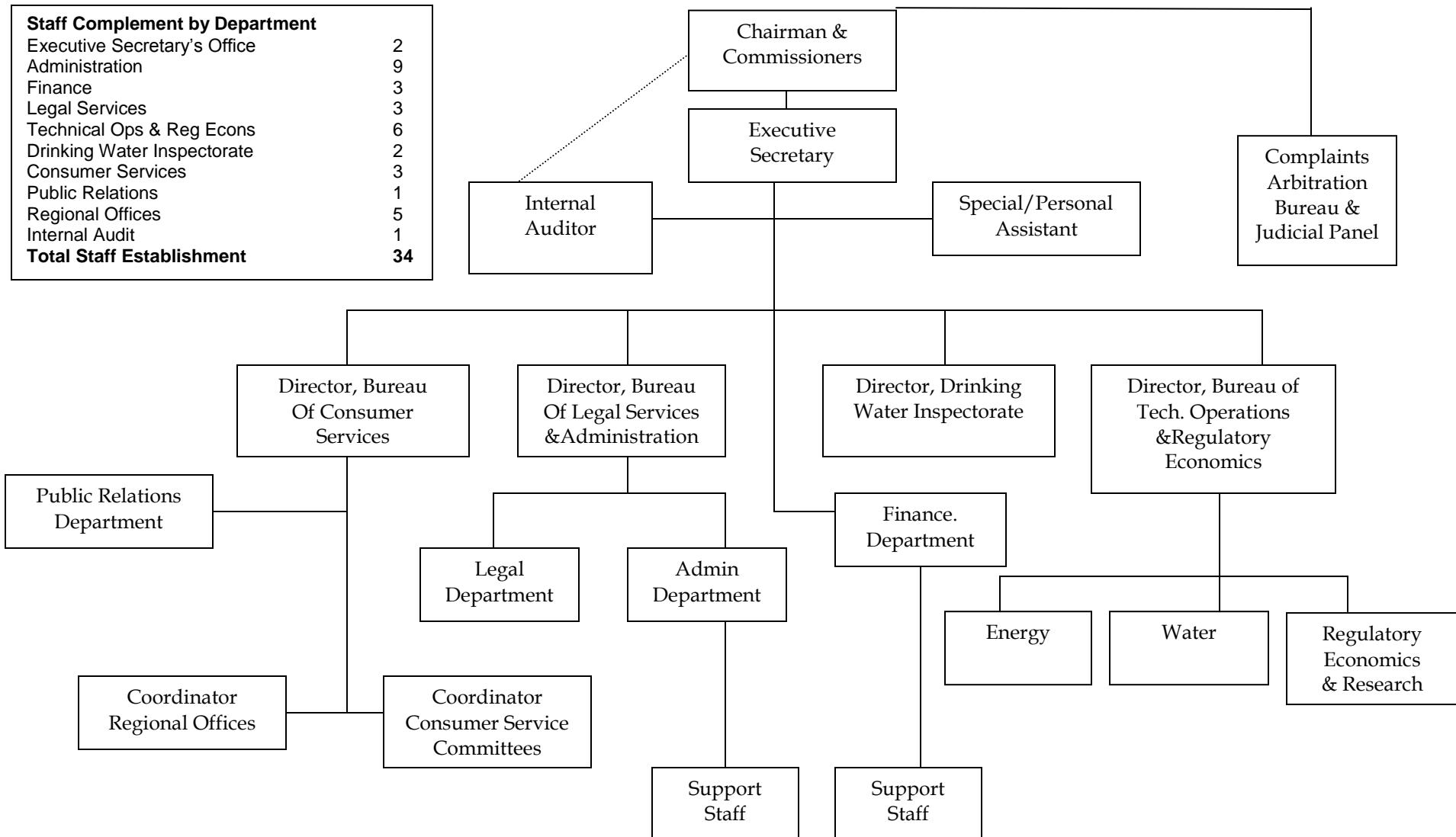


Nii Okai Kotei
**Director, Drinking Water
Inspectorate**



Mami Dufie Ofori
Director, Consumer Services

Figure 1 PURC's Organisational Chart



Human Resources and Administration Management

As at December 31, 2005, Public Utilities Regulatory Commission (PURC) had a staff complement of 34 made up as follows:

Executive Secretary's Office	-	2
Administration	-	9
Finance	-	3
Legal Services	-	3
Technical Operations & Regulatory Economics	-	6
Drinking Water Inspectorate	-	2
Consumer Services	-	3
Public Relations	-	1
Regional Offices	-	5
Internal Audit	-	1 on contract
Total staff establishment	=	<u>34</u>

In addition to these permanent staff, four National Service Personnel were posted to PURC.

A member of staff also attained the compulsory retiring age of 60 but was re-engaged on contract basis for one year.

Office Accommodation

Since moving into our new office premises, PURC has faced a lack of space to accommodate all the staff. Plans were far advanced to seek World Bank support to enable the Commission put up a storey building at the back of the existing office structure that would accommodate all the staff plus a library.

7. FINANCIAL PERFORMANCE

The Commission budgeted for an amount of ₦12,769,001,579 for Government Subvention. However, this was subjected to ceilings which reduced the amount to ₦5,459,123,985 representing 42.75% of the request of the Commission which was woefully inadequate to meet the needs of the Commission. The breakdown was as follows:

	<u>BUDGETED</u>	<u>ACTUAL</u>	<u>%</u>
	₦	₦	
Personnel Emoluments	2,424,331,579	2,662,511,944	
Administration	1,627,820,000	1,104,751,173	
Service	3,013,350,000	1,312,524,958	
Investment	5,703,500,000	379,335,910	
	-----	-----	---
	₦ 12,769,001,579	5,459,123,985	42.75
	=====	=====	====

Budgetary allocation from Government decreased by ₦203,980,223 from ₦5,690,104,219 in year 2004 to ₦5,459,123,985 in year 2005. Additionally, a total of ₦323,404,610 was received from Donor Agencies in the year under review. This amount showed a decrease of ₦1,886,683,556 from an amount of ₦2,210,088,166 received in year 2004.

From the above it is clear that the Commission did not receive the necessary funding and financial support to enable the Commission carry out its planned programmes and activities for the year. Consequently, a number of the planned programmes and activities had to be shelved, making the year one of the most difficult in terms of funding for the Commission.

The expanding responsibilities of the Commission including regulation of Natural Gas and the increasingly important requirement for effective monitoring of the utilities' activities make the funding issue of the PURC a priority.

It is the hope of the Commission that the funding situation of the Commission should attract the attention of the relevant authorities and the necessary funding made available to the Commission to enable PURC carry out its mandate as spelt out in Act 538 of 1997.

A copy of the Audited Financial Statements of the Commission is attached to this Annual Report.

8. CONSUMER SERVICE ACTIVITIES

In the year 2005, the Bureau of Consumer Services (BCS) intensified the quest for efficient and effective utility service delivery to consumers. BCS focused on the monitoring of Customer Service Centres (CSCs) and District Offices (DOs) of the utility companies, namely ECG, GWCL and NED, to ensure compliance with the provisions of quality of service requirements of the Commission.

The performance of a total of 36 CSCs and DOs were monitored in eight operational regions of the utilities in the year under review. Discussions were held with the Officials of the utilities to explain issues on billing, disconnection, service outages and general metering crisis among others.

The BCS also mediated and settled 230 out of a total of 287 complaints lodged against the utility companies. The complaints were lodged against ECG and GWCL. The BCS however did not receive any complaint against NED.

The Bureau embarked on an intensive public awareness programme. The electronic media was extensively employed. In addition, a platform was provided for an interactive engagement between the Commission and the general public as part of efforts to increase awareness about the Commission's functions.

A workshop was also organised in Kumasi for the staff of the utilities to sharpen their communication skills to be able to more effectively and efficiently discharge high quality customer service delivery obligations.

The Bureau, in collaboration with other departments of the Commission held an educational programme with members of the Parliamentary Select Committee at Elmina during the reporting year. This continued the Commission's tradition of constant dialogue with the stakeholders.

8.1 Monitoring of Customer Service Centres and District Offices of the Utility Companies

Performance monitoring is an important tool for fulfilling the Commission's mandate. The BCS embarked on a performance monitoring exercise of the various Customer Service Centres and District Offices of the utilities to ensure that the utilities were meeting the quality of service standards to ensure value for money.

The exercise covered the three regulated utilities namely, ECG, GWCL and NED.

Monitoring was undertaken in eight operational regions of the utilities namely the Accra East region, Central region, Eastern region, Kumasi West and East regions, Tema region, Upper West region and Western region. A total of 37 CSCs and DOs were visited in these regions.

To ensure scientific basis for the study, 15 criteria were used in assessing the standard of customer service delivery some of which include; ambience, comfort for consumers,

response time to faults, dedicated telephone line, consumer education, complaints and responses files among others.

The results revealed that most of the offices visited were not complying with the Commission's standards. For example, most of the centres do not have dedicated telephone lines or enough seats to ensure customer comfort.

8.1.1 Inspection of ECG CSCs/ District Offices

BCS staff visited four regions in the year under review and inspected 15 ECG CSCs and District Offices. The offices inspected included Ada, Prampram (Gt. Accra), Akwuaipim Mampong, Tafo, Koforidua (Eastern), Apam, Saltpond, Winneba, Swedru, Cape Coast (Central), Takoradi, Sekondi and Bibiani (Western), among others.

However, the findings and recommendations were forwarded to the utilities for their perusal. Interestingly, about 60% of the recommendations were implemented by the utilities when a follow up visit was undertaken by BCS.

Review of ECG Centres

Observations during the visits to ECG Centres:

- ◆ Most of the District Offices and CSCs were quite accessible and convenient to customers. However, their buildings and internal office arrangement need attention to ensure consumer comfort.
- ◆ Congestion was a major problem. For example in Koforidua where facilities are shared by the District and Regional office, it was observed that such arrangements created an internal operational problem with the Region interfering in the work of the District.
- ◆ The remoteness of Assesewa District Office is unacceptable as customers have to travel over a long distance before accessing the office.
- ◆ Due to high customer ratio as against under staffing, most of the centres looked congested.
- ◆ Customer comfort was not guaranteed since most centres have limited wooden benches.
- ◆ Basic communication equipment like telephone was lacking in some centres.
- ◆ Over billing, faulty meters and payment not reflecting on bills are some of the complaints generally lodged at the CSCs and District Offices. Customers interviewed indicated that ECG sometimes delays in the resolution of their complaints.
- ◆ Lack of material resources such as meters, job cards and poles undermines stipulated time frames for execution of certain services.
- ◆ Inadequate logistics such as computers, photocopiers and vehicles in some centres hampered the smooth operation of work.

Recommendations in respect of ECG inspected centres

- ◆ Steps must be taken to resolve complaints lodged at its offices as quickly as possible to gain customer confidence.
- ◆ More vehicles should be made available to District Offices where these are mostly needed to make the work easier for the staff.
- ◆ Customer educational programmes should be given much attention and educational materials should be made available at all times at the CSCs and District offices.

- ◆ Suggestion boxes should also be provided and customers should be encouraged to use them as a means of putting their grievances and suggestions across.
- ◆ Steps must be taken to relocate the Koforidua District Office to a more suitable site to facilitate work of the District Office.
- ◆ A sub office for the Assesewa office should be established at Nkurankan to make accessibility fairer to customers.

8.1.2 Inspection of GWCL CSCs / District Offices

BCS visited Eastern, Tema, Central, Western and Upper West regions in the year under review and inspected 15 GWCL CSCs and District Offices. Some of the offices visited include Amanokrom, Ashiaman, Dodowa, Kpong, Somanya, Swedru, Takoradi, WA, Winneba District offices, among others.

