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**COMPREHENSIVE REPORT ON
COMMERCIALIZATION OF DISTRIBUTION
ENTERPRISES IN THE GEORGIA POWER SECTOR**

**Georgia Power Sector Reform
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COMPREHENSIVE REPORT ON COMMERCIALIZATION OF DISTRIBUTION ENTERPRISES IN THE GEORGIAN POWER SECTOR

Executive Summary

This document has been prepared by Hagler Bailly in cooperation with the United States Agency for International Development, and is intended as a guide for electrical distribution companies in Georgia and other former Soviet countries in developing sustainable commercial operations as they transition from command decision-making to market-based economics. All information contained in this document is based on a pilot project supervised and carried by Hagler Bailly in cooperation with the USAID in the City of Rustavi, Georgia, during the period 1998-1999.

Inherent in the development of sustainable economic operations of any electric company is the need to improve overall reliability of the electric system and increase energy efficiency at the point of consumption. By providing proper market signals to consumers of electricity, the electrical system of Georgia can improve its basis for ongoing economic viability and sustainability. As revenues are increased through by accurate metering and billing procedures, increased funds will be available for proper maintenance of the physical assets, the purchase of fuel and/or additional generation capacity, and to pay employee salaries and taxes, which in turn can help support government budgets. Additionally, with increased reliability of electricity, the economy of Georgia can begin to grow more effectively, thus multiplying the positive effects through increased productivity and tax revenues for the entire country.

Electricity is one of the basic infrastructure elements upon which all sectors of an economy depend. A strong electric sector is necessary for the long-term economic growth of Georgia. This guide is intended to assist in creating a strong and economically successful and stable Republic of Georgia by focusing on the ultimate consumption of electricity and by providing full-time availability of power in return for consistent payment for such usage by the consumers.

The Commercialization Process

In the economic structure of the former Soviet Union, the Government owned and operated nearly all business entities, and provided central planning for both the production and use of products. The central Government also provided a controlled economic environment, which limited cost of raw materials, labor, set price controls on finished products and provided social welfare programs through State-sponsored subsidy systems.

Electric utilities, which provided the energy supply to the entire economy, were also built, owned and operated by the State. Generating plants, transmission lines and distribution systems were built through State-sponsored construction projects, fuel was supplied from State-owned mines and wells, and employees were paid from the State or Local budget through the Ministry of Energy or local administrative units. Tariffs were set by the State without little or no regard for the cost of construction of the systems, the cost of fuel, or the actual costs for labor or maintenance. The management of electric utilities was based on technical considerations and reliability, but often decisions were modified by political imperatives. No consideration was given to whether or not the operation of the electric utility system was profitable.

When the Soviet economy began to collapse, electric utilities, like many other industries, were cut off from government subsidies. Little consideration was given to the problems which they inherited in the form of debts for prior fuel purchases, unpaid salaries, lack of maintenance, old equipment, unrealistic tariffs or non-funded social welfare programs. Unlike other industries, the electric utility industry is, for the most part, currently unable to purchase raw materials (fuel or power supplies) from outside the influence of government-controlled agencies, and are unable to change the tariff structures or discontinue social welfare programs without government support. Thus the process of commercialization for electric utilities must come largely from its own operations.

The process of commercialization is the process of changing the management and operations of an electric utility (or any other entity) to a self-sustaining economic entity. The definition of a self-sustaining business (or economic) entity is one which can recover all costs of raw materials, construction, operations and maintenance, pay appropriate salaries and taxes, and make a reasonable profit for those who invest in the business. The methodology which we recommend is realistically to evaluate the current situation, determine where economic losses occur and where gains can be made, and to develop a plan for moving the company to a better economic position. Because electric utilities are unique in their importance to the overall economy and in their positions as a natural monopoly, government controls will undoubtedly always be a factor in their operations. Thus the key to successful commercialization is to develop a business entity which is capable of continually addressing and modifying its operations to an environment which is not always under its control.

Appendix A ("Fundamental Steps to Commercial Reform") provides a generic overview of the processes which were considered in the development of the Rustavi Demonstration Project,

which may be useful as a guide to utility managers beginning the process for their own companies.

Commercialization in Georgia – The Rustavi Demonstration Project

Information contained in this document is based on a pilot project which was developed, supervised and carried out by Hagler Bailly in cooperation with the USAID in the City of Rustavi, Georgia, during the period 1998-1999. During this period, a total of five administrative micro-regions, 93 apartment blocks, and approximately 9,100 customers were involved in the commercialization of electricity service where the physical system was renovated and billing and collection procedures were improved. From the main high-voltage substation to the customer's apartment, low-voltage substations, individual building wiring entrances and communal services wiring, as well as the wiring to individual apartments was re-constructed. Customer meters were re-calibrated by the Georgian State Standards Ministry and relocated to a secure and tamper-proof central location in each of the building entrances. In addition, new management procedures were implemented to improve the handling of all financial matters: meters were read on a monthly basis, and all accounting and cash-handling procedures were separated and improved to help insure accurate billing and collection processes. Customers who refused to pay for the full amount of consumed electricity were disconnected on a routine basis, and were re-connected when proof of such payment was provided.

The following figures are estimates, based on actual results of the work conducted by Hagler Bailly and USAID on the Relasi system. The numbers indicate the projected benefits and change in cash flow for Relasi, assuming that the demonstration project were expanded to include all customers.

Total Number of Residential Customers	-	40,000
Average Residential Usage	-	200 kwh / month
Technical Losses, prior to Demonstration Project	-	10%
Technical Losses, after Demonstration Project	-	10%
Commercial Losses, prior to Demonstration Project	-	40%
Commercial Losses, after Demonstration Project	-	~0%
Average Collection Rate on Usage, prior to Demonstration Project	-	25%
Average Collection Rate on Usage, after Demonstration Project	-	95%
Average "per meter" cost of Commercialization	-	80 GEL (\$35 US)
Includes rewiring of all apartment services, relocation of meters, new meter enclosures, new service entrance wiring to all apartment blocks, re-wiring of communal services including lifts and stairway lighting, and necessary repairs to low-voltage distribution substations (6-0.4kv)		
Wholesale Purchase price for electricity	-	0.04 GEL
Retail Tariff for electricity	-	0.06 GEL

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PROJECTED FINANCIAL RESULTS:

	Prior to Commercialization		After Commercialization	
Average Usage X Number of Customers	8,000,000	kwh / month	8,000,000	kwh / month
Losses between purchase and sales	8,000,000	kwh / month	888,889	kwh / month
Power required	16,000,000	kwh / month	8,888,889	kwh / month
Value of Delivered Power	480,000	Lari / Month	480,000	Lari / Month
Actual Revenue Collected	120,000	Lari / Month	456,000	Lari / Month
Cost of Power Required	640,000	Lari / Month	355,556	Lari / Month
Gross Profit (In Lari)	(520,000)	Lari / Month	100,444	Lari / Month
Gross Profit (In USD)	\$ (226,086.95)	USD/ Month	\$ 43,671.50	USD/ Month
Cost to "Commercialize"	=	\$ 35.00	Dollars / Customer	
Increase in Cash Flow	=	\$ 6.74	\$/ Customer / Month	
Pay-Back Period	=	5.2	Months	

It is readily apparent that, prior to commercialization, the electric system in Rustavi was buying more power (and incurring debts) than it could possibly collect in revenues. The combined technical and commercial losses were of such a magnitude that all income from sales should have been dedicated only to paying for purchased power, and even then the company would have needed a subsidy of over 500,000 GEL/month to pay its debt. This situation not only prevented full payment for purchased power, but also prevented payment of wages, taxes, maintenance or other operational and overhead costs.

Through the commercialization process, the electric utility should be able to pay for all purchased power while at the same time, obtain a positive cash flow of approximately 100,000 GEL / month. If all revenues were devoted to making these changes, the costs necessary to make the physical modifications could be recovered in less than 6 months. While this is not necessarily the most practical approach, it is easy to see how a distribution system should be willing to make the investment for any necessary costs. Certainly, there is no question that, under the circumstances that existed prior to the demonstration project, the enterprise could not have been economically viable.

It should be recognized that the successful commercialization of customers which has been demonstrated by Hagler Bailly and USAID in Rustavi, is only the beginning of the process that must be implemented by an electric distribution company in order to become economically viable. In addition, steps should be taken to evaluate expenses for labor, taxes, maintenance and operational and other overhead expenditures and appropriate management techniques applied to optimize these factors. Additionally, a company must work closely with the local administrative and regulatory bodies to ensure that the tariff structure is sufficient to allow a reasonable rate of return on investment. Until the management of the utility can be properly trained in these techniques, additional planning and assistance from outside management experts may be necessary.

In summary, the result of the demonstration project in Rustavi was to increase collection of revenues from 20% to over 95% of sales, thus more than justifying the investment required to make the required wiring and metering changes.

In addition to the increased revenues, however, was the equally significant in reduction of non-metered usage of electricity (commonly referred to as commercial losses). Prior to implementation of the project, the total value of sales would not have been sufficient to recover costs for purchased power due to commercial losses. It is estimated that losses have been reduced from nearly 50% to a level of 10%, or approximately the level of technical losses for the system.

Yet, perhaps the most impressive result of this project has been the demonstration of the willingness of Georgians to pay for a reliable supply of electricity. This demonstrated result has contributed to a business environment which recently resulted in the successful privatization of the electrical distribution system of the capital city of Tbilisi, where nearly 1/3 of the electricity demand for all of Georgia is represented.

Commercialization of an Electric Utility

Introduction

The following sections of this document have been prepared by Hagler Bailly as a guide to help the management of electric distribution companies of Georgia take specific actions to increase the commercial viability of their companies. These actions are all designed to be cost-effective and self-supporting, in that they will pay for themselves within a short period after their implementation. By initiating a properly planned and managed program, and with top management commitment to making the necessary operational changes to support such a program, a company may be able to obtain commercial loans to make the necessary investments in labor and materials which are associated with these actions.

The following information and sample documents are provided to assist the utility manager who may not have previously applied the concepts of market-based decision-making. Hagler Bailly recommends these concepts as being necessary to help assure the successful commercial operation of an electric distribution system. We encourage the utility management to implement all of the actions described in this document, and to demand results from all department heads and senior management within the utility. It should be remembered that a complete change in process is being undertaken, and any reluctance or tendency to accept previous levels of performance in this process may lead to the failure of the entire commercialization process.

It is important that local government, utility management, utility employees, and customers be kept informed throughout the process of commercialization and that they be assured that every procedure, physical modification, and management action is being implemented to the highest possible standards. All of these stakeholders should be informed about all efforts, that they are being made in order to ensure the fair and honest application of the commercialization process, and that both the consumer and the company will benefit. Strong management action must be taken when any efforts are discovered which may subvert any of these procedures, and

individuals who fail to support the commercialization process should be relocated lest the credibility of the process be placed at risk.

Evaluating Existing Economic Conditions

As was shown in the section entitled "Commercialization in Georgia", Hagler Bailly, working under the sponsorship of the United States Agency for International Development, has already successfully demonstrated the process of commercialization in the distribution company in Rustavi. The same basic analysis can be performed for any utility company. For example:

Total Number of Customers	-	10,000
Average Usage / Customer	-	100 kwh / month
Current Level of Technical Losses	-	10 %
Optimal Level of Technical Losses	-	10 %
Current Level of Commercial Losses	-	40 %
Optimal Level of Commercial Losses	-	~0 %
Current Average Collection Rate for Sales	-	25 %
Optimal Average Collection Rate for Sales	-	100 %
Wholesale Purchase price	-	0.05 GEL
Retail Tariff	-	0.10 GEL

PROJECTED FINANCIAL RESULTS of COMMERCIALIZATION:

	Current Economic Situation		Desired Economic Situation	
Average Usage X Number of Customers	1,000,000	kwh / month	1,000,000	kwh / month
Total Losses	1,000,000	kwh / month	100,100	kwh / month
Power required	2,000,000	kwh / month	1,100,000	kwh / month
Cost of Power (Raw material)	100,000	Lari / Month	55,000	Lari / Month
Total Sales x Collections Rate	25,000	Lari / Month	100,000	Lari / Month
Gross Profit (Loss)	(75,000)	Lari / Month	45,000	Lari / Month

The starting point for any commercialization project is a thorough understanding of the existing economic situation of the company. In order to accomplish this, the following steps are suggested:

- A. Formally review and document the current status of the finances and economic flows of the utility, identifying and including all revenues and expenses, and calculate the current profit/loss situation for the utility, giving full consideration of all known expenses and losses. This process should include the following steps:
- B. Review the current status of revenues from sales, and record all circumstances where revenues are not collected. List all non-collected revenues by customer and by date that they were originally supposed to have been paid.
- C. Identify where losses occur in both the use of electricity and in the process of collecting revenue from customers, and identify where the loss takes place. List the individual losses according to magnitude and impact on total profits.