Review of GWCL Centres

Observations during the visits to the GWCL Centres:

- ◆ Apart from the Dodowa office, most of the District Offices were accessible and convenient to customers. Some of the offices require major rehabilitation.
- ◆ All the District offices visited encountered problems related to meter shortage.
- ◆ The Kpong District Office is a very small place which shares office space with the Kpong Head Works. The noise from the water treatment plant not only disturbs but is disruptive of work in the office.
- ◆ Logistics such as computers and vehicles in all the GWCL centres were inadequate.
- ◆ GWCL general level of services to its consumers in the districts was low.
- ◆ The District Offices were under staffed.
- ◆ Although, most District Offices had seats for customer comfort these were not adequate.
- ◆ Inadequate or non availability of information, educational materials or suggestion boxes in most District Offices.

Recommendations in respect of GWCL Inspected Centres

- ◆ A bigger office should be provided for the Kpong District to accommodate the 17 personnel who share the single office.
- ◆ GWCL must improve their furnishing for both staff and customers. Computers and vehicles must be provided as well as rehabilitation of dilapidated offices.
- ◆ The Tafo office should be adequately staffed.
- ◆ GWCL must act seriously to handle complaints and respond to burst pipe situations rapidly.

8.1.3 Inspection of NED CSCs/ District Offices

BCS staff visited the Upper West region in the year under review to monitor the performance of seven NED CSCs and District Offices. Some of the offices monitored include Bole Bamboe, Jirapa, Nadowli, Nandom and Tumu District Offices. The Gwolla and Sawla pay point were also visited.

Review of NED Centres

Observations during the visits to the NED Centres:

- ◆ With the exception of the Wa CSC, none of the other centres had a means of transport to facilitate quick response to faults on the distribution network. These centres resort to hiring of vehicles for their transportation needs.
- ◆ The location of the Wa and Tumu centres are far away from the central part of town. This makes it difficult for customers to transact business at the centres.
- ◆ The CSCs especially that of Wa is very small and congested. A single bench has been placed outside for customers, making customers very uncomfortable.
- ◆ The newly established CSC at Nadowli and Namdom lacked basic facilities like telephones, computers and even chairs.

Recommendation for NED

NED should ensure that facilities such as telephones, vehicles and seats for customers be provided at the CSC to facilitate work at the centres.

8.1.4 Average Assessment Scores of Customer Service Centres and District Offices Monitored.

Table 1

Region	Utility Company	Number Visited	% Scored
Accra East Region	ECG	1	52
	GWCL	1	43
Eastern Region	ECG	3	53
	GWCL	4	59
Tema Region	ECG	5	59
	GWCL	4	50
Western Region	ECG	2	70
	GWCL	1	70
Central Region	ECG	5	69
	GWCL	3	50
Upper West region	NED	7	44
	GWCL	1	42

It must be noted that only one GWCL office was visited in the Upper West Region because the operations and offices in the other communities had been taken over by the Community Water and Sanitation Board.

It must also be noted that only one district office of Accra East Region was visited because most of the offices were extensively monitored in 2004.

8.2 Consumer Complaints

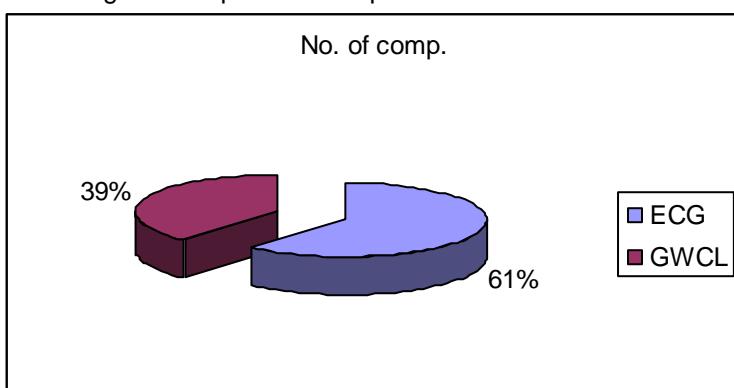
To ensure that consumer complaints are satisfactory dealt with, the Bureau of Consumer Services receives, investigates and settles disputes between consumers and the utility companies. Through the settlement of billing complaints alone, an amount of about ₦95,000,000 which would have been lost was credited to customers accounts.

The bureau in 2005 received a total of 287 complaints. The breakdown is as follows.

Table 2

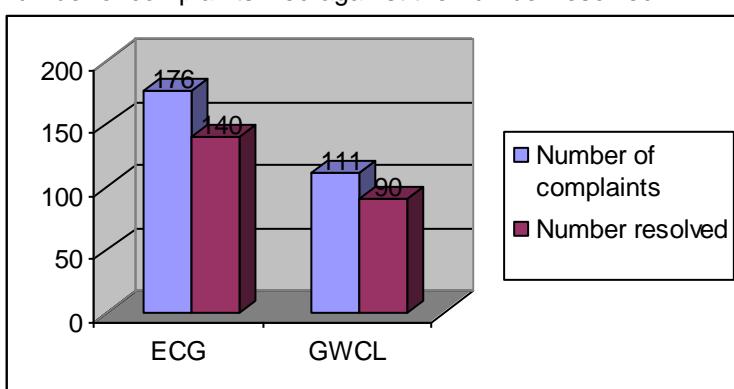
Utility Company	Number of complaints	Number resolved	Number Unsolved
ECG	176	140	36
GWCL	111	90	21
Total	287	230	57

Figure 2 Percentage of complaints in respect of the utilities



As can be seen in chart 1, out of the total of 287 complaints received by the Commission, 61% concerned ECG whiles 39% concerned GWCL.

Figure 3 Number of complaints filed against the number resolved



A total of 230 complaints were responded to by the utilities during the year constituting 80%. ECG responded to 80% of complaints lodged against it while GWCL responded to 81% of complaints brought against it.

8.2.1 Breakdown of complaints against the utilities for 2005

The complaints received in the year 2005 were in the following categories

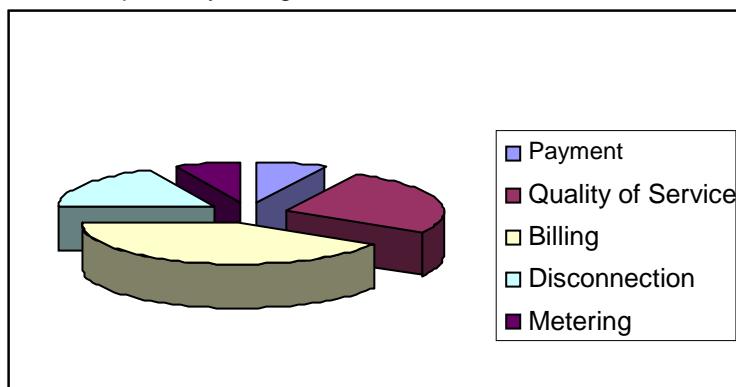
- ◆ Quality of Service
- ◆ Billing
- ◆ Payment
- ◆ Disconnection
- ◆ Metering

The total of 287 complaints filed are categorised in table 3.

Table 3

Months	Payment	Quality of Service	Billing	Disconnection	Metering	Number of complaints
GWCL	6	47	44	12	2	111
ECG	15	28	76	40	17	176
TOTAL	21	75	120	52	19	287

Figure 4 Total Complaint by categories



From figure 4 above, billing problems was the most frequently reported cases to the Commission. This constituted 41.8% followed by Quality of Service with 26.1%. Unlawful disconnections was the third most frequent complaint with 18.1% followed by payment disputes with 7.3% and the least being metering with 6.6%

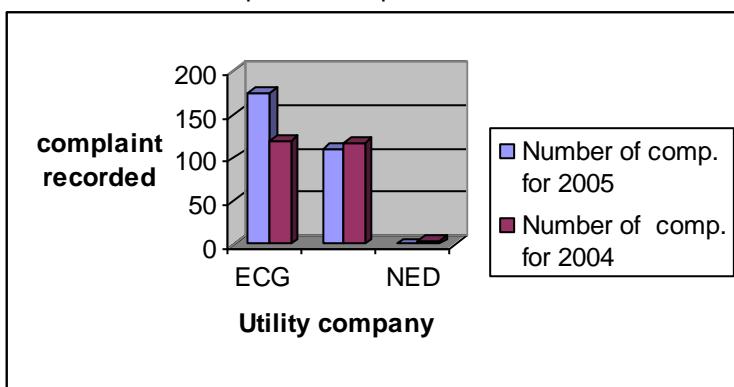
8.2.2 Comparing complaints of 2005 and 2004

Table 4

Utility company	Number of complaints for 2005	Number of complaints for 2004	Number of complaints resolved for 2005	Number of complaints resolved for 2004
ECG	176	120	140	109
GWCL	111	117	90	92
NED	0	3	0	0
Total	287	240	230	201

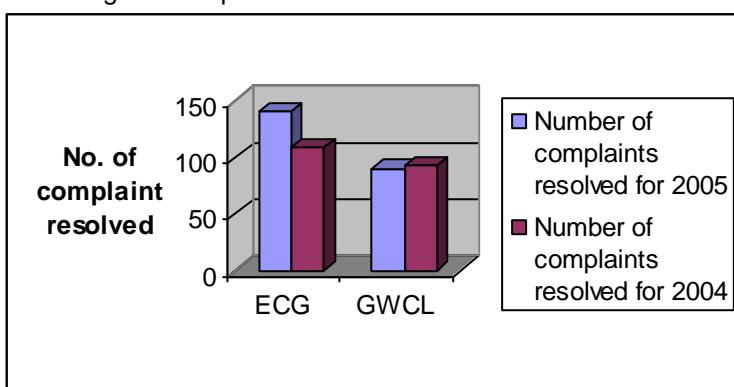
Comparing the reporting year of 2005 with 2004, it would be observed that consumer complaints to the Commission increased by 19% as can be observed from the table above. The number of complaints resolved increased by 12%. The improvement was largely due to the increased collaborations between PURC and the Utilities Regional Offices.

Figure 5 Number of 2005 complaints compared with 2004



It will be observed from figure 5 above that there was 31% increased in the number of complaints against ECG. This was due mainly to a technical survey undertaken by ECG to identify companies which were being under billed and also to flush out customers who were improperly connected. While complaints in respect of GWCL decreased by 6%.

Figure 6 Percentage of complaints resolved



The Commission resolved 80% of all the Complaints in 2005 as compared to 84% in 2004. In 2004 ECG responded to 91% of its complaints but only responded to 80% in 2005. GWCL however responded to 81% in 2005 as compared to 79% in 2004.

8.3 Public Awareness Programme

The BCS continued its educational activities and the creation of more awareness among the general public about the role and functions of the PURC. The public was sensitized on their rights and responsibilities in utility service delivery. This took the form of advertising and airing infomercials on Television and Radio.

Advertising Campaign

The Bureau advertised three different 45 seconds publicity infomercials on water issues on Ghana Television in this reporting year. This made quite an impact on the targeted audience as the complaints to the Commission has increased.

Radio Programmes

BCS staff featured in various live radio discussion programmes in the Greater Accra, Ashanti, Brong Ahafo, Central and Western regions. These include participation in discussion on Joy FM in Accra, Radio BAR Dormaa FM in Brong Ahafo, Gold Star Radio Central in the Central Region, Twin City, Kyzz FM, Sky FM in the Takoradi and Kapital Radio and Fox FM in Ashanti region.

Issues discussed include:

- ◆ Role and functions of PURC
- ◆ Complaint procedures
- ◆ Disconnection & Termination of Service polices.
- ◆ Effects of utility tariffs on industries among others.

The phone-in segments of the radio programmes gave the general public the opportunity to express their views and ask questions on the issues discussed.

Listeners concerns were mainly on the following:

- ◆ Perception of high tariffs set by the Commission.
- ◆ Frequent and unannounced power interruptions
- ◆ No water flow
- ◆ Poor attitude of utility staff toward customers.
- ◆ How complaints can be lodged with the Commission.

Distribution of Brochures

The Bureau adopted innovative ways of disseminating information through distribution of Commission's brochures in major bus terminals such as State Transport Company (STC) and Kingdom Transport terminals in Accra. The exercise was done by Senior Secondary School graduates recruited for two weeks and the impact was positive. There were distributions also in the PURC regional Offices.

8.4 Training Programmes

Workshop for Staff of Utilities

With increasing complaints of poor customer service from the utility companies, the Bureau employed a consultant to train staff of utilities in the Northern part of the country in delivering quality customer service.

To ensure high standard of performance from the utilities with regard to customer care and quality of service, the workshop targeted District Managers and District Commercial Officers of ECG, NED and GWCL from the Northern sector of the country in Kumasi. Over 52 staff of the utilities attended. The theme for the workshop was “Delivering Quality Customer Service”.

Training of Bureau Staff

Some staff of the Bureau also participated in various training programmes to enhance knowledge and skills in utility regulation as follows:

- ◆ The Director, BCS and the Regional Officer of Kumasi embarked on a study tour on general consumer services issues in Jamaica, Trinidad and Tobago.
- ◆ The Consumer Services Officer of Kumasi also participated on a training programme at the Public Utility Research Centre in the USA. The course focused on utilities regulation and strategies.
- ◆ The Consumer Services Officer of Accra also attended an IP3 training programme on Quality of Service in Washington.
- ◆ The Manager of the Bureau was also on a study tour of water related issues in United Kingdom.
- ◆ The Takoradi Regional Officer also participated in a project management training programme at the Management Development and Productivity Institute (MDPI) in Accra.

8.5 Relocation of Office

After operating over two years from the Shama Ahanta East Metropolitan Assembly (SAEMA) premises, the PURC Regional Office in Takoradi was relocated to a more spacious office at Ajumakoman Press, New Site along the Sekondi – Takoradi Road.

8.6 Observations

Noteworthy issues from the bureau:

- ◆ There was a general improvement at the customer service centres and District Offices visited as compared to 2004.
- ◆ The public awareness programme embarked upon by the bureau was very successful. This was discernable from the number of complaints received by the bureau during the campaign period and the feed back elicited from consumers.

8.7 Conclusion

In conclusion, building on the success of programmes undertaken in 2005, the following are recommended as the BCS and PURC forward plans:

- ◆ More District Offices and CSC's should be inspected especially in the Regions where the Commission has no offices, and districts outside the Regional Capitals.
- ◆ Enforcement of penalty for utilities not meeting standards and benchmarks should be intensified seriously to ensure total compliance.
- ◆ More public awareness programmes should be embarked upon to educate consumers on PURC regulations.
- ◆ The Takoradi Regional Office should be resourced to publicise the relocation of its office and to increase awareness in its operational area.
- ◆ A quarterly "meet the press" briefing should be introduced in 2006 to create awareness of the efforts by the Commission to improve utility service delivery in the country.
- ◆ The "catch them young" programme for second cycle institutions which was successfully piloted in 2004 should be continued.

9. PERFORMANCE OF THE WATER SECTOR

9.1 Ghana Water Company (GWCL)

During the review period, most of the performance indicators did not meet targets set by PURC. Non Revenue Water (NRW) for the year under review was 52.3% compared to PURC target of 45%. Water production was approximately 205Mm³ thus indicating a decline of 1.4% over the previous year value of 208Mm³. Water sales during the period under review was 98 Mm³, an increase of 5.1% over the previous year's figure of 93.3Mm³. This represents approximately 48% of water produced. The average metering ratio during the review period stood at approximately 48%, whilst collection ratio was 76.3% compared to PURC benchmark of 95% thus recording a deficit of 18.7%

According to the GWCL report, the major constraints to the performance of the company for the period under review include:

1. Reduction in water demand due to the abundant rains
2. Reduction in water sales due to water tankers being out of operation(break down) in Upper West
3. Prevalent power interruptions
4. Breakdown of two(2) low lift pump sets at Nawuni intake works in the Northern Region

The following steps have however been taken by GWCL to improve its performance:

1. A nationwide consumer survey to assess the actual customer strength and the level of working meters. This exercise is currently ongoing.
2. Procurement and installation of more meters to improve metering ratio.
3. Expedite action on the involvement of the private sector in arrears collection to enhance revenue collection rate.
4. Increase public relations activities to create more awareness on the ₦200,000.00 incentive for reporting illegal connection.
5. Intensify disciplinary action against errant workers
6. Assess the performance of the various monitoring teams both at regional level and the head office.

The company recorded an operating surplus of ₦5.4billion after depreciation. The overall position showed a net deficit of ₦89.3 billion after loan interest and exchange gains. The net deficit took account of loan interest of ₦64.3 billion and an exchange loss of ₦30.5 billion.

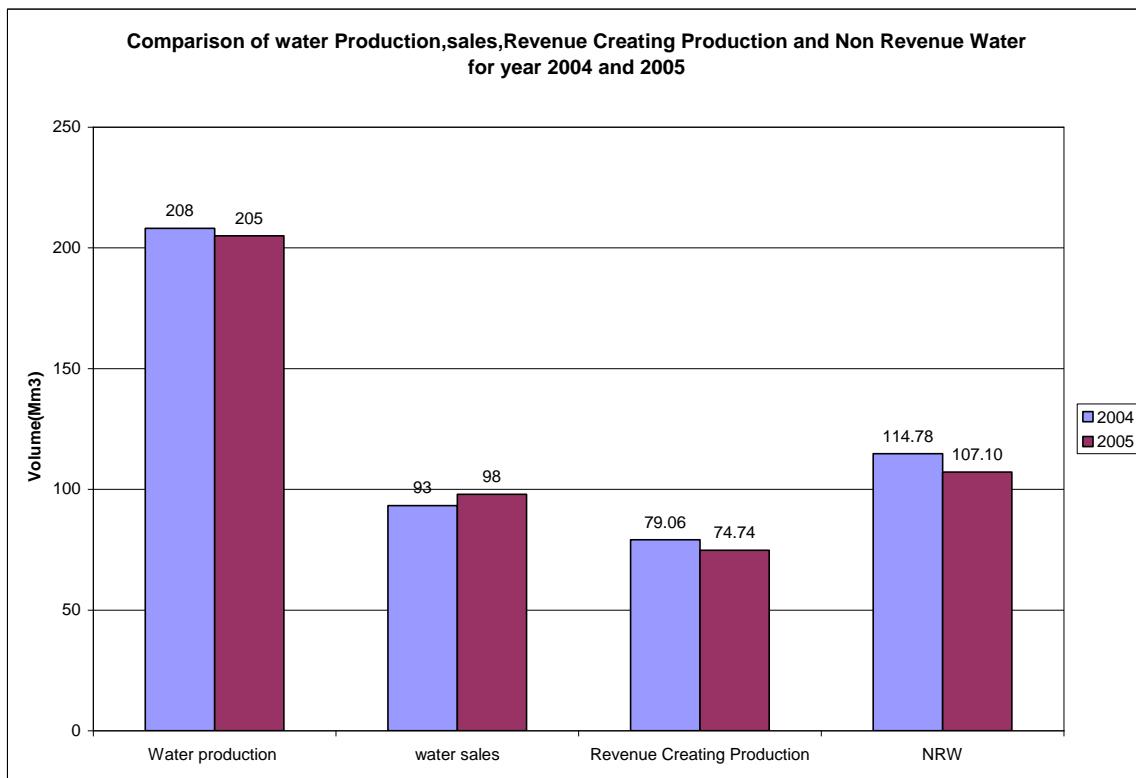
9.1.1 Water Production

The company operated a total of 84 systems during the period under review. Water production for the review period was 205Mm³. Water sales for the period under review was 98 Mm³.

The figure below shows water production, sales, revenue creating production and NRW for the period 2004 to 2005. From the figure, it is quite clear that NRW continues

to exceed water sales. This is one area warranting serious GWCL attention. There was a slight decline in NRW compared to that of last year.

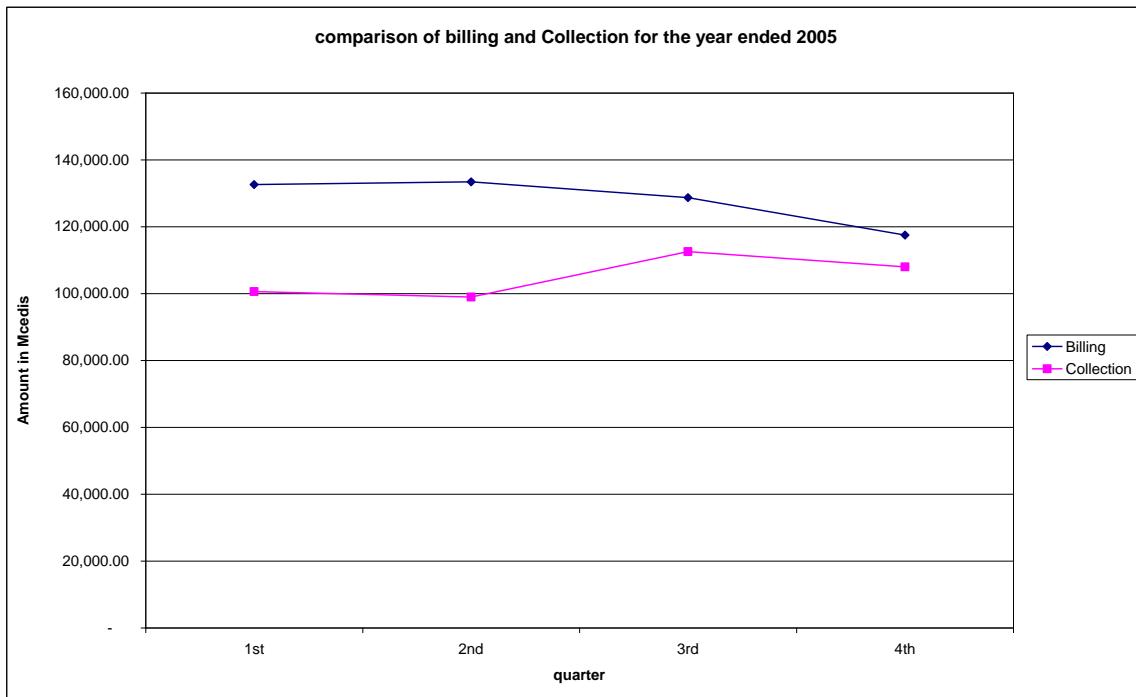
Figure 7 Comparative analysis of water production, sales and revenue creating water for GWCL (2004 – 2005)



9.1.2 Collection and Billing

The revenue collection ratio which is the actual amount of monies collected expressed as a percentage of the total amount of water billed over the review period did not meet the PURC agreed target of 95%. Over the review period, the average collection ratio was 76.3%. This constitutes an 8.7% decline over the previous year figure of 85%. Quarterly analysis of the billing and collection for the period 2005 is presented in the figure below.