- D. Identify all normal and necessary expenses of the utility, whether actually paid or not. These should include the cost of purchased power necessary to serve the load, salaries, taxes, social payments, repairs, maintenance, equipment and buildings, spare parts, vehicles, meters, substations, financing costs which may be incurred to borrow necessary capital, and an estimated fair rate of return for any owner or investor.
- E. List all debts of the utility in order of importance to the operations of the utility and by "age" of the debt (when was it incurred), to quantify what debts must be paid, and in what priority.

Strategic Planning

The subject of Strategic Planning for an organization goes beyond the scope of this document. Strategic Planning can, however, be implemented in a limited manner to assist the utility manager in making decisions about where to invest time and money. The following actions are recommended:

- A. Estimate the financial results that may be expected, if proper metering, billing and collection procedures are implemented, and theft, commercial losses, and non-payments are eliminated. We suggest that the utility should strive to achieve not more than 3% "commercial" losses, and not less than 95% collections from customers. Customers who do not pay within 30 days should be disconnected from the system.
- B. Review all debts owed to the utility and identify any customers who have moved or discontinued operations. Include a review of customers who have simply changed their business, in order to avoid paying debts. Estimate how much of the outstanding debt can be recovered from existing customers over what period of time.
- C. Review all debts owed by the utility and determine what creditors are critical to the operations of the utility. For instance, power supply and employees are necessary for the company to continue in business. However, taxes may need to be deferred until profits are made. Estimate how much debt owed by the utility can be paid over what period of time.
- D. Determine what costs may be incurred if the process of commercialization is undertaken. Collection of old debt requires very little expenditure, but may result in a significant increase in cash for the utility, if properly implemented. Include cost estimates for necessary system modifications; for example, in Rustavi, Hagler Bailly was able to relocate meters, rewire buildings, renovate local substations and install check-metering to verify loads, for a total investment of less than \$35 per residential meter.
- E. Prioritize individual actions that will result in maximum increase of revenue with minimum investment costs. It must be recognized that some solutions that appear to be minimal cost may not be practical without additional expenses being incurred. For instance, disconnection of customers for non-payment is not a viable solution where physical systems allow

reconnection by the customer himself, thus physical system must be rebuilt to eliminate the possibility of self-connection.

F. It is suggested that the following areas be specifically evaluated for their potential contribution to increasing profitability:

1. Uncollected Debts owed to the Utility
2. Non-metered usage of electricity (Commercial losses)
3. Non-payment for electricity
4. Non-working or inaccurate metering
5. Non / Inaccurate self-reporting of usage
6. Technical losses of the system
7. Theft and other losses due to internal procedures
8. Inaccurate accounting of income and debts
9. Diversion of payments
10. Non-paid subsidies for Privileged Customers

Identification and Prioritization of Solutions

Once the current economic situation of a utility is thoroughly understood and the elements that contribute to the lack of profitability have been realistically identified, proposed solutions to the various problems can be developed and prioritized. The process of developing solutions is certainly not a fixed process, and is dependent upon the creativeness and ingenuity of the people who are involved.

However, a word of caution is in order: proposed solutions should be reviewed and considered in terms of their impact on other solutions, and on the overall reputation and well-being of the utility. For instance, one possible means of reducing losses might be to simply check and recalibrate all meters, however if customers continue to make illegal connections to wiring that does not flow through the meter, the solution would be ineffective, by itself. Conversely, if wiring is protected from tampering, but meters are inaccurate or unavailable for inspection by the utility, and customers can not be accurately billed for their usage, the simple relocation and protection of wires would be ineffective.

While this example may seem obviously simple, there are more realistic examples that are more complex and require significant consideration. For example, if you implement a process to disconnect all customers who have not paid for their electricity, what do you do when a customer who is supposed to be provided with a government subsidy, fails to pay for usage above the subsidized amount? What if the subsidy is not funded?

Thus the identification of solutions and their prioritization may be quite complex. In the Rustavi demonstration project, Hagler Bailly identified the following technical solutions that addressed many of the issues identified in the Strategic Planning section:

- A. Relocation of meters to common areas
- B. Renovation of wiring in buildings, including lifts, lighting, pumps, etc.
- C. Renovation of building service entrances (basements)
- D. Renovation of wiring leading to buildings from substations
- E. Renovation of distribution substations (6/10kv – 0.4 kv)
- F. Implementation of new meter-reading, accounting and billing procedures
- G. Implementation of disconnection procedures for all non-paying customers
- H. Implementation of meter-checking and re-calibration procedures
- I. Separate functions for meter-readers, inspectors, billing and accounting personnel
- J. Implementation of standard formal payment locations / procedures

The solutions proposed above, and which were actually implemented in Rustavi, may provide a starting point for any electric distribution company wishing to become financially sound. However, the simple issue of debts that are currently uncollected by the utility is certainly an area where utility directors and managers can make minimal investments and achieve a significant improvement in the overall economic condition for the company. Certainly there are other topics which will also need to be addressed by the management of a company, once it has achieved the beginning point of having a positive cash flow that pays for the basic operational costs of power and salaries. This guide is not intended to provide a full management training program, however these additional areas will be described later in this section.

The second step to the prioritization process may be just as important as the identification and initial prioritization of potential solutions. That is, where should the utility begin to implement solutions. In the Rustavi demonstration project, due to the fact that the project was conducted in the poorest part of the city, three very important lessons were learned:

1. That the people of Georgia, no matter how poor, place great personal value on having electricity and are willing to pay a fair price for reliable electric service....if they are treated fairly by the electricity company in return.
2. That the process of commercialization can be put in jeopardy if the customers feel that they are being treated unfairly. For instance if they are asked to pay for electricity and their neighbors are not. If the neighbor who does not pay receives electricity, the neighbor who does pay will soon stop paying.

3. That the geographic phase-in of a commercialization process should be considered relative to the availability of a reliable source of electricity, and that the conversion of one neighborhood will immediately impact the surrounding neighborhoods, either negatively (as pointed out above) or positively.

When considering where to physically apply commercialization processes with customers, Hagler Bailly recommends that the largest users of electricity and those who are most affluent, be commercialized first. This will help to ensure that all customers realize that they are being treated equally and fairly, and will allow the utility to initially provide the highest quality of service to those who are most able to pay for it. As additional neighborhoods are converted to a commercial process, they will see the more reliable supply of electricity as a privilege that is associated with having paid full value for their usage. It is recognized that more affluent customers may have more political influence and may request 'special consideration' from the utility. However it is important that such 'considerations' not be allowed, or the entire process of commercialization will be jeopardized, and any future hope of achieving financial stability by the utility will be in question.

Appendix B - "Protected Feeders" - provides a discussion of the process of selecting and prioritizing specific areas of a distribution company's service territory to be commercialized, and the factors to be considered in carrying out this process.

Implementation of the Commercialization Processes

1. Customers and Receivables

To initiate the commercialization process, the utility should begin by contacting its most important customers and explain what the process is about and why it is necessary to ensure a reliable supply of electricity. This provides the customers with advance knowledge of the changes that are going to be made, and allows them to take corrective actions in their own businesses, if necessary. It is important to individually contact all customers who owe debts to the utility and explain that the utility is undergoing a process of commercialization, which requires that they pay their debts or be disconnected. If necessary, we suggest negotiating a payment schedule that results in complete pay back of all debt within 12 months or less, depending upon the size of the debt. However, specifically inform the customer that default on the payment schedule will result in disconnection from service until all debt is paid.

2. Debtors and Debt Payments

Much like the process of informing customers of the change in operations, the utility should also contact all debtors (including employees) and inform them of the changes to be undertaken. A specific schedule should be established and/or negotiated, where the utility promises to pay back old debts. This schedule should be a realistic schedule that can be carried out with the implementation of the overall commercialization process.

3. Management and Accounting Systems

One of the basic principles of successful commercialization is to ensure that the utility company is effectively and efficiently operating internally. This requires a change in management thinking and processes to recognize the importance of commercial considerations in addition to engineering and reliability considerations. Whereas in the past, most utility managers have been concerned solely with the reliability of electricity supply, the process of commercialization requires that the management place much more emphasis on economics and efficiency in utility management systems.

The following management systems were incorporated as part of the Rustavi Demonstration Project.

a. Accounting Systems

A computerized accounting system, based on international accounting standards was installed and four individual staff were hired from Relasi and trained to utilize this system. The accounting system operates on individual PC computers, and provides a complete billing and customer accounting system, as well as a corporate accounting package.

b. Billing Procedures

Billing procedures were modified so that individual meters for all customers are read on a monthly basis, and the results of these readings are provided to the accounting department. In the accounting department, usage figures are entered into the customer accounting system, which in turn, automatically generates individual customer bills, based on current tariffs. The concepts and individual action steps related to monthly billing is described in Appendix C.

c. Collection Procedures

Collections in the Relasi Demonstration Project, were turned over to a central bank where special utility account was established to ensure all payments are properly credited to the Utility. Bank-stamped and recorded receipts are collected daily from the bank and provided to the utility accounting department, where customer accounts are credited with their appropriate payments received.

d. Disconnection and Reconnection

Customers who failed to pay their electric bills within 20 days from the date of the issuance, were disconnected from service by the meter reader, at the time of the next scheduled meter-reading, approximately 20-25 days after the issuance of the bill.

Reconnection of individual customers was done only after the customer provided a stamped recorded bank receipt to the project accounting department, showing payment of the past due amount into the utility's account. Physical reconnection was made by meter inspectors, who in turn, were provided with a list of customers to be reconnected by the accounting department. Inspectors were also able to verify that restoration of service did not violate safety standards.

e. Customer Service

The function of Customer Service representative was being developed in the Rustavi Demonstration project, as a result of the increased number of customer complaints and requests for meter verification, alleged wire tampering, etc. Among the procedures which were under development:

- i. Written registration of each complaint, by customer name and location. This process helps to show the customer that his complaint is being taken seriously and that some action will be forthcoming on a scheduled basis. A written record also provides the utility with a means of identifying "chronic" problems, either with an individual customer or in a specific location, so that appropriate action can be taken.
- ii. Planned and scheduled inspections of customer premises and /or meters. This allows the meter inspectors to schedule their work, instead of responding on an ad-hoc basis. It also provides the customer with a time-frame in which he/she can expect some resolution to their complaint.
- iii. Procedures for meter checking / replacement – Portable meter testing equipment is not yet available, however procedures are being developed for inspecting and testing meters which are reported to be inaccurate.

4. Staffing

In order to implement and carry out the processes described above, the following staffing requirements were necessary:

a. Project Management

Hagler Bailly provided management supervision for the demonstration project in Rustavi, and became well aware of the work and problems that were encountered by the Georgian staff.

A copy of the description of work for all supervisory and management staff who were involved in the demonstration project is included in Appendix D.

b. Project Staffing

Local electric utility personnel were trained and utilized for project staffing requirements. A total of 14 persons were utilized in the demonstration project, including nine (9) field staff consisting of one manager, six meter inspectors, one meter reader and one person who delivered bills, and five (5) office / accounting staff, including a manager and four computer data specialists. It is estimated that the field staff could have serviced nearly twice the number of customers that were included in the demonstration project, and that the accounting staff could have provided all billing and accounting functions for the entire utility.

A copy of the description of work for all operational staff who were involved in the demonstration project is provided in Appendix E.

5. Technical and Physical Systems

Due to the long history of non-commercial operations of electric utilities in the former Soviet Union, little regard was given to the accuracy of metering, or the protection of wires from tampering and unauthorized connection. To effectively implement Commercialization, the physical system must be reconstructed so that the utility is protected from theft, commercial losses are minimized and the use of electricity by customers is accurately recorded. While this may sound like an expensive process, in fact, it can be accomplished with a very minimal investment, IF proper supervision and construction is carried out.

In addition to changes in the management systems and procedures, the Demonstration Project in Rustavi incorporated specific technical and physical changes in the system that provided power to the customer. These included:

a. Wiring

Main cable entrances into apartment blocks were inspected and re-routed through appropriately sized metal conduit and sealed metal entrances, in order to eliminate unauthorized access and use of energy. Where main fusing had been eliminated, fuses were replaced to protect against potential safety hazards. Separate cable runs were installed in metal conduit to supply communal services such as elevators and

pumps. All fusing and switching boxes were sealed with appropriate locking devices.

Where previously there had been feeder lines supplying three apartments on each floor of an apartment block, new wiring was installed from the main floor to each individual apartment. This wire was run through conduit that was in turn, sealed into walls, to eliminate unauthorized access and to protect against possible safety hazards.

b. Metering Access and Accuracy

To allow ease of access to individual apartment meters, all meters were relocated to a central meter cabinet located on the main floor of each apartment entrance. Metal cabinets were specifically constructed for this purpose and were designed to have tamper-resistant doors and locking devices. Also, in later installations, meter cabinets were fitted with small openings in the doors to allow ease of meter reading by both the utility and the customers. These windows were sealed against unauthorized access to the inner cabinet by the use of plexiglass windows.

To ensure that customer usage is accurately recorded, all meters were re-calibrated and certified by the Georgian State Standards personnel. Meters that could not be accurately calibrated were replaced with new meters, purchased by the project (utility).

c. Communal Services (Lifts, Lighting, Pumps, etc)

Communal services such as elevators and pumps were separately wired through metal conduit (pipe) to locking steel cabinets specifically manufactured for this purpose. Inside these cabinets are switching and fusing devices, as well as separate meters for these services.