Figure 8 Quarterly comparison Billing and Collection for the period 2005

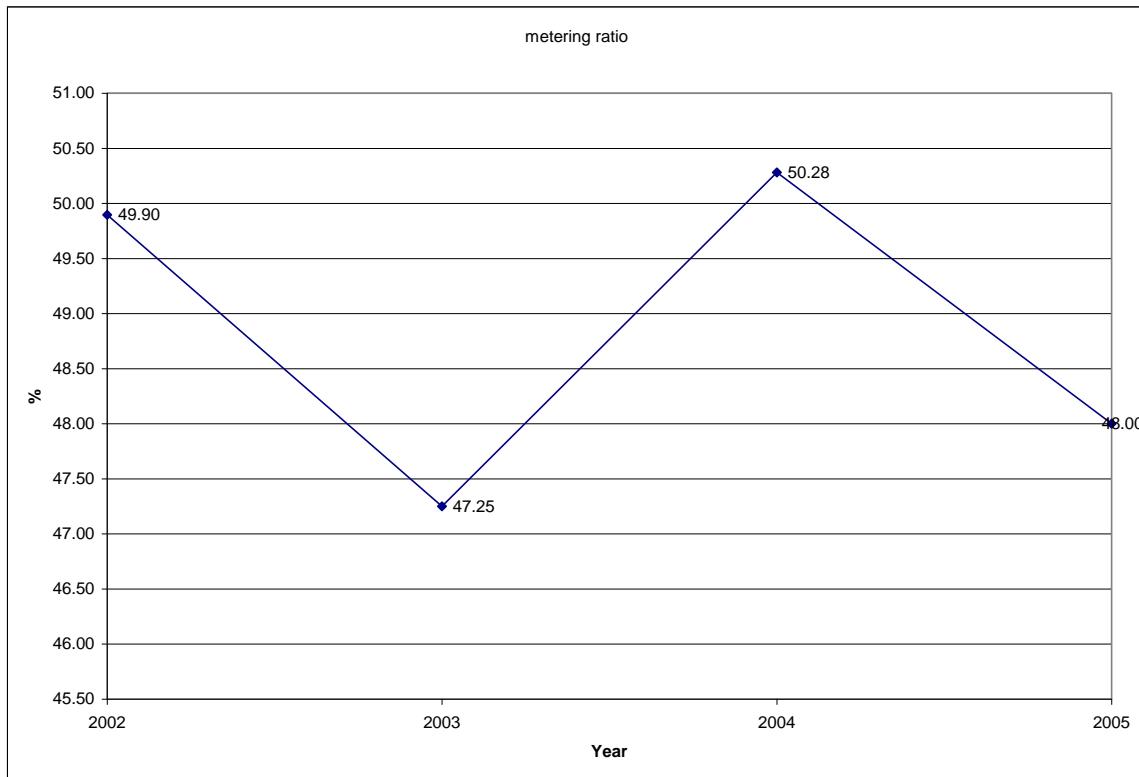


9.1.3 Metering Situation

Metering ratio, which is measured as the number of effective meters divided by the number of customers of the company for the review period stood at 48% compared to 50% for 2004 thus indicating a decline of 4% over the previous year. As part of efforts to improve upon NRW, the company embarked on a nationwide survey to assess customer strength and acquired more meters for installation. It was PURC's expectation that this exercise would have a significant improvement on the metering situation of the company.

A comparison over a four -year period from 2002 to 2005 for the metering ratio is shown in figure 3 below. The metering ratio has not seen any significant improvement over this period, ranging between 47.3% and 50.3%. The metering ratio declined to 47% in 2003, increasing to 50% in 2004 and again falling in 2005 to 48%.

Figure 9 Metering ratio for the period 2002 to 2005



9.1.4 Financial Performance

The financial performance of the company was based on the following financial and economic indicators:

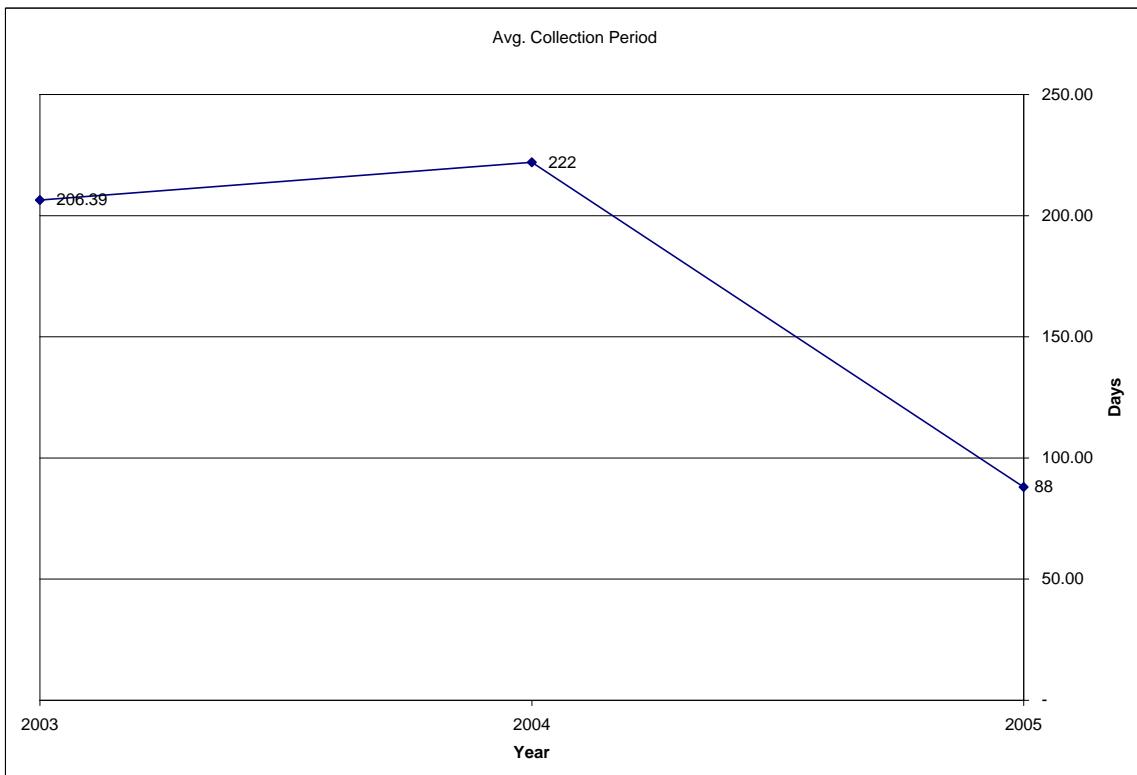
- ◆ Average collection ratio
- ◆ Revenue collection period
- ◆ Rate of return
- ◆ Net profit or loss before tax

Collection ratio for the period under review declined from 85% in 2004 to 76.3%, indicating a 18.7% reduction compared to the PURC target of 95%

The average collection period has been increasing over the years. From an average of 161 days in 2001, the average collection period worsened to 222 days at the end of 2004. However for the period under review there was a significant improvement following decline from 222 days at the end of 2004 to 88 days. This came about as a result of the implementation of the findings of the customer survey the Company carried out that intensified efforts to disconnect customers who owed the Company.

Revenue Creating Production (RCP) which is described as the volume of water produced which is actually converted into revenue did not change, remaining at 36% from the previous year. This is an indication that there was no improvement in the Non Revenue Water.

Figure 10 Average collection period (days) [2003 to 2005]



Expenditure Analysis

Total expenditure of the company amounted to ₦648 billion Cedis. This amount is made up of operating expenditure (including depreciation) of ₦563 billion and non-operating expenditure of ₦151 billion. A breakdown of the individual cost component of the total expenditure is presented in table 1 below.

Table 5 Expenditure of GWCL for 2005

COMPONENT	COST M¢	% of Direct Expense
Direct Expense		
Personnel	128,311.30	25.82
Treatment chemicals	43,438.30	8.74
Repairs and, maintenance	26,048.00	5.24
Fuel and lubricants	15,214.00	3.06
Electricity Cost	181,020.00	36.43
Overheads	88,259.00	17.76
materials cost	9,484.00	1.91
Operating materials	2,453.30	0.49
Lab and analytical cost	121.90	0.02
Hiring of equipment	174.60	0.04
Bank charges and interest	1,957.50	0.39
Audit fees	400.00	0.08
Sub Total	496,881.90	100
Indirect Expense		
Depreciation expenses	56,337.00	37.26
Loan Interest	64,294.00	42.53
Exchange Loss	30,551.00	20.21
Sub Total	151,182.00	100.00
Total Expenditure	648,064.00	
Net Total Expenditure Excluding Loan Interest and Exchange Loss	553,219	

Electricity and Personnel costs constitute the major components of the direct operating expenditure; contributing 36.43% and 25.82% respectively of the total direct operating expenditure. That is followed by overhead costs which accounted for 17.8% of the direct expenditure. Loan interest expense was the highest component of the indirect expenditure accounting for 42.53% followed by depreciation at 37.3%. Exchange loss accounted for 20.2%.

9.1.5 Conclusion

In order to make GWCL's performance more meaningful, the Commission and GWCL staff must work together to arrive at realistic standards and targets and strive to achieve them.

With regards to major constraints that hindered the performance of the company's operations in terms of water production, supply and sales, GWCL should endeavour to update the Commission on the latest action(s) taken since the same issues have been repeated in the previous report submitted.

In addition the following are suggested:

- ◆ As regards actions taken to enhance its performance, GWCL should specify and demonstrate the following:
 - the outcome of nation wide survey conducted to assess the actual customer strength and the level of working meters and provide the Commission with the results
 - the positive actions taken on the involvement of the private sector in arrears collection to enhance revenue collection rate
 - Some of the recorded disciplinary actions against defaulting workers
 - the Public Relation programmes for creating awareness on the incentive for reporting illegal connections.
- ◆ Findings from the review of GWCL continue to be bleak -
 - Water production during the year dropped by 1.4%
 - Improvements in the average collection period did not reflect positively in the collection ratio
 - There was a reduction in the Non-Revenue water for the period which was 52.3% compared to the previous year figure of 55%. However it still fell short of the PURC target of 45%.

A concerted effort by all stakeholders is called for to prevent further decline and improve on performance.

SUMMARY OF GWCL OPERATIONAL PERFORMANCE FOR THE YEAR 2005

PERFORMANCE INDICATORS - GWCL 2005					
	unit			unit	
water production	Mm ³	205.30	collection ratio	%	76.35
water sales	Mm ³	98	operating ratio	%	99.03
billing	Mcedis	538,104.80	gross revenue	Mcedis	558,614.20
collection	Mcedis	410,821.80	operating profit b/f dep	Mcedis	5,394.90
RCP	Mm ³	74.82	operating loss after dep	Mcedis	(50,942.00)
RCP	%	36.44	net profit b/f tax	Mcedis	(89,300.00)
NRW	Mm ³	107.3	return on capital	%	-3.61
NRW	%	52.26	metering ratio	%	47.89
Avg Tariff	cedis/m ³	5,490.87			

9.2 Drinking Water Quality

9.2.1 Drinking Water Safety Plans (DWSP's)

PURC led an initiative of the GWCL, Water Resources Commission (WRC), Environmental Protection Agency (EPA), and Consumers Association of Ghana (CAG) to develop a pilot study on “**Drinking Water Safety Plans**”(DWSP’s) based on the Weija drinking water supply system, in 2005. The traditional approach of regulating drinking water quality which sets a number of standards covering a range of physical, biological and chemical parameters, to require water suppliers to monitor against those standards and to take enforcement action if those standards are not met, has changed. The emphasis in the regulation of drinking water quality has shifted from testing water supplied at the consumer end to identifying and managing risks associated with the whole supply chain from the catchment to the consumer, managing the raw and treated water supply systems to ensure safe water. The approach results in the formulation of the “Drinking Water Safety Plans”. The change is due to the international recognition that only operational management controls can prevent the supply of unsafe water, because water is likely to have been consumed before the results of analysis are available.

Working Group Meetings

Working group meetings comprising the GWCL, WRC, EPA, CAG and PURC which started in 2004 with regard to the Drinking Water Safety Plans continued in 2005 to finalise the risk assessment of each point of the supply chain, and to arrive at the mitigation measures needed to address them.

Risk Assessment

The study identified four main areas of particular importance in relation to drinking water quality in this drinking water supply system. This was due to the very significant deterioration of the raw water quality leading to bloom of algae in the source water, disinfection controls within the treatment system, the loss of pressure within the distribution system, lack of flow, because of inadequate supply, and road tankers.