Stairway lighting is supplied from a separate line located in the main meter cabinet. This line is separately metered and protected with a low-amperage circuit breaker, which prevents any significant unauthorized load from being applied to this circuit.

d. Service Entrances

Service entrances to apartment blocks were each inspected and where necessary, cables were replaced. All service entrances were re-routed through steel pipe to steel service entrance fuse/disconnect boxes. Main feeder lines to individual meter cabinets, were rerouted through steel conduit (pipe) to protect against unauthorized access and potential safety hazards.

e. Low Voltage Substations and Cables

Generally, unless physical damage was observed, cables from the substation to the entrances of apartment blocks were not replaced. However, all low voltage substations were cleaned and renovated to ensure that new locks were installed on all doors, unauthorized cables connections were removed, and fusing for main feeder cables was properly sized and in working condition. In addition, roofs were repaired to eliminate water leaks and potential short circuits, thus providing better reliability for customers, and eliminating public safety hazards. Also, check meters were installed in substations to verify the actual loading on individual feeders, so that unauthorized and unsafe connections to the main feeder cables could be detected.

f. High Voltage Substation Feeders

High Voltage Substations which supplied the Rustavi Demonstration Project are owned and operated by Sakenergo, however with their agreement, Hagler Bailly installed individual feeder and bus "check meters" to verify loading from all low-voltage substations supplied by a particular feeder. Also, this allowed monitoring of power supplied to the substation bus and to the feeders and provided a method of verifying the agreement with Sakenergo to supply reliable electric service in exchange for full payment for such service.

g. Public Safety

In addition to the basic concepts of "Commercialization", significant consideration was given to the concept of public safety in the design and implementation of the Rustavi Demonstration project. By removing all unauthorized unsafe wiring, enclosing new wires in protected conduit, re-plastering walls, the potential for accidental exposure to energized lines has been reduced or eliminated. Locking all metering, switching and fusing cabinets, and installing locks on substations and service entrances has reduced the potential for unauthorized access and possible electrocution or installation of unauthorized and unsafe wiring, also reducing other potential hazards to public safety. And lastly, the general safety of the overall electric distribution system has been significantly improved through replacement of missing or over-size fuses, and installation of separately metered and fused lines for stairway lighting which thus reduces the potential for fire hazards, and improves safety in entering apartment buildings.

h. Construction

Actual construction work performed in Rustavi was carried out by high quality, local Georgian contractors, who were identified as being reliable and capable of excellent construction practices. Tender specifications were prepared and distributed to

qualified contractors, and bids were evaluated based on past performance, quality of work, reliability, and willingness of the contractor to make suggestions and improvements in the overall project.

A copy of the actual tender specifications that were utilized in this process are shown in Appendix F.

Public Information and Customer Relations

The importance of developing a formal process that provides for regular communications with political and business leaders, as well as public information to the general population served by a utility, should not be overlooked or ignored in the process of Commercialization. This process forms the basis of a new relationship between the utility, which provides a vital need (electricity) for the community and the local economy, and the customers which it serves. A clear and open understanding of the process being undertaken is necessary to help ensure the success of the commercialization process. Without this process, it is unlikely that technological solutions can be implemented with any certainty of success.

Appendix G – “Public Information Program” - provides several examples of public announcements which were considered for use during the Rustavi Demonstration Project.

1. Political Awareness and Public Support

The political and business leaders in a community control and manage the economy of a region, which in turn forms the basis for the community itself. The fact is that communities with no viable economic reason for existence soon disappear. Without a viable economy, there is no business or reason for people to live in the region, which in turn means that there is no basis for taxation and thus no revenues to support a local government administration. Thus, the political and business leadership of the economy are as dependent upon the citizens of a region, as the citizens are dependent upon them.

Since electricity provides the energy needed to run factories, schools, shops and services and administrative offices, as well as to provide basic human comforts such as lighting and heating, the need for electricity is universal throughout the community. The electric utility which provides this product to the community is therefore, as important as any of the other businesses in the community, and must be equally in a position to survive economically. In fact, it is arguably more important than any other industry in a region, since without electricity, no other industry can operate and make a profit.

2. Why Customer Relations are Important

The topic of Customer Relations may not be familiar to many utility managers, however, without knowing it, most have been directly involved in customer relations, as a customer

themselves. This topic becomes extremely important to the utility manager who wishes to become a successful leader in the energy industry, moving his company towards success in the commercialization processes.

Understanding and communicating the underlying inter-dependence of the political and business elements of a community to the provision of reliable electricity supply, is the job of the electric utility managers. In the past, utilities have not normally had to deal with such issues, and have been tasked only with delivering a reliable supply of power. However, with the new economic reality that is being established throughout Georgia, electricity must also become a business that is economically self-sufficient. Thus the leadership of the community must be willing to support the commercialization process of the electric utility, or all will fail in their respective economic planning. It is up to the utility manager to help the community leaders understand this reality.

Similarly, the general public must be made aware of the changes that are facing the community and in particular the necessity for the electric utility to become economically self-sufficient. Without this understanding, individuals in the community will continually attempt to undermine the efforts of the best utility management and technological solutions to the commercialization process, and the process itself may eventually fail, thus jeopardizing the entire regional economy, and the livelihood of the citizens themselves.

Again the utility management must take responsibility for informing the public of the necessity of implementing a commercialization process, and the changes that the individual will be involved in, both in general and in specific. Public information and awareness should become a major focus of the utility management, and all public media including television, radio, and local newspapers, should be utilized to carry the utility's message to all of the citizens.

3. The difference between "Consumer" and "Customer"

Perhaps the best way to understand why the topic of "Customer Relations" has been included in this guide, one should define and understand the difference between a "Consumer" and a "Customer". For our purposes, we define "Consumer" as anyone who utilizes a specific product or resource. In the case of electricity, anyone who is connected to the electric utility system and who utilizes electricity is thus defined as a "consumer". It does not matter whether or not he has paid for the electricity he uses, nor whether or not he is legally and officially connected to the system with an authorized connection.

We make the distinction here between consumer and customer, by defining "Customer" as someone who pays for a product or service that they use. In the case of electricity, a customer is someone who uses electricity by purchasing it through an authorized and metered connection, which allows the accurate recording of the amount of electricity consumed.

4. Communicating with Customers

Electric utilities can only obtain revenue from the sale of electricity, thus it is important that all "Consumers" of electricity also become "Customers" of the electric utility. For this to occur, several things must happen.

- First, all customers must be treated equally and fairly. A customer who is not treated fairly will try to be unfair in return, in order to maintain a balance in the relationship with the supplier. Thus in the case of electricity, they will attempt to take electricity without paying for it. Likewise, if one customer is able to receive electricity without payment, other customers will want the same privilege, whether or not it is authorized.
- Secondly, all consumers who use electricity through unauthorized, or un-metered connections must be disconnected, or other customers will learn that it is possible to bypass the system, and thus avoid payment for electricity. This type of information will be passed from one customer to another much faster than one might imagine.
- Thirdly, consumers who fail to pay for the consumption of electricity must be disconnected. Again, if the utility allows a customer to continue to use electricity without paying for it, that customer as well as neighboring customers will want the same privilege every month.
- Certainly there may be circumstances where specific customers may need to be treated with special consideration. For instance, if a hospital is disconnected from the electrical system while an operation is being carried out, the patient may die. An electric utility must know and understand its position as partner in the community and economy, and work with specific customers to develop mutual trust and understanding.
- There is no case where electricity can be provided without payment. If the customer does not pay for used electricity, then the utility itself must pay. This means that profits will be reduced and if allowed to expand without limits, can lead to the failure of commercialization: an outcome that would result in the failure of the electric utility system and the economy of the community as a whole.
- The utility must communicate to its customers the importance of an economically viable electric utility system. It must work with its customers to help ensure that this information is understood, or that it is at least understood by the leaders of the community, so that both the utility and the community can survive.

Utility managers should recognize that the process of communication with customers is not limited to public media of television, radio and newspaper. Perhaps the single most

important means of communicating with a customer is the monthly billing notice. Appendix H – “Notice to Electric Customers” – Provides a sample of how information can be provided to the individual customer throughout a service territory.

It should also be recognized that direct customer communications is not limited to personal conversations with political and business leadership in the community. In fact, everyone who lives in the community is a customer, and therefore should be considered in the communication processes.

It is important to recognize that the utility employees themselves, are customers of the utility. If they are not treated fairly, or if they are not paid, they will in turn, attempt to cheat the utility, or will be unable to pay for the electricity that they use. If utility managers or their family and friends receive special treatment, employees will see this and want special treatment for themselves. They will also talk with their neighbors and acquaintances and the requests for special treatment will grow and expand far beyond the first “favor”.

Thus the informal process of communications with customers is equally as important as the formal processes, and utility management should always be aware of this and ensure that their own family, friends and employees are treated as all other customers. The guide for all customer communications should be fairness and equality, or the economic viability of the utility will be at risk.

5. Customer Agreements

In addition to public information processes, the utility must implement a process of informing each individual customer of the changes that are being introduced into the electric utility and how they will impact the customer. This is generally done in a formal agreement signed by the customer and the utility, however old customer agreements must be changed to reflect the new economic reality of commercialization.

Appendix I – “On supply of Electricity to the individual customer” – provides an example of a draft agreement that was developed for consideration in Rustavi. It is important that any customer agreement be reviewed with the Georgian National Electric Regulatory Commission, prior to its implementation. Failure to do so may result in invalidation of all agreements.

For instance, in Rustavi, all customers were informed that the utility (in this case, with the assistance of Hagler Bailly and USAID) were implementing a renovation program which would involve the rewiring of all apartments in a building, and re-locating the individual customer meters to a centrally-accessible meter cabinet. Customers were informed that this was being done to improve the overall reliability of the electrical supply to their apartment block and that in return, their meters would be re-calibrated and replaced if necessary.

Customers were also informed that the new system would result in regular billings being issued by the utility and that they, in turn, were expected to pay for all electricity used within a short time (20 days) after receiving the bill. This was being done in order to improve the economic condition of the utility system and there was an agreement from the Government of Georgia that 100% payment would result in 24 hour/day supply of electricity. On the other hand, customers were informed that if payment was not received within 20 days of the date of the bill, the customer would be disconnected from the electrical system, and would not be reconnected until all debt was paid.

Where debt already existed, customers were provided with an opportunity to re-pay this debt over an extended period of time by making small monthly payments against the total debt amount. The customer was again informed that if these payments were not made, he/she would be disconnected from the electrical system, and that, in this case, all debt would have to be paid in it's entirety, prior to reconnection.

The overall process of communication with the customer has been revised in the Rustavi Demonstration project and the result is that customers are now much more aware of the value of electricity in their lives. This awareness has been proven through the fact that, even though these customers are poor, they still pay nearly 100% of their electricity bills on a regular monthly basis, thus helping to make Relasi a commercially viable electric distribution company.

Customer Agreements should reflect all normal arrangements and agreements that are being proposed by the utility and should indicate what the consequences are if these agreements are violated by either the customer or the utility.

6. Responding to Customer Complaints

"Customers are NOT always right, but they are always the Customer". This is a phrase that is often repeated in market economies, where it is always recognized that a customer is paying money for a product, and therefore is important to the economic success of the business that sells the product. When customers complain; when they feel they are being cheated or mistreated, it is up to the utility to try to assist the customer in a reasonable and logical manner that helps assure the customer that his/her complaint is being dealt with fairly and reasonably.

- If the customer is correct, and there has been a problem or an injustice, the utility will want to know about the problem in order to prevent other similar occurrences.
- If the customer is not correct, it is the responsibility of the utility to help the customer understand why they are not correct.

- If the customer is not correct, and is aware that he/she is not correct, it is the responsibility of the utility to ensure that it takes appropriate action to prevent future complaints from the same customer and to protect itself from fraud.

In summary, customer communications are extremely important to the overall process of commercialization of a utility, and can either assist or hinder the process of the utility becoming financially self-sustaining. Therefore, it is in the best interests of the utility management to recognize this important factor and take appropriate actions to address it in a formal manner.

Learning to Change – Ongoing Modifications

No single document can prepare a utility manager for the problems that may arise as the process of commercialization is initiated at a specific utility. It is important to recognize this fact and to attempt to prepare the senior management “team” of the utility to be ready to respond to new problems and new conditions as they arise. We encourage the utility manager who is seriously considering implementing commercialization, to develop new management practices that will draw upon the intelligence and ingenuity of all staff to help find answers in the ever-changing environment in which the utility business operates. As the business develops, new challenges will be encountered. The help and assistance of every individual may be required to find the solutions to these challenges.

One management tool that can help to organize a utility’s efforts in training employees to adopt new policies and procedures and monitoring their effectiveness, is to ensure that they are written down. As new procedures are developed, they should be distributed to all employees to help insure that they are uniformly applied throughout the company. Then as employees begin to implement these new policies and procedures, they will be able to provide important feedback information to management on how the procedures may be improved.

Appendix J- provides an example of how Policies and Procedures can be developed and documented for the on-going use of utility management and employees. A regular and systematic review of a company’s policies and procedures will help to ensure that these procedures are kept current with the business and technological environment in which the company operates.

Other Considerations

What has been described above is a commercialization process that focuses on the relationship between consumers of electricity and the utility that provides this electricity. However, it should be clear that this is not the totality of how an electric distribution company becomes financially viable. Internal issues are also vital to the long-term economic viability of any company and the electric utility is no exception. While the first step in accomplishing “commercialization” is to ensure that the revenues from sales of electricity are greater than the cost of purchasing the

supply of electricity, we encourage a full review of the following issues be undertaken as part of any long-term planning process:

- Employees

The electric utility depends upon the performance of its employees in carrying out its normal daily operations. It is therefore important that employees be properly trained and supervised, and that they receive a regular and reasonable salary for their work, so that they are not forced to subvert the economic progress of the company in favor of their own personal survival.

However, it should also be recognized that electric utility is a commercial business and it is not in a position to provide a social welfare function by hiring more people than are needed to carry out its business function. Therefore, utility management should review the total number of employees and ensure that there are not an excessive number of people for the actual work required.

- Taxes and Social Payments

Taxes and social payments are a regular and required payment that the utility should include in any financial planning for its economic success. Close cooperation and interdependence between the utility, business and government, means that none can survive without the other. Therefore the utility is obligated to provide appropriate support in the form of taxes, to the local and State administrative bodies.

- Maintenance and Repairs

Evidence shows that the electric utility system in Georgia is long overdue for maintenance and repair. While in the past, complete rebuilding of the system might have been proposed as a solution to this situation, in a market economy, and with current financial constraints, this is not a viable option. On the other hand, without routine maintenance and repair, any utility will soon find itself once again in a position of being unable to provide a reliable supply of electricity to its customers. As can be seen in the current situation of the Georgian power sector, this leads to a high degree of customer dissatisfaction and an increase in non-payments, which will only exacerbate the problem.

Therefore we strongly recommend that an electric utility set aside a specific budget to provide for an ongoing program of maintenance and repair. This not only provides a reasonable and economic approach to maintaining system reliability, it also contributes to the long-term self-sustaining process of commercialization.

- Buildings, Equipment and Spare Parts

Similar to "Maintenance and Repairs", an electric utility that is attempting to implement commercialization, should consider those expenses that will be required for buildings and modern equipment for both the operations of the business function (computers, copiers, telephone, fax equipment, etc) and the operation of the system itself (meters, cables, fuses, switches, automatic relaying equipment, etc). These considerations should be a routine and regular expense for any utility business, and should not be overlooked in the process of planning for Commercialization.

The items described above are not intended to be a complete listing of all considerations which should be incorporated into utility planning as it moves towards commercialization, however they are offered as examples and may be helpful in developing other additional items which should also be considered.

Environmental Impact of Commercialization

It is interesting to observe that the process of commercialization has more impact than just that of improving the economic viability of the electric utility system. In fact, as the economics of the electric utility system improve, the impact on the human environment throughout Georgia is improved. For instance, in the Rustavi Demonstration project, it was observed that:

- Basements had been cleaned up, reducing the potential habitat and feeding sites for rodents and other unwanted animal life, thus reducing the risk of infectious disease and improving the general quality of health for the residents of these building.
- Illegal and technically unsafe wiring had been removed from basements and stairwells, reducing the risk of electrocution, fire and otherwise hazardous circumstances, again contributing to an improvement in the general quality of health for the residents.
- Original cabling which had been allowed to deteriorate due to lack of funds for maintenance was replaced, and unsightly cable connections have been eliminated, contributing to the general well being of the public health and safety.
- Neighborhood Distribution Substations were cleaned and rehabilitated with the installation of new fuses of appropriate sizing and locking devices on doors, thus eliminating access to a potentially deadly environment for children, while at the same time contributing to safer electrical operations and protection against accidental electrocution and fire hazard.
- By increasing the availability of electricity, the use of kerosene and wood-burning heat sources was reduced in apartment buildings, thus reducing the level of smoke and other emissions and, again, reducing the risk of fire hazard.

The utility manager should be quick to point out these potential benefits which can accrue from the process of commercialization, and use this information in presenting his arguments for support from political, business and local citizens.

Regulations and Tariffs

Regulations and tariffs are intentionally not included as a topic to be covered in this document. The tariff structure of electricity rates in Georgia is undergoing considerable review by the Georgian National Electricity Regulatory Commission. Therefore we have chosen not to describe tariff setting processes, nor the regulatory requirements which govern the electric utility industry.

We would suggest, however, that throughout the world, no tariff which results in less than a fair rate of return for the investor, will be able to attract new investment. Having said this, there is also no regulatory body that will allow a utility to increase tariff without regard for the social impact of such increases.

Therefore it is incumbent upon the electric utility to ensure that their costs and the efficiency of their operations are such that any necessary tariff increases can be thoroughly and completely justified and verified. This necessarily means that the utility must also be able and willing to provide documentation of all costs to the regulatory body, when asked.

Some of the topics which have been reviewed and discussed with the Georgian National Electricity Regulatory Commission are contained in Appendix K.

Summary

Much of the program described in the preceding pages has been developed and tested in Georgia by Hagler Bailly and the United States Agency as part of the Commercialization Pilot Project carried out in the city of Rustavi. Nearly 25% of all customers of the Relasi Distribution Company have been converted to a commercial basis and the Rustavi project has proved itself to be viable and profitable.

We hope that this information will be of value to other utilities throughout Georgia and beyond, as they begin to make their own transition into commercial operations and move towards financial viability. It is our hope that this information will help to bring about a reliable energy supply and thus contribute to a stable economy for all who wish to implement it.

LISTING OF APPENDICES

APPENDIX A – Fundamental Steps to Commercial Reform

APPENDIX B – “Protected Feeders”

APPENDIX C – Monthly Billing Procedures

APPENDIX D – Project Supervisory Position Description

APPENDIX E – Project Employment Agreements

APPENDIX F – Specifications for Construction Work Tender

APPENDIX G – “Public Information Program”

APPENDIX H – “Notice to Electric Customers”

APPENDIX I – “On Supply of Electricity to the Individual Customer”

APPENDIX J – Draft Policies and Procedures for Commercialisation

APPENDIX K – Legal and Regulatory Consideration for Commercialisation

APPENDIX A

FUNDAMENTAL STEPS TO COMMERCIAL REFORM

FUNDAMENTAL STEPS TO COMMERCIAL REFORM

CUSTOMER ACCOUNTS	Actions & Options
1. Read meters and bill customers monthly.	Establish monthly billing capability. Divide customers into 20 billing groups (1 per working day) Read and bill 5% of customers each work day Estimate kWh consumption where meter not accessible Show past due amount on separate line on bill Partition bill payment from meter reading Maintain rigid monthly schedule which customers can anticipate Provide convenient payment station locations and hours
2. Disconnect for non-payment.	Make policy to disconnect if bill not paid in 30 days Schedule to provide manpower for "date-certain" disconnect Be equipped to relocate metering and wiring for reconnection Require customer to pay labor and material for relocation
3. Maintain proper records	Adopt international Accounting Standards Computerize customer accounts Link customer accounts to general ledger

POLICIES & PROCEDURES	Actions & Options
4. Standardize terms of service between distribution company and customer	Require signed customer agreements specifying terms of service Require disconnect if bill not paid within 30 days Allow penalty charge for collection and disconnection trips Require 3-month deposit if disconnected for non-payment or theft Allow penalty charge for late payment Allow fixed charge for common building service (prorated) Allow for minimum bill, regardless of consumption level
wholesale power bill in full or lose franchise.	Require new, standard wholesale power supply contracts Must pay power bill in full within 60 days or lose franchise Penalty plus interest for late payment of power bill Hours of power supply to be a function of payment percentage.
6. Set appropriate wholesale and retail tariffs	Wholesale tariffs to cover all generation and transmission costs Retail tariffs to cover power bill and distribution costs Limit system loss percentage that can be recovered in tariffs

LEGAL & REGULATORY	Actions & Options
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7. Establish penalties for power theft.	Fines, jail terms, restitution to be a multiple of amount stolen. Higher degree of punishment for employees who collaborate. Define theft as meter tamper, bypass, direct connection Type of evidence required for conviction. Suitable judiciary to expedite hearings and resolution.
8. Provide amnesty period for removal of illegal connections	Organize and publicize company for voluntary removal No penalty if voluntary reporting and removal Offer free technical help to customers to correct
9. Provide conditional relief from accumulated customer debt	Establish a "deferred receivable" accounting category Allow past debt to be deferred if bills paid currently hereafter If cut off for non-payment, all past bills due before reconnect If illegal found, disconnect and collect past due before reconnect
10. Provide wiring assistance and "loans."	Supply labor and material to customer to improve wiring Allow pay-out of cost over a 10-month period
11. Provide mechanism to protect the very poor.	Government to identify and certify those eligible. Credit not allowed if household income above specified limit May require some partial payment from customer Send bill to customer specifying portion to pay, even if zero Submit itemized list with power bill payment for credit Credit against power bill to be applied at retail kWh rate GoG to credit against Sakenergo taxes and/or pay directly

WIRING STANDARDS	ACTIONS & OPTIONS
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12. Harden service wires against theft.	Modify service entrance design; rewire as necessary Only one service connection to a building No wiring concealed from view ahead of meter unless in conduit No unmetered wiring or conduit in building accessible to tenants Meter building common service; add to tenant bills equally
13. Install individual disconnect methods.	Must be sealable, publicly visible, and immune to tampering May be switch, breaker, removable meter or prepayment meter.
14. Make all meters accessible to meter readers.	Must be publicly viewable from street or stairwell. Relocate if inside house or apartment, behind locked gate, or guarded by dogs

15. Improve meter accuracy and capacity	Establish modern meter laboratories for testing and repair Replace all meters at time of relocation Capacity should allow for cooking, water heating, room heaters Use meters with magnetic suspension, not jewel bearings
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FULL TIME SERVICE	ACTIONS & OPTIONS
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16. Provide 24-hour service agreements to individual customers	Offer full-service on a feeder-by-feeder basis. Agreement requires <u>deposit</u> ² equal to 3-months' usage. Disconnect promptly for non-payment, confiscate deposit. Maintain intensive surveillance and prosecution for illegal taps.
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¹It is assumed that the principal constraint to power supply is not the generating capacity, but the funds necessary to buy fuel for domestic plants, or import foreign power. With full payment, service could be provided on a 24-hour basis.

² Deposit should be kept in separate cash fund used only in the event customer fails to pay monthly bill. Otherwise, cash may not be available to pay wholesale power bill in full

**LEGAL & REGULATOR REFORM~
FOR ELECTRIC DISTRIBUTION COMPANIES**

The following factors are to be considered for inclusion in the commercialization pilot project for electric distribution companies in Georgia. This document presents a brief introductory discussion of each in order to acquaint the Regulatory Commissioners and others with many of the issues related to the reform of distribution commercial procedures. This is not necessarily a complete list of factors, nor does it provide complete solutions. It is intended primarily to open the dialog on the issues which should be considered.

In most cases, these reforms cannot be undertaken unilaterally by the distribution companies, but require authorization and/or a mandate from the Regulatory Commission or other government offices.

1. Establish penalties for power theft

- 1.1 types of criminal actions covered
- 1.2 parties subject to penalties
- 1.3 types of punishment
- 1.4 types of evidence required

2. Tariff factors

- 2.1 Monthly billing authorized
- 2.3 Late payment charge
- 2.3 Social subsidy
- 2.4 Minimum bill
- 2.5 Charges to recover common building supply
- 2.6 Estimated bills

3. Service Conditions

- 3.1 Customer service agreement
- 3.2 Deposit required
- 3.3 All electricity supply must be metered
- 3.4 Only one supply connection per building or residence
- 3.5 Vacant property de-energized unless minimum bill paid monthly
- 3.6 A final bill to be rendered on de-energized property, based on final meter reading
- 3.7 Service attachment requirements

4. Service fees

- 4.1 New connection fee
- 4.2 Delinquent collection trip
- 4.3 Disconnect/reconnect trip fee
- 4.4 Meter Test fee

5. Quality of service

- 5.1 Normal utility obligation

6. Monthly Reporting Requirements to Regulatory Commission

- 6.1 Customer sales statistics

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- 6.2 Sales by levels of consumption
- 6.3 Aging of Accounts Receivable
- 6.4 Wholesale power purchases
- 6.5 Operation and Maintenance expenses
- 6.6 Capital expenditures
- 6.7 Plant in service
- 6.8 Inventory of materials
- 6.9 Balance Sheet
- 6.10 Key Ratios

7. Customer Assistance Programs

- 7.1 Installment payment programs for upgrade of service entrance and metering
- 7.2 Indefinite suspension of prior debt as long as current obligations are met
- 7.3 Grace period to voluntarily remove illegal connection

1. Establish Penalties for Power Theft

1.1 Types of theft actions covered

Provision. The theft, misappropriation, or malicious damage to electric utility property, plant and facilities of all types, including generation, transmission and distribution equipment and material, both in an operational status or in inventory shall constitute a felony, punishable under (applicable existing theft) statutes. The electric energy conveyed throughout the electric transmission and distribution network shall be considered the property of the electric utility company until delivered to the customer through an appropriate metering device installed by the utility company.