Catchment Controls

The Water Resources Commission with responsibility for the regulation and management of the utilization of the water resources and also the coordination of all relevant Government policies related to water management; and the Environmental protection Agency, which monitors effluent quality discharges, monitors encroachment on the catchment, and grants environmental permits, are responsible for catchment controls. By bringing them together in the Weija Pilot project in the formulation of “Drinking Water Safety Plans” PURC adopted an integrated approach to jointly tackling catchment issues within the Weija supply system, and agreeing in dealing with them within an agreed time frame. The collaboration also ensured a common position on issues which would otherwise have stalled due to overlapping mandates of the agencies. These two organizations are subjecting the Densu basin to catchment controls through the introduction of buffer protection zones around the lake. This will limit the activities in those areas, thereby preventing or reducing the runoff of nutrients and other contaminants. However there is a need for commitment to a firm programme of clean-up and enforcement of pollution control measures to guarantee the success of the programme.

Production Controls

It is expected that it will take a number of years before the catchment controls take effect. During that time, the GWCL will have to deal with the algae in the source water. Options to minimize the amount of algae reaching the treatment plant, and thus reduce treatment cost are being considered.

The risk assessment highlighted the importance of the chlorination process at the Weija Water Treatment Plant and identified the need for improved controls.

Controls in the Distribution System

In the distribution system, the most serious risk identified with regard to drinking water safety, was loss of pressure in the distribution system risking possible ingress of faecal matter and other contaminants from the ground and other surrounding areas. Replacement of pipes, valves and other fittings in bad condition, coupled with the introduction of a comprehensive leakage control system would raise pressures and reduce the incidence of intermittent water supply.

Tanked supplies complete the supply chain for some consumers and the measures to reduce the risks of contamination are included in Private Tanker Service Guidelines. The risks inherent in supplies sold by the bucket were not included in this study, but are dealt with in the pro-poor studies.

Public Utilities Regulatory Commission's Role

PURC's drinking water audit effort will in the future be concentrated on checking that the drinking water safety plans are in place, and are working effectively as operational procedures.

Recommendation - Roll-out of the Drinking Water Safety Plans across Ghana is recommended. In addition PURC and GWCL must agree on the important issue of day to day working relationship with the management contractor.

9.2.2 Tankering Guidelines

Similar to arrangements during the DWSP'S, PURC has been meeting with GWCL and the Tanker Owner's Associations with regard to drafting guidelines on drinking water tankers. Further meetings were held between PURC and the Tanker Service providers, and also between PURC and GWCL to define the functions to be undertaken by each party in the provision of Tanker Service to ensure safety and affordability to the consumer, without jeopardizing the interest of the Tanker owners and GWCL between January and May 2005.

Stakeholder Consultations

A workshop was held on May 12th 2005 to highlight to the public issues of concern to the consumer with the theme "Building Partnerships to improve water supply". Presentations were made on PURC's Social Policy on Water Regulation, Water Safety Plan as a Tool for Assuring Drinking Water Quality, Water Supply to the Urban Poor with focus on accessibility issues and the role of tankers and vendors and Introduction to Draft Tankering Guidelines.

Comments from stakeholders at the programme worth noting include:

- ◆ Concerns about the definition of the “Urban Poor”.
- ◆ The microbial contamination between transmission and distribution.
- ◆ Invitations to the Government to play a major role in the provision of tankers to supplement the operation of Tankers Operators.
- ◆ Concerns that the lifeline tariff was not addressing the issue of the urban poor and that alternatives like cross subsidies from higher income earners to low income earners be considered.
- ◆ That Tankering Guidelines should be turned into a Legislative Instrument.
- ◆ That the Singapore experience where catchments were turned into training grounds to deter people from encroaching on the land within the catchment should be adopted.

9.2.3 Water Quality

Raw Water Quality

During the first and second quarters raw water quality with respect to color and turbidity worsened due to increasing rains. This trend continued into the third quarter. However during the final quarter colour and turbidity showed a marked improvement as a result of reduction in the amount of rainfall. Below are the average values of some raw water parameters of key treatment plants:

Table 6 Average Raw Water Quality Values for Key Systems in 2005

SYSTEM \ PARAMETER	WEIJA	KPONG	B'KESE	OWABI	KPEVE	BRIMSU	K'DUA	DALUN	D'BOASE
pH Average	7.8	7.0	7.1	6.9	7.0	6.7	6.9	7.2	7.4
Turbidity (mg/l)	18.3	1.0	35.3	171.2	0.5	18.8	29	253.6	64.4
Colour (HU)	122	5.0	184.3	462	5.5	158.8	205.3	491.3	224
Iron	0.03	0.05	10.6	21	0.28	1.33	0.04	1.77	541.11
Manganese (mg/l)	NIL	NIL			NIL	NIL	NIL	0.119	
Chloride (mg/l)	52.9	4.3	12.5	57.1			22		10.7
Suspended Solids (mg/l)	6.8	2.0	11.8	22.1	1.8			273.2	35.8
Dissolved O2 (mg/l)	14.4	4.01		1.06			10.7		3.0

Water Quality at Treatment Plants

Water treatment and quality monitoring was satisfactory during the year 2005. Most head works met accepted water quality standards. The bacteriological and physical qualities of water produced at most headworks complied with accepted water quality standards. Ghana National Standards was achieved. Below are average levels of performance for some key treatment Plants:

Table 7 Average Target Achieved For Treatment Plants in 2005

PLANT \ PARAMETER	WEJA	KPONG	BARAKESI	BRIMSU	DABOASE	DALUN	ABESIM	KPEVE	K'DUA	VEA
Total No. samples as Target	1620	1620	600	270	270	450	270	270	360	90
% Target achieved (samples)	100+	100+	77.5+	100	100	100	100	100	97.7	100
% Compliance (Bact)	100	100	99.3	100	100	100	100	100	100	100
% Compliance pH	67(100)	100	71.4(100)	58.4(100)	66.8(100)	93.3(100)	88.1(100)	98.8(100)	100	100
% Compliance Residual Chlorine	59	100	66.3	46.8	56.9	92.1	91.1	95	100	74
% Compliance Colour	100	100	94.3(100)	80.8(100)	96.5(100)	93.6(100)	99.98(100)	87.8(100)	98.6(100)	72.8(100)
% Compliance Turbidity	100	100	91.2(100)	77.9(100)	73.4(100)	71.8(100)	99.7(100)	100	100	93.3(100)
% Compliance Odour and Taste	100	100	100	100	100	100	100	100	100	100

Kpong and Koforidua were the only systems which met GWCL targets for **residual chlorine**. However when converted into Ghana National Standards all systems complied. Kpong, Weija, Kpeve and Koforidua were the plants that met GWCL targets for **turbidity**, whilst the others failed, but all have achieved Ghana National Standards. Kpong, Kpeve, Koforidua and Vea complied with GWCL targets for **pH** but still complied with Ghana National Standards. From the table it is clear that Kpong treatment Works complied with GWCL Standards on all indicators. This means they surpassed the Ghana National Standards.

Water Quality in Distribution System

All regions were compliant for bacteriology in the distribution system in the first quarter except for Western and Brong Ahafo Region. In the second quarter, all regions were compliant for bacteriology except for Ashanti, Western, and Upper East region. In the third quarter, all regions were compliant for bacteriology except for Upper East Region, and in the fourth quarter, by Ghana National Standards, there was absolute compliance with respect to all the indicators. In the fourth quarter, although all the systems did not meet GWCL standards regarding residual chlorine, this did not affect bacteriological quality in the distribution except for Upper East and ATMA which recorded bacteriological failure.

Note: Figures in brackets are compliance according to Ghana National Standards, whilst all other values are measured against GWCL standards. Ghana National Standards are standards set by Ghana Standards Board. However GWCL has set its own internal targets which are superior to the Ghana National Standards to ensure that even when they fall short of their own targets, they still achieve the Ghana National Standards. The colours in Tables 7 and 8 are explained as follows:

- ◆ The colour green refers to 100% compliance with GWCL targets which being superior to Ghana National Standards implies excellent performance by those regions in those indicators.
- ◆ The colour blue refers to not achieving 100% compliance by GWCL targets but still achieving 100% compliance by Ghana National standards.

- The colour red refers to failure to achieve compliance even by Ghana National Standards, having already failed GWCL targets.

Table 8 Averages of Performance of Some Regional Distribution Systems in Year 2005

PLANT PARAMETER \ ATMA	ASH	C/R	W/R	N/R	B/A	V/R	E/R	U/E	
Total No. samples as Target	1560	600	540	450	495	240	150	360	90
% Target achieved (samples)	35.5	84.8	72.6	93.5	53.5	96.8	84.1	95.4	100
% Compliance (Bact)	84.8	97.7	99.4	95.3	97.6	97.7	100	100	78.8
% Compliance pH	89.5(100)	63.7(100)	85.6(100)	92.4(100)	95.4(100)	93.7(100)	100	86.6(100)	100
% Compliance Residual Chlorine	22.8	51.3	70.0	44.0	91.7	77.7	86.3	93.6	64
% Compliance Colour	100	79.3(100)	86.3(100)	85.5(100)	94.1(100)	100	99(100)	92.5(100)	77.8(100)
% Compliance Turbidity	100	97.3(100)	87.6(100)	93.5(100)	84.0(100)	99.3(100)	100	96.3(100)	74.5(100)
% Compliance Odour and Taste	100	100	100	100	100	100	100	100	100

9.2.4 Visit to Treatment Plants

Water Inspectorate and Technical Bureau staff visited the Kpong Treatment Plant, and Kpeve treatment (Volta region) within the year.

Kpong Treatment Works:

At Kpong, the GWCL team which conducted PURC staff around pointed out that due to the unadulterated nature of the raw water, their chemical cost was rather minimal. Rather the plant ran an enormous energy cost of about ₦3.6 billion a month. The PURC team witnessed the processes gone through to produce water under very difficult circumstances. The GWCL team complained that despite these efforts the Commission only emphasized GWCL's high unaccounted for water. They also expressed their reservation at PURC's unwillingness to give them a cost effective tariff.

PURC staff explained to them that through its monitoring and observations, it realized that GWCL was lax about both collection and disbursements. The PURC staff indicated that they were aware that, as a production team they put in their best, but others allowed a large number of consumers to get away with illegal connections and under-estimated bills. PURC benchmarking and GWCL's failures in meeting their targets and its negative impacts were also discussed.

The total amount of water produced at the plant is about 36 million gallons daily from the new works. The old works which was also toured produces about 7 million gallons. It was revealed that there was enough raw water but increased operation was hampered by inability to treat more and the constraint of the existence of only one aged transmission line.

Kpeve Treatment Works:

At the Kpeve Works, GWCL staff stated that their demand and supply situation was in order, pointing out that, the places they did not supply were places not connected to supply.

They were concerned about their revenue collection during the rainy season, which fell drastically because people then relied on streams, rain water and wells. They wanted the old system of minimum payment to be reinstated, so that people would be obliged to pay once they were connected. A GWCL team then took the PURC team on a visit to the Kpeve treatment plant which they said was the biggest of the three in Volta region, the others being in Hohoe, and Sogakope. The Kpeve treatment plant serves Ho and Peki. The Regional chemist informed the PURC team that, they visited consumer premises periodically to test water at the point of delivery. The Commission staff conveyed GWCL concerns regarding institution of a service charge to the Commission.

For most of the year, such as the time of the PURC visit, water was only accessible with a floating intake or pontoon. The source of the water was upstream of the head works of the Kpong works. It therefore, definitely showed a cleaner source of water even visually than Kpong. Production was at about 4 million gallons of water daily.