The theft of electric power shall be defined as any deliberate action or activity which results in the use of electricity by an individual or corporate entity (beneficial user) without such use being properly metered and billed to the consumer by the power supplier. Such actions shall include, but not be limited to:

- any action which alters the normal sensing or recording mechanism of the electric meter,
- unauthorized alteration of the meter register,
- connections to the service wires on the utility's side of the customer's meter, or
- unregistered direct connections to the utility's distribution network.

Rationale. Very large amounts of electricity are used by very large numbers of customers through unmetered and unregistered connections to the distribution companies' networks. This deprives the distribution companies of revenue necessary to pay their wholesale power bills, employees salaries, and other operating expenses; and deprives them of funds needed for rehabilitation of the networks.

Such use of "free" electricity is so endemic that it presently carries no social stigma. In order to curtail these practices, they should be declared illegal, and programs should be undertaken to remove illegal connections and restrain customers from the further pursuit of such illegal practices.

1.2 Different parties subject to penalties

Provision. A distinction shall be made between three different categories of potential perpetrators of energy theft in order to set different levels of punishment for each. These would include:

- beneficial users of the electricity, whether registered customers or otherwise, who perform the illegal actions on their own initiative;
- electricians or other entrepreneurs who provide or sell their technical knowledge or skills to the beneficial users; and
- utility employees who, in collaboration with the beneficial users, provide or sell their knowledge or skills.

The level of punishment for a tradesman selling illicit services shall be one degree higher than that applicable to the beneficial user, plus the loss of any professional license or permit which he may possess; and the level of punishment for a utility employee collaborating with consumers to defraud the utility should be two degrees higher than that applicable to the beneficial user, plus the loss of his job with the utility, and disbarment from further employment with any utility company.

Rationale. It is generally accepted that a high percentage of unmetered connections, tampered meters, and falsified meter readings are the result of collusion between utility employees and

customers. This provision is designed to increase the risk and reduce the inclination of knowledgeable technicians from profiting at the expense of the utility companies.

1.3 Types of punishment

Provision. Punishment upon conviction of power theft shall include a fine and/or imprisonment consistent with the punishment set forth in existing criminal codes for crimes of singular nature, including the value of the loss incurred and the number of prior convictions.

Imprisonment may be suspended for first offenders if monetary restitution is made to the utility. The restitution shall be three times the calculated loss, plus fixed charges to cover investigation and prosecution costs incurred by the utility company.

Rationale. It is important to establish in the minds of the public that electricity is a "property" and has value just as any other personal or tangible property, and its theft or misappropriation constitutes a serious crime. The reason for allowing the suspension of jail sentences, especially for first offenders, is to provide an incentive for the perpetrator to make restitution. The purpose for the restitution being set at 3 (or more) times the amount stolen is to sharply increase the financial risk to the person contemplating the theft of electricity.

1.4 Types of evidence required

Provision. Evidence required in order to file criminal charges against a consumer shall include a date-stamped series of photographs (or video tape) showing wide-angle views of the premises, in order to clearly establish the location; and then successively closer photographs which clearly indicate the nature of the violation, both before, during, and after the process of removing and correcting the violation. Confiscated meters, wires, connectors and other apparatus associated with the theft shall be removed, labeled, and safeguarded until the case is settled.

There should also be two witness, in addition to the utility employee detecting and correcting the illegal apparatus, one of which should preferably be a law officer, and both of whom shall provide sighted affidavits of their observations.

The existence of theft apparatus on a consumers premises shall constitute prima facie evidence that the beneficial user is responsible for the condition found.

Where it is clear that unmetered electricity has been used, but evidence is not sufficient to result in criminal conviction, the utility shall not be excluded from independent civil action to recover payment for the electricity lost.

Rationale. The above provisions are intended to be indicative, not necessarily specific. The actual wording should be crafted by those skilled in such matters. While the utility should not be unduly burdened with the requirements for evidence, there should also be adequate protection of consumers from utility employees who may be tempted to extort payment from unwitting customers through false reports and accusations.

2. **Tariff factors**

2.1 Monthly Billing authorized

Provision. The (government) explicitly authorizes and empowers electric distribution companies to deliver monthly electric billing statements to retail customers and require that payment be made on a regular monthly basis as a condition of continued electric service. These bills shall be based on actual or estimated meter readings, and be calculated in accordance with tariffs approved by the Regulatory Commission.

Rationale. It is reported that in at least one CIS nation, monthly bills were expressly prohibited. In order to advise the customers of the new billing procedures and other conditions of service, the distribution company should prepare a concise listing of Rules and Regulations related to the rights and responsibilities of customers, and present them in the form of an agreement which is to be signed by all new customers. In the case of existing customers, it will not be necessary to obtain a signed copy, but the information should be delivered in written form to every customer location before the implementation of the new procedures.

2.2 Late payment charges

Provision. Distribution companies are authorized to levy a "late payment" charge in order to prompt customers to pay their electric bills without a specified period, provided the utility delivers bills on a regular and predictable schedule every month to those customers.

Any late payment charges to which the customer is subject shall be explicitly specified on the monthly billing statement, and the date after which the late payment charge becomes effective shall be clearly stated. This date shall not be earlier than 10 days following the date of delivery of the bill to the customers premises.

The amount of the late payment charge shall be calculated as a percentage of the bill. The full amount of the penalty shall be applied and collected on any payment made after the due date printed on the bill.

Rationale. Good collections depend upon the establishment of a payment discipline among the customers. Bills should be paid every month and not allowed to accumulate. If a customer cannot pay one month's bill, it is highly unlikely that he can pay two or more months' accumulated bills, and the utility is not helping the customer by letting him get behind in payments.

Customers should learn to expect their electric bills to be delivered at the same time every month, subject to slight variations caused by weekends and holidays. The bill due date should always be the same day of the month, except on rare occasions when meter routes may be regrouped or rescheduled for efficiency of operation. When the due date falls on a weekend or holiday and payment stations are closed, the bill is due on the next following work day.

The late payment penalty is designed to help instill payment discipline, and is a common practice among all western utilities (electric, gas, and water). The penalty should be large enough to cause the consumer to want to avoid the penalty, typically 5% or 10%, by paying the bill on schedule. The amount of the penalty charged should be subject to approval by the Regulatory Commission.

There may be cases where the collection of the penalty may be waived, but this would be decided on a case-by-case basis by utility managers. One example would be where the due date falls a few days before a pensioner receives his monthly allotment. The utility may make it a practice to apply the penalty if the payment is made within a day or two after the allotment is received.

The Commission may desire to have the utility to account for revenue collected as penalty charges separately from regular electric revenue for statistical analysis purposes. This could be done routinely with computerized billing programs.

2.3 Social subsidy

Provisions. In order to make a minimum level of electric service affordable to the largest number of very poor customers, the electric tariff shall contain three (or more) steps, providing a specified number of kilowatt hours within each rate block, with the rate charged for each block being successively higher, as follows:

First 20 kWh @	2.0 tetri per kWh
Next 30 kWh @	4.0 tetri per kWh
Over 50 kWh @	6.0 tetri per kWh

Rationale. This is described as an "inverted block rate." The values shown are illustrative in nature, and not intended to represent actual values which may be applicable in Georgia. This type structure is completely contrary to normal "cost of service" considerations in that it results in high-use customers subsidizing low-use customers. It represents a type of "tax" on one group of customers to pay the bills of another group. It is motivated politically for one or both of the following reasons:

- to provide an affordable, subsistence-level of electric service to very poor people, or
- to conserve electric energy by penalizing higher consumption.

The tariff is not necessarily fair to poor people, since many poor may have electricity as the only source of heat, and they very quickly find themselves in the higher rate levels.

In order to provide the distribution companies with adequate revenue, the average rate for all kWh billed must still equal 4.5 tetri (under present rates), and to achieve this average, the rate in the higher use blocks must be set very high. Furthermore, in order to project overall revenue under various block rate scenarios, the utility must have very accurate records of the number of consumers in each strata of monthly kWh consumption, as described in paragraph 6.2, below.

Since normal rate-making data is not available, any block structure adopted would likely be based on an arbitrary but politically acceptable structure, with the government committed to subsidize any shortfall in revenue.

Alternative. An alternative to the inverted block social tariff structure would be the identification of very poor customers whose electric bills would be subsidized by the government. This would require a complex set of rules under which customers would be entitled to subsidies based on household income levels, or their status as pensioners, war veterans and other criteria. Eligible persons would have to be certified by some government agency to the distribution companies; billing records of those customers would have to be compiled by the utility and submitted to Sakenergo for credit on their wholesale power bills, and Sakenergo would then apply to the government for direct payments or credits for those amounts. A substantial bureaucracy would be required to administer the program, and it would open the possibility of false certifications being sold by various government officials.

Conclusion. Some type of government subsidy on behalf of the very poor will be necessary if they are to receive electric service, and the distribution company is to operate at the same time as a viable commercial enterprise. The most expedient approach should be undertaken initially,
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with the more fair and efficient solutions being adopted as better data becomes available and management techniques become more sophisticated.

2.4 Minimum Monthly Bill

Provision. The Distribution Company may include as a component of its retail electric tariff a minimum monthly charge of 40 tetri per month. This charge shall appear on the billing statement as a separate line item and labeled as a "Monthly Fixed Charge."

Rationale. When retail electric tariff structures are under consideration, decisions are generally based on a cost-of-service analysis. Components of this analysis include energy costs, demand costs, customer costs, and "other." The customer-related costs are the on-going costs incurred by the utility, independently of the number of kWh used. The most precise application of this customer-related cost in the tariff structure is as a "fixed" charge, itemized separately on the billing statement and added to the kWh charge. Sometimes utilities include a few kilowatt hours within the minimum bill, but usually at a higher per-kWh rate, as illustrated below.

First 5 kWh @	8 tetri per kWh (40 tetri Minimum Bill)
All other kWh @	4.5 tetri

However, this approach is not consistent with the social tariff (inverted block rate structure) described above. If a minimum bill is to be applied within the context of a social tariff, it should be listed as a separate fixed charge. Such fixed charges are calculated during a cost-of-service analysis, but sufficient data does not exist to conduct a proper analysis in Georgia at the present. Typically, fixed charges are in the range of 4% to 10% of the average monthly residential bill.

One value of the minimum bill is that it provides a basis for collecting revenue monthly from vacant property which remains energized. Under traditional accounting procedures, there is a cost to the utility for maintaining service to a vacant property, and large numbers of idle services can affect the utility's profitability. These costs include line losses, exposure to theft, lightning damage, line maintenance, right-of-way maintenance, property taxes, and depreciation. While these may not be significant issues at present, they will become so in the future.

The concept of a minimum bill probably should not be introduced at the present time. However, Regulators and planners should be aware of its potential when establishing new conditions of service, accounting procedures and reporting requirements for the distribution companies

¹Or other such values as may be determined by the Regulatory Commission.

2.5 Charges to recover common building supply costs

Provision. The distribution company may add a fixed monthly charge to the bills of customers located in apartment buildings which provide to the tenants common services such as stairwell and outdoor lighting, and elevators. This fixed charge shall be the same for all tenants of the building, and shall be based upon the total common-service usage per year, divided by 12 months, and further divided by the number of customers in the building. The common-service usage may be either billed or estimated, and may be reviewed and adjusted annually or as circumstances warrant.

Rationale. The common building services presently represent a loss in kWh ad revenue to the distribution companies. The building occupants are the beneficial users of this electricity and should pay for it. The charge should be a separate line item on the tenants monthly electric bill, and show the tenant's prorated share of both the kWh and amount charged to the tenant.

There are some complicating factors in this procedure. The amount of electricity actually used will depend upon the voltage of the light bulbs used, how promptly burned-out bulbs are replaced, and whether or not the lights are turned off during the day time, If the common services are metered, the actual use can be reviewed and adjusted annually. If not metered, the use can only be estimated.

Another factor is the number of apartments in the building which are permanently vacant. This would be one purpose of an annual review, wherein the charge would be adjusted based on the number of apartments occupied.

2.6 Estimated bills

Provision. Where the utility is unable to obtain an actual meter reading, an estimated reading shall be used in the calculation of the monthly bill. Any convenient and rational method may be used to establish the estimated reading. It should generally be based upon the average monthly consumption, however, such mathematical calculations may be arbitrarily increased or decreased, especially where seasonal variations resulting from the use of electric heat or other factors are indicated.

Where access to the meter has not been possible and estimated readings used for a period of 6 months, written notice may be provided to the customer that an appointment must be made for the utility to obtain a meter reading and conduct a meter inspection, or service will be disconnected.

Rationale. A bill must be prepared and delivered to every active customer location every month. The bill must be based upon an actual or estimated kWh usage. A computerized billing system generates such a bill when an estimated reading is entered into the computer. The billing software should provide a means to mark estimated readings as "Estimated," and print the word "Estimated" on the face of the bill and also in the billing ledgers. The reason for this is so that in case there is a dispute about the size of the bill, both the customer and staff know that it is based on an estimated reading.

It is important to also know if the previous bill was estimated, since if it were under-estimated, a current-monthly reading might produce a higher than normal bill, since it would also include some kWh actually used in the prior month.

If there is a complaint about an estimated bill, an adjustment may be made and a different payment accepted. This procedure, however, must be accompanied by the preparation of an "adjustment voucher," and the computer software must be designed such that it properly records that an adjustment was authorized, including the adjustment voucher number. This is to provide an "audit trail" which can be monitored by managers and independent financial auditors to assure that employees do not use "bill adjustments" as a means of embezzling money from the company.

Generally, if only one meter reading is missed, an automatic adjustment occurs when the next meter reading is obtained. The reason for linking the number of successive meter readings which

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can be estimated is to assure that the estimates reflect actual usage, and to allow visual inspection of the meter to assure that it has not been tampered. One method to prompt the customer to provide access to the meter is to over-estimate the consumption.

3. Service Conditions

3.1 Customer service agreement

Provision. The distribution company shall provide to the customer a concise listing of the terms and conditions under which the utility will provide and maintain electric service to the customer. This listing should be in the form of a Service Agreement or Contract, and should be signed by the customer at the time he applies for service as an acknowledgment that he has been advised of his rights and responsibilities and agrees to abide by them. It shall include the current tariff schedules, with the notation that they may be changed from time to time upon approval by the Regulatory Commission.

Rationale. The relationship between the distribution company and the customer should be contractual in nature, specifying the rights and responsibilities of each party. This contractual relationship establishes the basis for any disciplinary action or recourse available to either party when the terms and conditions are violated by the other.

The principal recourse available to the utility is service fees and penalties, and the termination of electric service. The principal recourse available to the customer is a complaint or appeal to the Regulatory Commission when the utility is considered to be conducting its business in a negligent or abusive manner.

The Commission should establish an office for the specific purpose of hearing and investigating consumer complaints. This office would establish liaison with the distribution companies, maintain records and determine when a distribution company may be consistently and deliberately in violation of the provisions of its License Agreement, issue warnings, and undertake disciplinary action when warranted, including proceedings to suspend or revoke the distribution company's license.

3.2 Customer deposit required

Provision. The distribution company may establish a policy to require consumers to provide a cash deposit to guarantee payment of electric bills. This deposit may be equal to three month's estimated electric bills at the location. This deposit may be required at the time a new customer applies for service, or as a condition of reconnection of service after a customer had been disconnected for non-payment or theft of electricity.

Cash received in the form of a deposit shall not be treated as income, but shall be maintained in a separate account and shown on the financial Balance Sheet of the company as a Liability, since it is money that is owed back to the customer. The deposit may be applied to the customer's final bill, with any excess amount being returned to the customer. Some or all of the deposit may be confiscated at the time a customer is disconnected for non-payment, as necessary to cover the unpaid bills.

Rationale. Electricity is sold to customers "on credit," that is, the electricity is used before payment is received, and it cannot be repossessed if payment is not made. If it develops that a customer cannot or will not pay, the number of unpaid days of service accumulated by the time

service is disconnected, even under the best administered programs, is 80 to 90 days. This is the reason that a 3-month deposit is prudent.

In some western utilities, the deposit is returned to the customer if he establishes a clean record of bill payments, with no history of late payments or non-payment disconnects over an extended period of time.

3.3 All electricity supplied must be metered

Provision. All electricity used by a customer must pass through a metering device which shall record the number of kWh used with an accuracy of $\pm 2\%$. This meter shall be supplied, installed, and owned by the distribution company. The meter capacity (amperage rating) must match customer service requirements, it shall be located in a publicly accessible place, and sealed with a utility security seal. The utility shall have access to the meter at all times for purposes of reading and inspection, and the meter may be adjusted or replaced by utility at the discretion of the utility.

Rationale. Accurate metering is required to protect the revenue of the distribution company, and to assure that all customers are billed the proper amount in relation to their usage. The NIS practice of requiring or allowing customers to provide their own meter should be abandoned. To the extent that it is necessary for the customer to contribute to the cost of the meter, this should be covered through a suitable connection fee charged by the utility. The utility should procure all meters in order to control the quality. Meter purchases are usually bid on the basis of an entire year's supply in order to obtain the best pricing. However, deliveries are spaced throughout the year to match the projected requirements of the utility. A further argument against the policy of customer-supplied meters is that it creates a black market in stolen meters, and promulgates the practice of installing meters indoors so they won't be stolen.

3.4 Only one supply connection per building or residence

Provision. There shall be only one service supply connection to a building; and in multiple-occupancy buildings, there shall be only one service supply connection per tenant. The utility shall provide independent utility-owned supports for service wires, and shall not attach wire support structures to one building in order to carry the wires to another building.

Rationale. Service connections should be kept as simple and direct as possible, and all wiring should be installed in such a way as to clearly distinguish between unmetered utility wiring, and customer wiring to outbuildings. The electric service supply should enter a building (or apartment) at only one point for metering and disconnection purposes. Wiring safety and fire codes generally require that a single point be provided to disconnect service in case of fire, or when work is to be done on the interior wiring system.

The practice of providing electric service from two different sources through an alternate feeder should be eliminated. Where such installations have been made as a concession to maintain service when the primary feeder is off, it should be considered a temporary connection, to be removed when 24-hour supply becomes available. Meanwhile, such second feeders should be rerouted and metered so that electric use can be billed.

In the context of private ownership of property, neither the utility company nor a neighbor has the right to attach to the property of another. While utility companies may exercise the right of

imminent domain, they may not do so without properly compensating owners on whose property they infringe.

3.5 Vacant property de-energized unless minimum bill paid monthly

Provision. The "customer of record" shall be responsible for electricity used at a location unless and until he advises the utility that he is moving out and has paid all amounts due. When the existing occupant vacates a house or apartment, service should be disconnected unless the owner or a successor tenant requests that service be supplied in his name.

Rationale. The utility should make a distinction between active and inactive accounts. When a customer applies for electric service and signs the service agreement, he becomes obligated to pay for all electricity used on the premises. If the customer moves away, he is not automatically relieved of the responsibility for payment for service at the location. In order to be released from the payment obligation, the departing customer must advise the utility that he will no longer live there or be responsible for the electric bills.

If the house remains unoccupied, but the owner desires that the wiring remain energized, the owner must apply for service in his own name, meter readings will continue, and a bill sent to him each month. As long as the service remains energized, the meter should be read on a regular basis, and a minimum bill delivered even if there is no kWh consumption. Meter readings and billing will cease only if the service is disconnected.

3.6 A final bill to be rendered on de-energized property, based on final meter reading

Provision. When a customer advises the utility he is vacating a property and desires to be relieved of bill payments at the location, the utility shall obtain a current meter reading and provide a "final bill" to the customer. This final bill shall include the amount of any previous unpaid bills, plus an amount based on the kWh used since the previous reading and the final reading date.

Rationale. The customer's obligation to the utility is not completely discharged until payment is made for all electricity used, and his account status changed to inactive. If a customer moves away without proper notice or settlement, the service should normally be disconnected within two months for non-payment.

If there is a change in tenants and no notice is provided to the utility, the new tenant would continue to receive service in the old tenant's name. If he accumulates unpaid bills and moves away without payment, the bad debt would be recorded as attributable to the last customer of record, not the person who actually accumulated the debt. It is for this reason that when a customer moves away, he should settle his account and clear his responsibility for any future bills at that location.

3.7 Service attachment requirements

Provision. The utility shall provide new customers with instructions regarding service attachment requirements. These shall be in writing and in conformance with national wiring standards. Generally, the customer must prepare exterior meter-mounting point at a location accessible by utility at all times. The mounting point shall be located at eye level (1.6 to 2 m above floor or ground level). The customer will be responsible for all wiring on the customer side of meter, and shall provide proper over-current protection (fuse) on all household circuits.

The utility shall provide the wiring on the utility side of the meter. The wire size shall be adequate to serve entire customer load, and none of it shall be concealed within the customer's premises. All splices and connections shall be made with proper devices, which are completely insulated and secured from access by the customer.

Existing installations are not required to be upgraded to the new standards until a change in status occurs, including disconnection for non-payment or for power theft, or if electric appliances are added which exceed present wire and meter capacity.

Rationale. Wiring standards are generally established by a state authority to minimize fire and shock hazards. Some provisions may also be included to minimize the opportunity for power theft. It is a common to require wiring be installed in accordance with the standards, and approved by a state wiring inspector before electric service may be connected.

Usually, when new standards are adopted, existing installations are not required to meet the new standards as long as they remain undisturbed. However, when any change is to be made, the wiring must be upgraded to the new standards.

This concept may be used to encourage prompt payment. If failure to pay results in disconnection of service, and the new standards must be met as a condition of reconnections; and further, if the customer is required to bear much of the cost of modifying the service to provide an outside meter location, then the customer would find it advantageous to pay on time in order to avoid the greater rewiring expense.

4. Service fees

4.1 New connection fee

Provision. The distribution company is authorized to establish and collect reasonable fees from new service applicants as a condition of the extension of service. This fee may cover the direct cost of wiring material, some or all of the cost of the meter, and some of the direct labor cost.

Rationale. Such charges should specifically include the meter cost, assuming that the meter would no longer be supplied by the customer.

4.2 Delinquent collection trip

Provision. The distribution company is authorized to levy and collect a service charge when it is necessary to send a field representative to collect delinquent electric bills. This charge may be added to other amounts to be collected, provided that the utility maintains a payment station within a reasonable walking distance of the customer. The amount charged should be calculated to cover the average transportation and labor cost for trips to customer locations.

Rationale. If customers have the option of paying their electric bills at a payment station or to a field collector, they need an incentive to pay at the office. Otherwise, many would simply wait until the field collector calls. This delays receipt of the money, and also adds to the expense of collection. Therefore, it is quite appropriate to charge an additional service fee for field collections. This trip charge would be in addition to the 5% or 10% late payment fee.

In some cases, utilities do not allow field collections. If payment has not been made at the office by the disconnect date, the field trip is for the sole purpose of disconnection.

4.3 Disconnect/reconnect trip fee

Provision. The distribution company is authorized to levy and collect a service charge for field trips related to disconnection and reconnection of delinquent customers. This charge shall be based upon two trips to the customer site, one to disconnect and one to reconnect, and shall be added to other amounts to be collected before service may be restored.

Rationale. Additional costs are incurred in dealing with delinquent customers, and those costs should be fully borne by the delinquent customers, not spread among other customers who pay their bills on time. When calculating such special charges, they should be based on the recovery of actual costs, and not used as an opportunity to make a profit. The calculations should be reviewed by the Regulatory Commission to assure that they fairly represent the expenses incurred.

4.4 Meter Test fee

Provision. If the customer disputes the accuracy of his meter, he may demand that it be tested in a laboratory certified by the (state) and qualified to perform such tests. A copy of the test results shall be supplied to the customer. If the meter is found to be accurate within the $\pm 2\%$ range, the customer shall pay for the test, and no adjustment of billing will be required. If the meter error is greater than the acceptable range, the billings for the previous six months shall be recalculated, based on the percentage of error, and the customer's account shall be credited or debited through the preparation of an adjustment voucher.

Rationale. Customers will sometimes request a meter test simply as a ploy to defer payment of their bill. Most western utilities rarely have meters which are "running fast," and to avoid "nuisance complaints," require the customer to pay a deposit before the test is made.

However, the situation in Georgia is different. A field analysis of Georgian meters in December, 1996 indicated that 80% of them are out of calibration, with about as many running fast as were running slow. Further, a brief inspection of the Telasi meter laboratory showed it is woefully inadequate and unreliable as a meter test and calibration facility.

An early program to be promulgated by the Regulatory Commission should be the establishment of one or more meter laboratories equipped with modern test and calibration equipment, and with suitably trained technicians following "world standard" procedures to insure meter accuracy.

5. Quality of service

5. Nodal utility obligation

Provision. The Service Agreement between the utility and the distribution company and the customer shall specify the normal voltage and frequency at which electric service is to be delivered, including the normal range of variations to be expected. However, the distribution company will state that such specifications cannot be guaranteed since conditions are often beyond the control of the distribution company. For this reason, the customer is obligated to

provide his own protection of sensitive electrical equipment against low voltage, voltage spikes, erratic frequencies, and extended power outages.

Rationale. While the service agreement theoretically sets forth the obligations of the distribution company, it cannot guarantee any level of "quality of service," especially under present power supply conditions in Georgia. The purpose of explicitly stating that the quality of service is not guaranteed is to relieve the utility of responsibility for damage to equipment or loss of business income as a result of power supply problems.