10. PERFORMANCE REVIEW OF ELECTRIC UTILITIES

This section reviews the technical and financial performance of the electric power utilities, that is, the operations of VRA, NED and ECG for the year ended December 31, 2005. It also considers the quality of service performance and level of service delivery from the three power utilities.

10.1 Volta River Authority - Technical Analysis

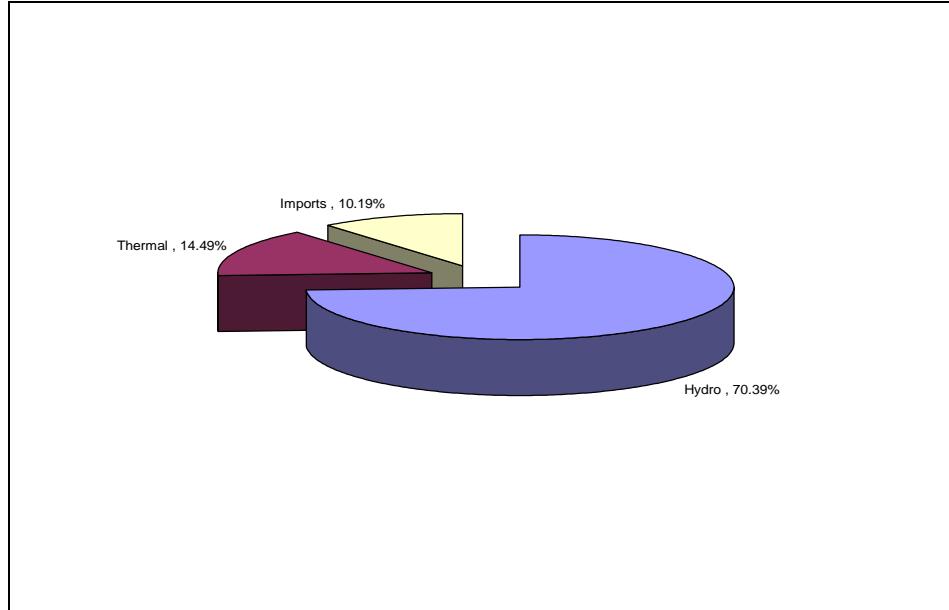
10.1.1 Generation Mix Analysis

System Energy supply from the various generation sources for the period under review is shown in Table 1 below. Total energy generated for the year 2005 from hydro, thermal and imports amounted to **7,602 GWh** excluding **394 GWh** of energy wheeled to CEB. Of the total energy generated, hydro sources contributed **5,628 GWh** representing **70.4 %**, whilst generation from thermal sources (TAPCO and TICO) amounted to **1159 GWh**, representing **14.5%** of total generation for the year while imports amounted to **815 GWh**, accounting for **10.2%**. There was no energy generated from the Tema Diesel Generating Station for the period. Transmission Losses amounted to **250 GWh** representing about **3.1%** of total energy generated.

Table 9: Energy Generation by Source

Generation Source	GWh	% Composition
HYDRO:	5,628	70.4
THERMAL:	1,159	14.5
IMPORTS	815	10.2
SRP	0	0
TEMA DGS	0	0
Energy Wheeled to CEB	394	4.9
TOTAL	7,669	100
Transmission Losses	(250)	3.1

Figure 10: Pie Chart Showing Generation-Supply Mix -2005



10.1.2 System Capacity -2005

Table 10: Domestic Capacity for the Year Ended December 31, 2005

SOURCE	EFFECTIVE CAPACITY (MW)	INSTALLED CAPACITY (MW)	% COMPOSITION
Hydro:			
Akosombo	860	1,020	
Kpong	109	160	68.0
Thermal:			
TAPCO	146	330	
TICO	210	220	32.0
Total Available Effective Capacity	1,325	1730	100
System Coincident Peak Demand	1,009		
Reserve Margin (Effective)	316		

Table 10 above shows composition of effective domestic supply and installed capacity for the year. Total effective capacity amounted to 1325 MW, whilst system coincident peak demand was 1,009 MW, thus giving a reserve margin of 316MW. Though VRA had reserve margin of 316 MW coming mostly from its thermal sources, the Authority had to rely on imports from natural gas-fired plants in La Cote d'Ivoire to provide the necessary support for system security and reliability due to the high price of crude oil on the international oil market.

10.1.3 Energy Demand Analysis

Total energy transmitted comprising domestic and export markets (including wheeled energy to CEB) for the year (shown in Table11 below) was **7,705 GWh**. Demand by local customers including ECG and NED for the period amounted to **6,413 GWh**, representing **83.2%** of

energy transmitted. Total energy supplied to foreign customers including Valco, CEB and SONABEL amounted to **1,292 GWh**, representing **16.8%** of total demand for the period.

Table 11: Energy Demand: Domestic and Exports Markets

DOMESTIC DEMAND (GWh):	2005	% COMPOSITION
ECG	5,053	65.6
NED	501	6.5
Mines	753	9.8
Others	106	1.4
Total Domestic	6413	83.2
EXPORTS (GWh):		
VALCO	259	3.4
CEB (Contractual)	387	5.0
CEB (Additional VRA Supply)	248	3.2
CEB-Wheeled	394	5.1
Sonabel	3.5	0.05
Others	0.4	0.01
Total Exports + wheeled	1292	16.8
TOTAL DEMAND	7704	100

10.2 VRA - Financial Analysis

10.2.1 Analysis of VRA's Operating Expenses

Billion Cedis:

Revenue from Electricity Sales	3,251.4
Other Income	119.6
Total Income	3,370.9
Cash Operating Expenses	(2,865.1)
Gross Profit/(Loss)	505.9
Depreciation	1,024.0
Loss/(Gain) on Foreign Exchange	(9.7)
Total Operating Expenses	(4,074.6)
Operating Profit/(Loss)	508.3
Exchange Fluctuation on Foreign Debt	162.2
Interest Charges	185.5
Net Profit/(Loss)	(531.7)

Table 12: Details of VRA'S O & M Expenses – 2005

DIRECT O & M EXPENSE Billion ¢	YEAR 2005	% COMPOSITION	YEAR 2004	VARIANCE 2005 vs. 2004) BILLION CEDIS (+/-))
Hydro Generation	35.9	1.25	39.6	(3.7)
Thermal Generation	936.5	32.69	497.0	439.5
Purchase of Electricity	1298.9	45.34	906.0	392.9
Transmission	77.8	2.72	90.9	(13.1)
Central Services	304.7	10.64	298.5	6.2
Akosombo/Akuse Township	45.4	1.58	38.1	7.3
Health Services	40.5	1.41	22.6	17.9
Distribution (NED)	125.3	4.37	64.2	61.1
Total	2,865	100	1,956.9	908.1

Table 12 above shows comparative key cost drivers of VRA's direct total operating expenses for the year ended December 31, 2005. The thermal cost component of energy generated increased by approximately 88% from a figure of ¢497 Billion in 2004 to ¢936.5 Billion in 2005. The cost of distribution in NED also rose significantly by approximately 95% from a figure of ¢64.2 billion in 2004 to ¢125 billion in 2005. The cost of electricity purchased rose by 43% from a figure of ¢906 billion in 2004 to ¢1,298 billion in 2005. In 2005 alone, electricity purchased constituted 45% of the operational and maintenance cost.

Table 13: Selected Financial Indicators - 2005

INDICATOR	UNIT	2005	2004
Operating income/(Loss)	¢B	(508.4)	437.2
Net Operating Income/(Loss)	¢B	(531.7)	47.0
Rate of Return on Average Re-Valued Net Fixed Assets	%	(2.1)	1.9
Overall Operating Cost/Sales Revenue (Ratio)	%	88.1	65.4
Debt Service Coverage (Ratio)	%	0.2	0.4

10.2.2 VRA Cash Flow Statement- 2005

	Billion Cedis
Cash flow from operating activities	436.7
Cash flow from investing activities	(101.5)
Cash flow from financing	(381.4)
Increase/Decrease in cash and cash equivalents	(46.2)
Cash and cash equivalents at beginning of year 2005	278.2
Cash and cash equivalents at end of year 2005	232.0

10.3 Electricity Company of Ghana - Technical Analysis

10.3.1 Distribution System Analysis

In 2005, ECG purchased a total of **5,045.4 GWh** of energy from the VRA. Energy billed for the period totalled **3,762.0 GWh**, whilst distribution system losses for the period totalled **1,283.4 GWh** as shown in Table 14 below. In percentage terms, ECG recorded **25.44%** system losses as against PURC's system loss benchmark of **21%**. ECG's system loss deterioration with respect to PURC benchmark for the period was **-4.4%**. Power Sales as percentage of Power purchased amounted to **74.56%** as shown in Table 6.

Table 14: Analysis of Power Purchases, Sales and System Losses- 2005

DETAIL	GWh	%
Power Purchased (GWh)	5,045.4	100.0
Power Sold (GWh)	3,762.0	74.56
Total System Losses (GWh)	1,283.4	25.44
PURC System Losses Benchmark	1,059.5	21.0
System Loss Deterioration With Respect To PURC Benchmark	223.8	4.4

Table 15: Comparison of ECG's Distribution System Losses (2004aAnd 2005)

SYSTEM LOSS	Year 2005	Year 2004
Total System Loss (%)	25.44	25.65
PURC System Loss Benchmark	21.0	21.0
System Loss Deterioration With Respect To PURC Benchmark	-4.44	-4.65

Table 16: Cost of System Losses to ECG- 2005

DETAIL	Billion Cedis
Power Purchased	2,144.3
Power Sold	2,730.8
Expected Power Sales Based On PURC Benchmark	2,893.4
Total System Losses (25.40%)	931.75
System Losses Based on PURC Benchmark (21.0%)	769.1
Cost of System Losses to ECG	162.6

10.3.2 ECG - Financial Analysis

10.3.2.1. Highlights of ECG Financial Performance- 2005

	Billion Cedis
Total Revenue	2,732.3
Direct Operating Costs	(2,222.7)
Gross Profit	509.6
Operating, General & Admin. Expenses	(822.6)
Depreciation	(406.6)
Operating Profit/(Loss) (before exchange fluctuation, Interest, Commitment Charges & Exceptional Items)	(313.0)
Exchange Fluctuation Loss	(54.9)
Loan Interest	(47.3)
Net Operating Profit/(Loss)	(305.4)

10.3.2.2 Analysis of ECG's Operating Cost- 2005

The key cost drivers of ECG's operations for the period under review were:

- a. Direct: - Cost of power purchase - ₦2,144.3 Billion Cedis
- b. Indirect: - Depreciation ₦406.6 Billion

Though there was a slight reduction in distribution loss of 1.0%, this could not reflect in the net operating loss for the period under review, recording loss of ₦305.4 billion compared to the net operating loss of ₦269.7 billion 2004. The net operating loss for the year would have been reduced by at least 53% or ₦162.6 Billion if the Company had achieved PURC system losses benchmark of 21% and benchmark revenue collection rate of 95%.

10.3.2.3 Analysis of ECG's Cash Flow Position for 2005

	₦M
Net Cash inflow from Operating Activities	221.0
Net Cash Outflow from Investing Activities	(279.9)
Net Cash inflow before Financing Activities	58.8
Net Cash inflow from Financing Activities	80.6
Increase in cash and cash equivalents	21.8
Balance in cash and cash equivalents (At Jan 1, 2005)	282.8
Balance in cash and cash equivalents (As at December 31, 2005)	₦304.6

Table 17: Key Statistics for the Year 2005

	UNIT	2005	2004	VARIANCE
Distribution System Losses	%	25.44	25.65	0.21
Revenue Collection	%	85.8	84.1	1.7
Debtors Collection Period	Days	179	142.0	-35.0

Table 17 above shows key statistics for the year 2005. During the year, Distribution System Losses was reduced from **25.65%** in 2004 to **25.44%** in 2005, representing 0.21% reduction. The Company recorded deterioration in its Debtors Collection period by **35 days** from **142 days in 2004 to 179 days in 2005**. However, this did not adversely affect its revenue collection since the collection ratio went up by almost 1.7% from a figure of 84.1% in 2004 to 85.8% in 2005.

10.4 Quality of Service Performance

Quality of service performance review of the regulated electric utilities for the year 2005 involved analysis of the performance of VRA's generation and transmission systems i.e. transmission and generation availability, generation utilization factor, duration of transmission planned and unplanned outages. The performance of ECG's distribution network was also assessed, including duration of supply hours lost per connected customer (i.e. a measure of network availability), supply interruption per 100 km of system length (i.e. measure of network security and system reliability) and distribution system loss levels.

10.4.1 Generation & Transmission System Quality of Service for the Year 2005

Table 18: Generation Availability Factor (%)

GENERATION STATION	AVAILABILITY FACTOR (%) 2005	PURC BENCHMARK
Akosombo GS	88.10	95.0
Kpong GS	95.66	95.0
TAPCO	62.09	85.0

Table 19: Generation Utilization Factor (%), 2005

GENERATION STATION	UTILIZATION FACTOR (%) 2005	PURC BENCHMARK
Akosombo GS	78.17	95.0
Kpong GS	91.80	95.0
TAPCO	29.64	85.0

Table 20: Transmission System Analysis for the Year Ended December 31, 2005

DETAIL	YEAR 2005	PURC BENCHMARK (%)
Transmission System Losses (%)	3.28	2.80
Transmission System Line-in-Service (%)	98.93	97.0
Power Supply Availability (%)	99.52	97.0

10.4.2 Distribution System Quality of Service

10.4.2.1 Customer Outage Hours

The average cumulative outage-hours in the eight ECG operational areas for Special Load Tariff (SLT) Customers for the year under review was under one hour per connected customer, as against the PURC's benchmark of 30hrs, whilst that of the non-SLT Customers was 122 hours, 22 hours higher than the PURC's benchmark of 100. NED also registered average cumulative outage-hours of 116 hours, 16 hours higher than PURC benchmark as noted in Tables 21 and 22 below.

Table 21: Duration of Supply Hours Lost per Customer - 2005 (ECG)

DETAIL	YEAR 2005	PURC BENCHMARK (VARIANCE (HRS)
SLT (Caused by ECG)	0.085	-	
Non-SLT (Caused by ECG)	99.86	-	
SLT (Caused by VRA)	0.014	-	
Non-SLT (Caused by VRA)	22.98	-	
Total SLT	0.99	30	29.01
Total Non-SLT	121.84	100	-21.84

Figure 11

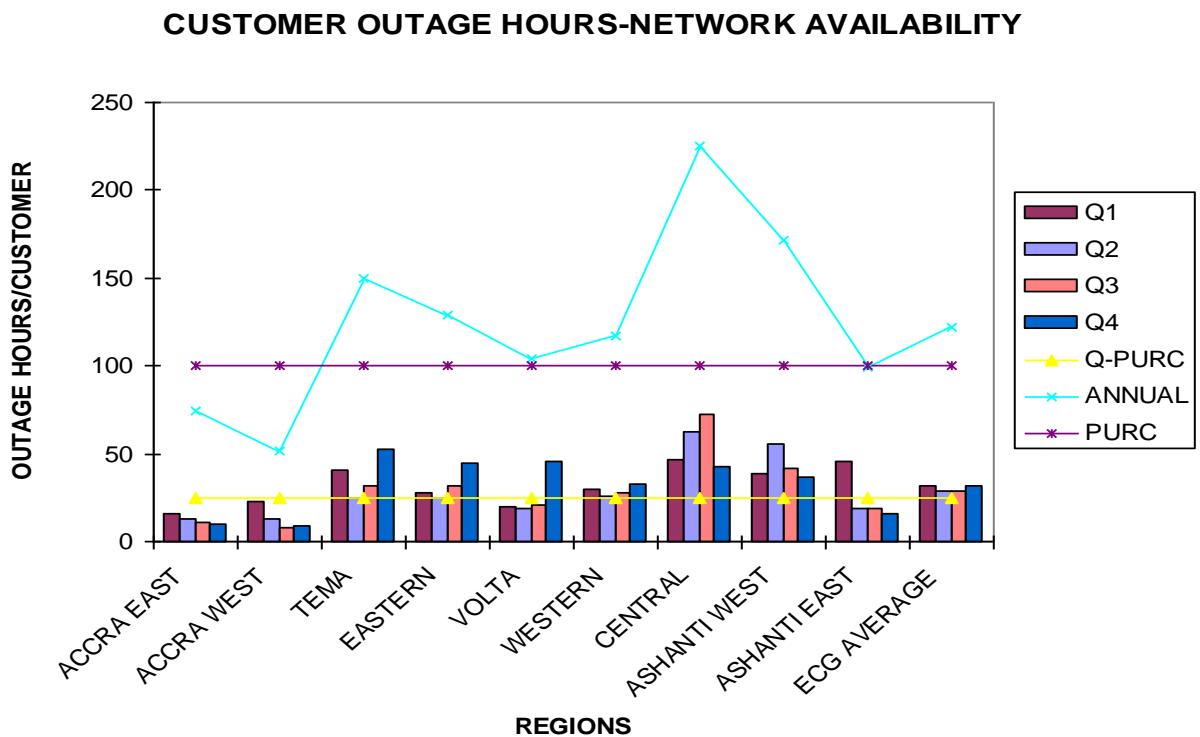
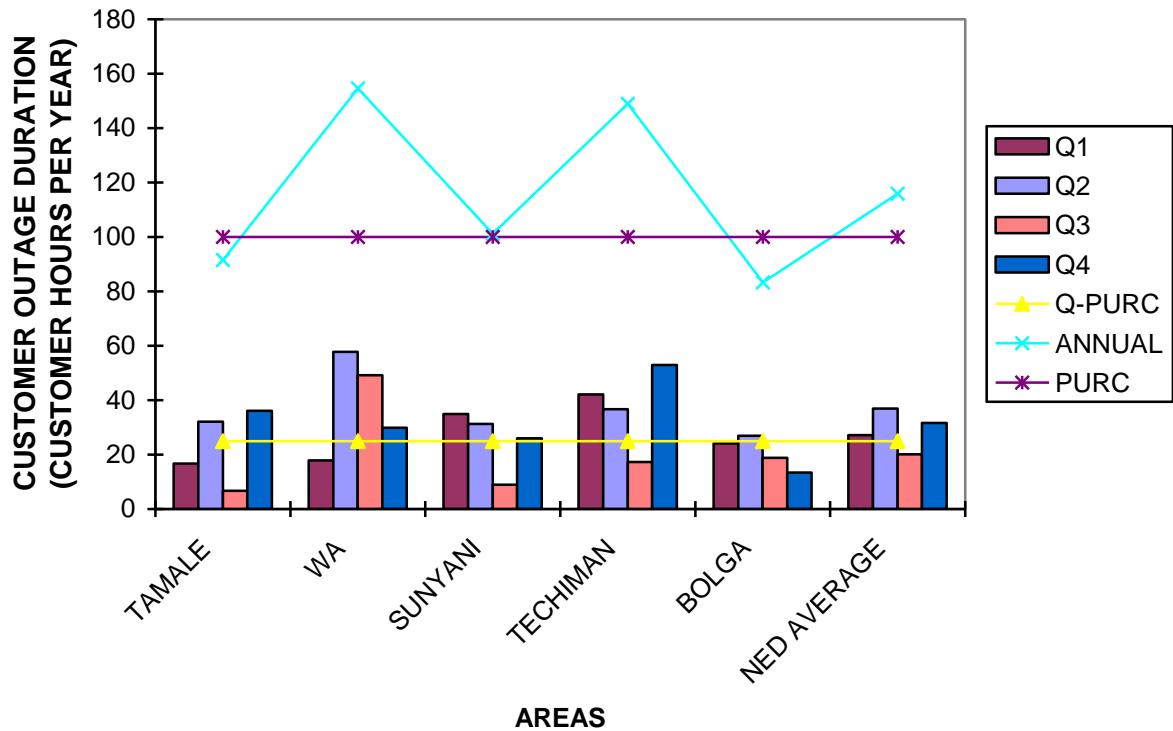


Table
22:

NED: Duration of Supply Hours Lost per Customer 2005

DETAIL	YEAR 2005	PURC BENCHMARK (VARIANCE (HRS)
SLT/Non-SLT (Caused by NED)	84.15	-	
SLT/Non-SLT (Caused by VRA)	31.77	-	
Area Average	115.92	100	-15.92

Figure 12 CUSTOMER OUTAGE HOURS-NETWORK AVAILABILITY



10.4.2.2 Supply Interruptions per 100km of System Length

During the year under review, ECG and NED recorded varying levels of supply interruptions per 100km of system length. Cumulatively, ECG recorded an average of 0.339 interruptions per 100km for SLT Customers and 420.64 interruptions per 100km for Non-SLT Customers for the year. These figures are 29.66 interruptions lower than the PURC benchmark for SLT and over 320 interruptions higher than the PURC benchmark for Non-SLT Customers as shown in Table 23. These high levels of supply interruptions per 100km of system length for Non-SLT indicate a very unstable network security. NED recorded 152 interruptions, 52 higher than the PURC benchmark of 100 interruptions (see Table 24).

Table 23: FREQUENCY OF INTERRUPTIONS PER 100KM OF NETWORK 2005 (ECG)

DETAIL	YEAR 2005	PURC BENCHMARK (INT)	VARIANCE (INT)
SLT (Caused by ECG)	0.33	-	
Non-SLT (Caused by ECG)	407.99	-	
SLT (Caused by VRA)	0.007	-	
Non-SLT (Caused by VRA)	12.65	-	
Total SLT	0.339	30	29.8
Total Non-SLT	420.64	100	-320.64