6. Monthly Reporting Requirements

The discussion in this section deals with the type of information which should be reported to the Regulatory Commission so that the relative condition of the distribution companies may be monitored, and the data necessary for tariff studies based on cost of service may be accumulated. It will be necessary to standardize and upgrade accounting procedures at the all of the distribution companies to achieve this. Much of what is listed here will not be practical until customer accounting procedures have been computerized.

6.1 Customer sales statistics

The monthly sales statistics report should include the number of customers, kWh, and revenue billed for each month in each customer category, somewhat as shown below. This report must include all active customers, and requires that a bill be produced every month for every active customer.

The kWh and revenue is usually attributed to the month in which the meter reading is taken, even though some of the electricity may have actually been used in the preceding calendar month. The "sale" of electricity is recognized to have occurred on the date that the meter reading is obtained, even though the electricity consumption was actually spread over the previous 30-day period.

While sophisticated computer programs may be used to prorate and allocate revenue into separate months, they are only approximations. Generally, the income may be considered "earned" at the time of the reading, and be recorded on the financial books of the company as sales revenue for the month in which the reading was taken. It would be considered revenue whether or not payment is ever actually collected. Until such time as payment is collected, it is classified as a receivable, and considered as an asset of the company.

In order to account for the uncollectible amount, an "expense" item is entered into the operating statement each month which may be called "allowance for uncollectible accounts," or "bad debt reserve." This expense item is typically a percentage of the revenue billed for that month. The size of this allowance is usually the running average of uncollected accounts over the past year. In the U.S. it is typically three-tenths of one percent (0.3%), but in Georgia would be much, much higher. This accounting technique allows the distribution company to produce monthly financial statements showing profit and loss on a current-basis without having to wait to see how much revenue billed this month was actually collected.

Monthly report of Sales Statistics

	No. of customers billed	kWh billed this month	Revenue billed this month	kWh year-to-date	Revenue year-to-date
Residential					
Sm. Commercial					
Lg. Commercial					
Industrial					
Institutional					
Street Lights					
TOTAL					

The specific classes of customers for which sales reports are to be differentiated should be established by the Regulatory Commission. For example, the Commission may wish to classify urban residential customers separately from farm or rural customers. Large and small industrial customers may also be defined. In the above example, Small Commercial accounts may be defined as those metered by 25 ampere residential-style meters, where Large Commercial would be those large enough to require CT metering.

6.2 Sales reported by levels of consumption

Another important report required is one that lists the number of customers with kWh consumption in each of many narrowly defined levels, or strata, as follows:

Sales by Consumption Levels

Consumption Range	Number of bills	kwh Used
0 kwh		
1-10 kwh		
11-20 kwh		
21-30 kwh		
...etc		

This type of information is needed to make revenue projections under various proposed stepped-tariff scenarios, and is critical in designing social tariff structures such as described in Section 2.3.

6.3 Aging of Accounts Receivable

Another most useful report for management is the "Aging of Accounts" reports, used to indicate the effectiveness of distribution companies' collection programs, and progress in improving levels of payment. It shows Billed revenue not yet collected as of the close of the calendar month, by Customer Class and by Age of debt.

Aging of Accounts Report

Age:	0-30 days	31-60 days	61-90 days	90-120 days	over 120
Residential					
Sm. Commercial					
Lg. Commercial					
Industrial					
Institutional					
Street Lights					
TOTAL.					

Theoretically, as long as the past-due amount is owed by an active customer, there is the potential to collect it. If a customer has moved away without settling his account with the utility, it is not likely the past-due amount will ever be collected. It should be re-classified as a "bad debt," and "written off," that is, removed from the list of accounts receivable and no longer considered an asset of the utility.

The procedures and a complete record of Accounts Receivable and Bad Debt write-off should be structured and maintained in such a way that it can be reviewed and proven by auditors from the Regulatory Commission, tax authorities, and potential investors.

6.4 Wholesale power purchases.

The wholesale power cost is based on the meter readings taken at delivery points (substations) supplying the distribution company's network. Readings are usually taken at or near the end of the calendar month so that the readings will represent the amount of energy purchased and the wholesale power cost for that month. Under normal conditions, the distribution company would pay the wholesale power bill on the date due, and record the amount as the cost of purchased power for the month in which the reading was taken.

Since Georgian distribution companies are not paying their wholesale power bills in full, the Regulatory Commission should require, as a part of the monthly reporting process,

- the amount paid on current or previous power bills;
- late payment charges levied on power bill(s); and
- the unpaid amount of power bills, by age, as follows:

	0-30 days	31-60 days	61-90 days	90-120 days	over 120
Un-paid bills					

6.5 Operation and Maintenance expenses

Regulatory Commissions require distribution companies to include in their monthly reports the operating and maintenance expenses incurred each month. Typically, these would be summarized into not more than 6 or 8 categories and used for comparisons between companies. This information is important in judging the operating efficiencies of the companies, and the expenses claimed must be justified as reasonable if they are to be allowed to be fully recovered through the tariffs. The accounting procedure employed by the utilities should be standardized for all utilities so they can be inspected and verified by outside auditors.

Until power sector operations return to normal, the Georgian Commissioners may request reports regarding some sub-accounts not normally required. For example, because employees are sometimes not paid on schedule, they may wish to monitor the payroll expense in relation to certain other expenses. For example:

Monthly Operations & Maintenance Expense Report

	This month	Year-to-date	Past due <30	31-60 days	61-90 days	Over 90 days
Operation expenses						
Wages						
Material and supplies						
Maintenance expenses						
Wages						
Material and supplies						
Customer accounting						
Wages						
Material and supplies						
Administrative & general						
Wages						
Material and supplies						
Contracted services						
Taxes						
Other						
...etc						
TOTAL						

6.6 Capital expenditures

If a distinction is made between "capitalized" and "expensed" expenditures (e.g., transformers vs. fuses), then there should also be a similar report on capitalized expenditures. These would generally be rehabilitation or expansion expenditures, and they should be monitored by the Commission.

6.7 Plant in service

Routine reports by distribution companies include a summary of plant in service, and should be required by the Commission. In addition to totals, it may also include the quantities installed and

quantities removed for the month. This report typically includes miles of line and numbers of transformers of various types. Other categories may be required by the commission.

Miles of line	Overhead	Underground
0.4 kv		
6 kv		
10 kv		
>10 kv		
TOTAL		
Transformers		
50 kv		
100 kv		
400 kv		
...etc		
TOTAL		

6.8 Inventory of materials

The utility should maintain accurate inventory records, which includes a purchase order and work order reporting system that tracks material as it comes into inventory and goes out for installation in the field. This information is needed when preparing various financial reports. The inventory system should allow management to see printed reports at any time the amount of material on hand, item by item, which is available for construction and maintenance purposes. Each item has a value, and the total value of all items in inventory are counted as an asset of the company. The value of all of the material in inventory appears as a line on the company's Balance Sheet.

Regulatory Commissions are generally not concerned about the specific quantities of various items of line material. However, the Georgian Commission may wish to accumulate certain data on inventory until operations in the electric sector are normalized, as it might be useful in national planning strategy and the allocation of resources.

6.9 Balance Sheet

The Balance Sheet is a standard monthly and annual financial report which shows the value of all of the assets and liabilities of the company, and its net worth. Complete and Accurate Balance Sheets should be supplied to the Commission on a monthly basis.

6.9 Key Ratios Analysis

Regulatory Commissions and lending agencies frequently develop a series of "key ratio" for measuring and comparing the efficiencies and financial performance of utilities. Since electric utilities are "capital intensive" (large investments in facilities) and carry large amounts of debt, various ratios such as "times interest earned ratio" (TIER) and "debt service coverage" are used to measure financial health. Other ratios, such as the average cost per customer for customer accounting (commercial) operations are used as a measure of efficiency of operations.

In order to calculate these key ratios, certain other operating data is required, such as the number of full-time employees; and part-time employees expressed as full-time equivalents. The Commission may require such additional operational data in order to adequately monitor the performance of the distribution companies.

7. Customer Assistance Programs

7.1 Installment payment programs for upgrade of service entrance and metering

7.2 Indefinite suspension of prior debt as long as current obligations are met

7.3 Grace period to voluntarily remove illegal connection

POWER SUPPLY CONTRACT
Between
SAKENERGO
and
RUSTAVI ELECTRIC DISTRIBUTION COMPANY

THIS CONTRACT, made and entered unto this _____ day of _____ 19 _____
by and between SAKENERGO, a corporation created and existing by virtue of the _____
_____ and RUSTAVI ELECTRIC DISTRIBUTION COMPANY
(hereinafter called "Distributor"), an electric power distribution corporation duly created,
organized, and existing order and by virtue of the laws of the Republic of Georgia;

WITNESSETH

WHEREAS, the (decree/legislation) authorizes Sakenergo to sell electric power to municipalities, corporations, partnerships, or individuals according to the policies therein set forth; and

WHEREAS, Distributor owns and operates an electric system, and in the operation thereof is presently purchasing and desires to continue to purchase power from Sakenergo; and

WHEREAS, the parties wish to enter into a new contract to replace their present power contract;

NOW, THEREFORE, in consideration of the mutual promises here's contained and subject to the provisions of the (decree/legislation), the parties agree as follows:

1. Purpose of Contract. It is hereby recognized and declared that, pursuant to the obligations imposed by the Government of Georgia, Distributor's operation of an electric system and Sakenergo's wholesale service thereto are for the benefit of the consumers of electricity. Toward that end, Distributor agrees that the electric system shall be operated as a free-standup and self-supporting enterprise, that electric system funds and accounts shall not be mingled with other funds or accounts of Distributor (municipality), and that resale rates and charges shall be applied which will provide revenues which can reasonably be expected to be equal to, aid not substantially greater than, the sum required for the items listed in subsection (a) of section 6 hereof. In accordance with these principals, which are mutually recognized as the essence of this contract, Distributor agrees that the electric system shall be operated and the system's financial accounts and affairs shall be maintained in full and strict accordance with the provisions of this contract.

2. Power Supply.

(a) Subject to the other provisions of this contract, Sakenergo shall deliver to

Distributor at the delivery points specified in or hereafter established under Section 3 hereof and Distributor shall take and distribute the electric power required for service to Distributor's customers. Distributor shall keep Sakenergo currently informed on any important developments affecting its probable future loads or service arrangements. Sakenergo shall take account of all available information in making its forecasts of the loads of Distributor and of Sakenergo's other customers. Sakenergo shall make every reasonable effort to secure the increased generating capacity and to provide the transmission facilities required to supply additional power when and to the extent needed to meet increases in their loads.

(b) Distributor shall be entitled to use the power made available hereunder to serve all consumers to whom the resale rate schedules specified in section 5(b) hereof are applied except those Sakenergo is entitled to serve directly, as provided below. Sakenergo shall be entitled to serve directly any consumer to whom said resale rate schedules are not applicable, and any Government of Georgia installations excepting those with loads less than <5,000> kilowatts served from a general delivery point, and any consumer whose energy requirements in any month are more than <10,000,000> kilowatt hours plus the amount of energy, if any, delivered by Distributor to residential consumers under billings for the preceding December and received from Sakenergo at the delivery point through which Distributor would receive the energy for such consumer if it were served by Distributor. The supply of power by Sakenergo to Distributor for resale to any consumer which has a supply of <5,000> kilowatts or more of power other than that furnished by Distributor under said resale rate schedules, and the contract for such resale between Distributor and such consumer, shall be subject to such special arrangements as Sakenergo may reasonably require. Nothing herein shall be construed as preventing Distributor and Sakenergo from agreeing upon special arrangements for service to my consumer.

(c) It is recognized that from time to time there may be a consumer served by one party hereto which, because of changed conditions, may become a consumer which the other party is entitled to serve under the provisions of subsection (b) of this section. In any such case the parties hereto, unless otherwise agreed, shall make such arrangements (including making appropriate allowances for any otherwise unrecoverable investment made to serve such consumer) as may be necessary to transfer as soon as practicable such consumer to the party entitled to serve the consumer hereunder and the party originally serving said consumer shall cooperate in every way with the party entitled to serve the consumer in making arrangements for the latter to undertake such service including, without limitation, releasing the consumer from any then existing power supply contract from and after the effective date for initiating service under any contract between such consumer and the party entitled to serve it.

(d) Distributor shall keep Sakenergo informed of any prospective developments affecting any individual load which uses or shall use <5,000> kilowatts or more. As soon as practicable after receipt of information from Distributor regarding the prospective addition of, or increase in, any load of <5,000> kilowatts or larger which Distributor would be entitled to serve hereunder, Sakenergo shall notify Distributor of the time schedule upon which the additional power required for such service could be made available to Distributor at wholesale rates then in effect hereunder and, upon request, of my terms under which it could supply any power in advance of said schedule. Distributor shall not take and deliver such additional power for said load in advance of or in amounts larger than specified in said schedule except to the extent that it has made special arrangements with Sakenergo to do so. Sakenergo, by notice in writing to Distributor, may change the designated amount of <5,000> appearing in this subsection (d) to such other amounts as Sakenergo deems necessary.