Figure 13

QUALITY OF SERVICE PERFORMANCE-NETWORK SECURITY 2005

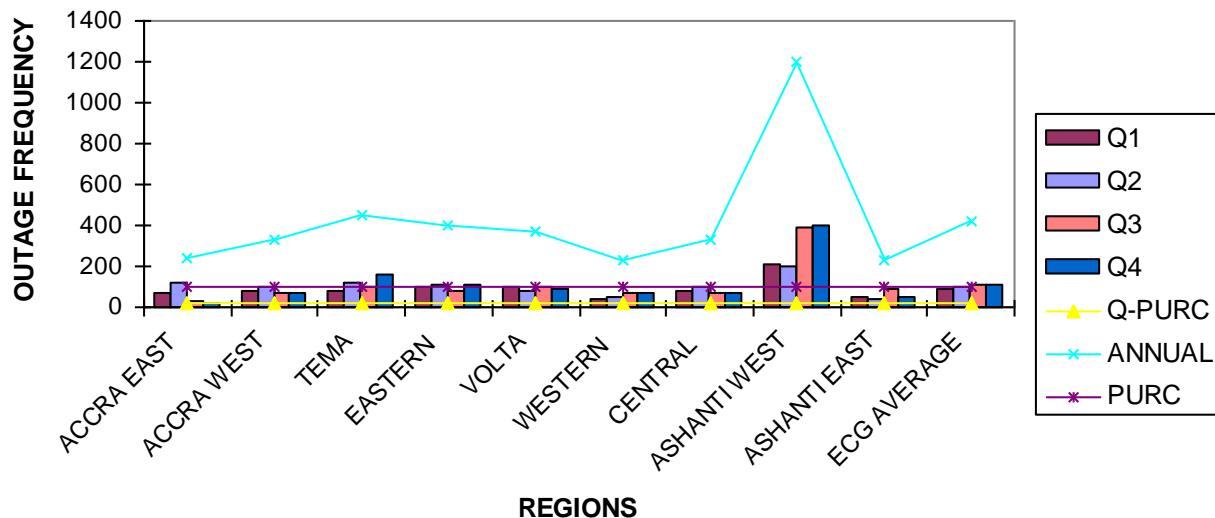
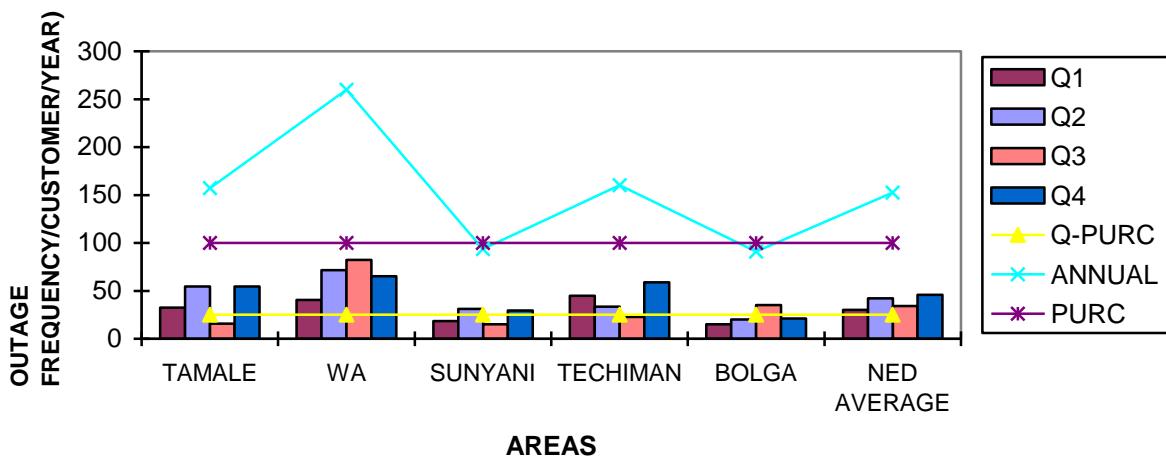


Table 24: FREQUENCY OF INTERRUPTIONS PER 100KM OF NETWORK 2005 (NED)

DETAIL	YEAR 2005	PURC BENCHMARK (INT)	VARIANCE (INT)
SLT/Non-SLT (Caused by NED)	99.4	-	
SLT/Non-SLT (Caused by VRA)	52.96	-	
Total	152	100	-52

Figure 14 QUALITY OF SERVICE PERFORMANCE-NETWORK SECURITY



10.4.3 Distribution System Losses

Table 25: ECG's Distribution System Losses - 2005

SYSTEM LOSS	Year 2005
Total System Loss (%)	25.44
PURC System Loss Benchmark	21.00
System Loss Deterioration With Respect To PURC Benchmark	-4.44

Table 26: NED's Distribution System Losses -2005

SYSTEM LOSS	Year 2005
Total System Loss (%)	25.81
PURC System Loss Benchmark	25.00
System Loss Deterioration With Respect To PURC Benchmark	-0.81

Distribution system losses as shown in Tables 25 and 26 above indicate that ECG recorded 25.44% distribution system losses, whilst NED registered a distribution system loss of 25.81% in 2005. In comparison with PURC distribution system losses benchmark of 21.0% for ECG and 25.0% for NED respectively, ECG exceeded the benchmark by 4.44% and NED by 0.81%.

10.5 Activities of the Bureau

Workshops

During the year under review, the Bureau of Technical Operations and Regulatory Economics (BTORE) organized three Workshops for Stakeholders in energy sector.

The first workshop on the topic 'Open Access Transmission Pricing and Guidelines' was held on 24th March 2005 with the key objective of obtaining a fair pricing principle for the transmission system in Ghana that will create incentives for investment in generation capacity. Among other things the workshop highlighted the following for consideration in the pricing:

- ◆ Transmission Availability Factor (TAF) which tends to create an incentive to transmission system operator to maintain high transmission system availability
- ◆ Area Congestion Index (ACI) which will provide appropriate price signals to ease transmission congestion by making it more lucrative to set up generation facilities where transmission congestion will be minimal.

The second workshop was organised on 17th August 2005 on the theme 'Productivity and Efficiency Benchmarking for the Utility Companies'. The aim of the workshop was to introduce stakeholders within the energy sector to the Commission's new approach to strengthening PURC's incentive based tariff regulation, by establishing efficiency targets and performance based on detailed empirical analysis.

The PURC since its inception had embarked on performance regulation in its rate making. The benchmarks used were restricted to the calculation of simple ratios and performance indicators. The ratios and indicators were however limited in terms of providing a synthetic indicator of the overall economic performance of the utility company and also difficult to use in an incentive-based rate design.

The Commission therefore developed the data envelopment analysis (DEA) technique and other regression analysis to get the total factor productivity so as to model the overall efficiency of the utility companies. It was hoped that the DEA approach would provide the needed information on the sources of utility performance constraints as well as enable PURC move to the frontiers of utility regulation.

The third workshop held on 3rd October 2005 discussed ‘Guidelines for embedded generation’ was aimed at developing an economically efficient and transparent pricing framework that would facilitate cost-effective connection of embedded generation (EG) technologies (generations at distribution voltages) to the distribution networks in Ghana. The other objectives of the workshop included:

- ◆ identifying the main cost drivers for network investment
- ◆ reviewing existing approaches for distribution access pricing
- ◆ proposing a simple methodology for determining distribution system wheeling charge
- ◆ proposing a metering mechanism for electricity imports and exports
- ◆ identifying other key issues to facilitate practical application

The PURC has not been able to achieve these objectives and to continue with the necessary studies due to lack of funds

Monitoring

The Bureau in collaboration with the Consumer Services Bureau undertook joint monitoring exercises in respect of the quality of service of Electricity and Water in some parts of the Brong-Ahafo Region namely; Sunyani, Brekum, Kato, Dormaa Ahenkro, Kitampo, Techiman and Nkoranza. The monitoring was in response to frequent consumer complaints lodged with the Commission’s Kumasi office. The monitoring exercise revealed that major towns in the area were served with 11kV distribution overhead lines and underground cables, while the rest were on 34.5 kV distribution network. There was widespread low voltage due to firstly, system low voltage from VRA, and secondly to long 34.5kV and LV distribution lines. The Area Management of VRA-NED had been trying to upgrade the sizes of the LV conductors, and also monitor their load and equipment performance to ensure prompt maintenance. This was being done alongside their routine maintenance schedule. The Area will need about 60 distribution transformers for injection to bring the quality of supply to the desired standard in terms of voltage and stability of supply. The estimated number of distribution transformers needed would even be higher if distribution is to be limited to about 5-10 households per transformer, a situation which would significantly reduce technical losses and make the system more capable to deliver stable supply to consumers.

11. OTHER ACTIVITIES

11.1 Seminar for Parliamentarians at Elmina

During the year under review the Commission interacted with some Parliamentarians at a retreat organised for them at the Elimina Beach Resort from 15th to 16th July 2005. The programme was held specifically for the Parliamentary Select Committees on Mines and Energy, Works and Housing, Legal and Constitutional Affairs and Finance to sensitize them on the activities of the Commission and also discuss some of the challenges faced by the Commission especially regarding the funding of the PURC.

Issues discussed included the Tariff Setting Process, Consumer Service and Public Awareness Programmes of the Commission, how to build partnerships to improve water supply and the legislation issued with Parliamentary support by PURC to inculcate civility in service provision under the Commission's rule making mandates.

11.2 Launching of PURC Policy Papers on the Water Sector

The Commission at a press conference held in February 2005 formally launched some of its technical papers prepared to assist in carrying out its functions in the water sector. The documents launched were the PURC Social Policy, PURC Urban Water Tariff Policy and a five year review of the Performance of the GWCL from 1998-2003.

The PURC Social Policy is a strategy for water regulation adopted by the Commission which addresses the issues relating to service provision to the urban poor. This document was premised on a research dubbed "Use and Satisfaction" Survey undertaken by the Commission in 2001-2002 to improve the Commission's understanding of issues important to consumers in respect of water supply service. The Urban Water Tariff Policy seeks to strike the optimum balance between conflicting interests of stakeholders, notably that of customers and service providers and relates only to the activities of the GWCL. The five year review of the GWCL on the other hand seeks to identify major operating constraints on GWCL and to work with the company to improve its performance and operational efficiency. The aim of the study was to assist the company prioritize its investments to bring maximum benefit to all stakeholders.

11.3 Regulatory Partnership with the PUCO, Ohio, USA

In 2005, the PURC entered into a regulatory partnership with the Public Utilities Commission of Ohio (PUCO). The Partnership is being implemented by the National Association of Regulatory Utility Commissioners through cooperation and funding from the United States Agency for International Development (USAID).

Aimed primarily at natural gas regulatory capacity building, the partnership is designed as a vehicle for the exchange of experience and information between the two regulatory bodies with the goal of improving regulatory practices and fostering long-term sustainable relationships between the institutions. The partnership will allow PURC to have access to US regulatory practices and will enable PUCO to learn new techniques and methodologies as well as gain an understanding of the international regulatory environment.

The first partnership activity took place in Accra from 11th to 15th April 2005 during which delegates from PUOC visited PURC. A partnership agreement was signed during the partnership visit.

11.4 Visits to the Commission

Visit to PURC by Delegates from the Federal Ministry of Water Resources, Nigeria

Delegates from the Federal Ministry of Water Resources in Abuja, Nigeria visited PURC in November 2005 to undertake a study tour to broaden their knowledge on utility regulation of the water sector.

The tour was part of a programme for implementing reforms within the urban water supply sector in Nigeria by the Federal Government of Nigeria in collaboration with the World Bank. The tour afforded delegates the opportunity to learn about issues concerning increased access to piped water network and improved reliability and financial viability of urban water utilities as well as the provision of a legal and regulatory environment to enhance private participation in water.

Visit by the Hon. Minister for Water Resources, Works and Housing

The Minister for Water Resources, Works and Housing Hon. Hackman Owusu Agyeman paid a courtesy call on the Commission in April 2005 to acquaint himself with our activities and hold a dialogue with members of the Commission regarding some of the challenges being faced by the Commission. He was accompanied by members of his management team at the Ministry.

11.5 Exhibition and Trade Fair

The Commission participated in the 6th Ghana Industry and Technology Fair (INDUTECH) organized by the Association Of Ghana Industries(AGI) from 3rd to14th March 2005 at the Ghana International Trade Fair Centre, Accra. The Theme for the Exhibition was "Transforming Ghana's Industrial Sector through Information Technology".

The Commission sought to achieve the following by participating in the Exhibition:

- ◆ To interact with the public to find out the type of problems faced by consumers of the water and electricity utilities.
- ◆ To create awareness on the rights and responsibilities of consumers.
- ◆ To educate the public on the functions and mandate of the Commission.
- ◆ To fast track complaints received at the exhibition stand.
- ◆ To educate the public and consumers on how and where to seek redress when confronted with utility related problems.

11.6 Media Relations

The Commission recorded and aired Radio Adverts in both Twi and English on PURC Disconnection Procedures on some radio stations in all the Regional Capitals and their immediate environs. Commission staff also participated in TV and Radio public education as well as interactive consumer relations programmes. In addition, the Commission published in some of the daily papers full page adverts on electricity and water disconnection procedures

for a period of two weeks during the year under review. The publication was aimed at sensitizing consumers on their rights and responsibilities.

11.7 Publication of Dairies and Calendars

In the year 2005, the Commission published its first edition of Calendars and Diaries for the year 2006. These were distributed to some members of the Executive, Legislature, Utilities, Media and other stakeholders in the water and energy sectors. These souvenirs contain summaries of useful information and memorable events in the Commission's calendar and will supplement PURC's sustained publicity drive.