(e) The area of service limitations of the Distributor as set forth in <Government of Georgia license to operate> are incorporated herein by reference as fully as though set out herein, and this contract shall not be construed as permitting any arrangement by Distributor which would be inconsistent with those limitations.

(f) Notwithstanding any other provision of this section, Sakenergo may, as a condition precedent to Sakenergo's obligation to make power available, require Distributor to provide such assurances of revenue to Sakenergo as in Sakenergo's judgment may be necessary to justify the reservation, alteration, or installation by Sakenergo of additional generation, transmission, or transformation facilities for the purpose of supplying power to Distributor.

3. Delivery and Receipt of Power.

(a) The power to be supplied hereunder shall be delivered at the delivery points designated below and, under normal operating conditions, shall be within limits of 50 hertz and within 3 percent above or below the normal wholesale deliver voltage specified below for each deliver point: provided, however, that any normal wholesale deliver voltage of <110 kV> or higher specified below may be changed by Sakenergo from time to time upon notice to Distributor to a voltage level not more than 5 percent higher or lower than the voltage so specified. Substation transformers with a high-side voltage rating of <110 kV> or above will be equipped with taps or other suitable means for adjusting for the changes in normal voltage set forth herein. The operating representatives of the parties may by mutual agreement provide for variations in wholesale delivery voltage other than those provided for herein when in their judgment such variations are necessary or desirable.

Substation	High-side kV	Low-side kV	Delivery point	Normal Wholesale Delivery Voltage
<alpha>	110	10	10-kv side	10,000
<beta>	110	10	10-kv side	10,000
<gamma>	110	10	110-kv side	10,000
<delta>	110	6	6-kv side	110,000

It is recognized that load growth and development and the maintenance of high quality service in Distributor's are may require new delivery points from time to time. Such new delivery points will be established by mutual agreement. In reaching such agreement Distributor and Sakenergo shall be guided by the policy of providing the most economical of the practical combinations of transmission and distribution facilities, considering all pertinent factors, including any unusual factors applicable to the areas involved.

Neither party shall be responsible for installing at any delivery point equipment for the protection of the other's facilities, or for damages to the other's system resulting from the failure of its own protective devices, but each party agrees to design, construct, and operate its system as not to cause undue hazards to the other's system.

(b) The hours of service provided by Sakenergo to Distributor may vary from day-to-day and area-to area at the discretion of Sakenergo as Sakenergo funds it necessary to ration the delivery of power to match the supply available. It is recognized that the supply available is limited by the cash available to Sakenergo to pay the generating costs at domestic power generating companies, and import electricity from foreign generators. It is further recognized that this lack of available cash is due (l) to the inability of the various distribution companies to pay

fully for the power delivered by Sakenergo, and (2) to the inability of the Government of Georgia to subsidize the purchase of fuel or imported power through tax revenues. In order to avoid conservation interruptions of power supply, Distributor may enter into special contracts with Sakenergo in accordance with provisions of "Uninterruptable Power Supply Agreements" - Schedule C, attached hereto.

4. Wholesale Rate. Attached hereto and made a part hereof is a "Schedule of Rates and Charges." Subject to other provisions of this contract, Distributor shall pay for the power and energy supplied by Sakenergo in accordance with the provisions of the Wholesale Power Rate - Schedule A.

5. Resale Rates. In distributing electric energy in the area served by Distributor, the parties agree as follows:

(a) Distributor agrees that the power purchased hereunder shall be sold and distributed to the ultimate consumer without discrimination among consumers of the same class, and that no discretionary rate, rebate, or other special concession shall be made or given to any consumer, directly or indirectly.

(b) Distributor agrees to serve consumers, including all municipal and governmental customers and departments, at and in accordance with the rates, charges, and provisions set forth for the several classes thereof in the attached Schedule of Rates and Charges, and not to depart therefrom except as the parties hereto may agree upon surcharges, special minimum bills, or additional resale schedules for special classes of consumers or special uses of electric energy, and except as provided in subsection (c) next following.

(c) If the rates and charges provided for in said resale schedules do not produce revenues sufficient to provide for the operation and maintenance of the electric system on a self-supporting and financially sound basis, including requirements for interest and principal payments on indebtedness incurred or assumed by Distributor for the acquisition, extension, or improvement of the electric system hereinafter called "System Indebtedness"), the parties shall agree upon, and Distributor shall put into effect promptly, such changes in rates and charges as will provide the increased revenues necessary to place the system on a self-supporting and financially sound basis. If the rates and charges in effect at the time provide revenues that are more than sufficient for such purposes, as more particularly described in Section 6 hereof, the parties shall agree upon as reduction is said rates and charges, and Distributor shall promptly put such reduced rates and charges into effect.

6. Use of Revenues.

(a) Distributor agrees to use the gross revenues from electric operations for the following purposes:

(1) Current electric system operating expenses, including salaries, wages, cost of materials and supplies, taxes, power at wholesale, and insurance;

(2) Current payments of interest on System indebtedness, the payment of principal amounts, including sinking fund payments, when due, and/or the payment of the prescribed return on investment of strategic investors; and

(3) From any remaining revenues, reasonable reserves for renewals, replacements, and contingencies; and cash working capital adequate to cover operating expenses for a reasonable number of weeks.

(b) All revenues remaining over and above the requirements described in subsection (a) of this section shall be considered surplus revenues and may be used for new electric system construction or the retirement of System Indebtedness prior to maturity; provided, however, that resale rates and charges shall be reduced from tinge to tune to the lowest practicable levels considering such factors as future circumstances affecting the probable level of earnings, the need or desirability of financing a reasonable share of new construction from such surplus revenues, and fluctuations in debt service retirements.

7. Rules and Regulations. Distributor hereby adopts the "Schedule of Rules and Regulations" attached hereto. Such Rules and Regulations may be amended, supplemented, or repealed by Distributor at any time upon 30 days' written notice to Sakenergo setting forth the nature of and reason for the proposed change. No change may be made in said schedule, however, which is in violation of or inconsistent with any of the provisions of this contract.

8. Use of Lines for Transmission Purposes. Sakenergo is hereby granted the privilege of using any electric lines of Distributor, to the extent their capacity in excess of the requirements of Distributor, for the purpose of transmitting electric energy between adjoining portions of Sakenergo's facilities or to other customers of Sakenergo. Sakenergo shall be obligated to pay Distributor the additional cost, including any additional fixed charges and operating and maintenance costs, imposed on Distributor by permitting use of its facilities to serve other customers of Sakenergo, and to indemnify and save harmless Distributor from any damage or injury caused by Sakenergo's exercise of such use.

9. Waiver of Defaults. Any waiver at any time by either party hereto of its rights with respect to any default of the other party or with respect to any other matter arising in connection with this contract shall not be considered a waiver with respect to any subsequent default or matter.

10. Transfer of Contract. Neither this contract nor any interest herein shall be transferable or assignable by Distributor without the consent of Sakenergo.

11. Restriction of Benefits. No member of or delegate to the Georgia Parliament, or Regulatory Commissioner, or employee of Sakenergo shall be admitted to any part of this contract or to any benefit to arise therefrom. However, nothing contained in this section shall be construed to any corporation if the contract be for the benefit of such corporation.

12. Termination of Existing Contracts. It is hereby agreed that the power contract dated <July 15, 1993> and numbered _____, as supplemented and amended, between the parties is terminated as of the effective date of this contract.

13. Term of Contract. This contract shall become effective as of April 1, 1998, and shall continue in effect for 20 years from said date, subject to termination by either party, effective not earlier than 10 years from said date, on not less than 4 years' prior written notice. If Distributor should give notice of termination hereunder, Sakenergo shall be under no obligation from the date of receipt of such notice to make or complete any addition to or changes in my transmission or transmission facilities for service to Distributor unless Distributor agrees to reimburse Sakenergo for its non-recoverable costs in connection with the making or completion of such additions or changes.

HAGLER BAILLY

IN WITNESS WHEREOF, the parties hereto have caused this contract to be executed by their duly authorized officers, as of the day and year first above written.

Attest:

SAKENERGO

Secretary

By _____

Director General

Attest:

RUSTAVI ELECTRIC DISTRIBUTION COMPANY

Secretary

By _____

Director General

SCHEDULE A

WHOLESALE POWER RATES
Interim Schedule F (Firm)
April 1, 1998

AVAILABILITY

This rate shall apply to the FIRM electric power supplied at a Delivery Point. Firm power may be contracted by Distributor for an entire substation, or for one or more individual 10/6 kV feeders emanating from a substation, provided suitable metering has been installed.

CHARACTER OF SERVICE

Alternating current, three phase, 50 hertz. Power shall be delivered at a transmission voltage of 110 kV or 220 kV.

BASE CHARGES

Substation Charge:

500 GEL per delivery point per month (May be modified after cost-of-service tariff study)

Demand Charge:

None (Requires Demand metering. May be added after cost-of-service tariff study)

Energy Charge:

3.2 tetri per kWh

SUBSTATION TRANSFORMER LOSS ADJUSTMENT

Where the delivery point is established as the low-side of the substation transformer and billing is based upon metering on the low-side bus, the total energy and demand charges shall be decreased by $\leq 3\% \geq$ to account for the losses in the substation transformer.

POWER COST ADJUSTMENT

The base demand and energy charges shall be increased or decreased in accordance with the current Adjustment Addendum published by Sakenergo. Said adjustment addendum shall be based upon month-to-month changes in the cost of generated power delivered into the Sakenergo transmission system, as affected by fuel costs and ratios of hydro, thermal, and imported power.

DETERMINATION OF DEMAND

The metered demand for any month shall be the highest average during any 60-consecutive-minute period beginning or ending on a clock hour of the month of the load metered in kW, and such amount shall be used as the billing demand.

REACTIVE DEMAND CHARGES

If the reactive demand (in kVAR) is lagging during the 60-consecutive-minute period beginning or ending on a clock hour of the month in which the substation's highest metered demand occurs, there shall be added to the substation billing a reactive charge of $\leq \geq$ tetri per kVAR of the amount, if any, by which the reactive demand exceeds $\leq \geq$ percent of such metered demand.

If the reactive demand (in kVAR) is leading during the 60-consecutive-minute period beginning or ending on a clock hour of the month in which the substation's lowest metered demand (excluding any metered demands which are less than 25 percent of the highest metered demand) occurs, there shall be added to the substation billing a reactive charge of $\leq \geq$ tetri per kVAR of the amount of the reactive demand.

Such charges shall be in addition to all other charges under this rate schedule.

PAYMENT

Bills under this rate schedule will be rendered monthly. Any amount of bill unpaid after due date specified on the bill may be subject to additional charges under Sakenergo's standard policy.

SINGLE POINT DELIVERY

The charges under this rate schedule are based upon the supply of service through a single delivery and metering point and at a single voltage. If service at the substation is supplied through more than one delivery point (meter) or at different voltages, the supply of service at each delivery and metering point and at each different voltage shall be separately metered and billed.

Interim Schedule 1 (Interruptible) April 1, 1998

AVAILABILITY

This rate shall apply to the INTERRUPTIBLE electric power supplied at the Delivery Point,

CHARACTER OF SERVICE

Alternating current, three phase, 50 hertz. Power shall be delivered at a transmission voltage of 110 kV or 220 kV.

BASE CHARGES

Substation Charge:

500 GEL per delivery point per month (May be modified after cost-of-service tariff study)

Demand Charge:

None (Requires Demand metering. May be added after cost-of-service tariff study)

SUBSTATION TRANSFORMER LOSS ADJUSTMENT

Where the delivery point is established as the low-side of the substation transformer and billing is based upon metering on the low-side bus, the total energy and demand charges shall be increased by $\leq 3\% \geq$ to account for the losses in the substation transformer.

POWER COST ADJUSTMENT

HAGLER BAILLY

The base demand and energy charges shall be increased or decreased in accordance with the current Adjustment Addendum published by Sakenergo. Said adjustment addendum shall be based upon month-to-month changes in the cost of generated power delivered into the Sakenergo transmission system, as affected by fuel costs and ratios of hydro, thermal, and in>pated power.

DETERMINATION OF DEMAND

The metered demand for any month shall be the highest average during any 60-consecutive-minute period beginning or ending on a clock hour of the month of the load metered in kW, and such amount shall be used as the billing demand.

REACTIVE DEMAND CHARGES

If the reactive demand (in kVAR) is lagging during the 60-consecutive-minute period beginning or ending on a clock hour of the month in which the substation's highest metered demand occurs, there shall be added to the substation billing a reactive charge of \leq tetri per kVAR of the amount, if any, by which the reactive demand exceeds \geq percent of such metered demand.

If the reactive demand (in kVAR) is leading during the 60-consecutive-minute period beginning or ending on a clock hour of the month in which the substation's lowest metered demand (excluding any metered demands which are less than 25 percent of the highest metered demand) occurs, there shall be added to the substation billing a reactive charge of \leq tetri per kVAR of the amount of the reactive demand.

Such charges shall be in addition to all other charges under this rate schedule.

PAYMENT

Bills under this rate schedule will be rendered monthly. Any amount of bill unpaid after due date specified on the bill may be subject to additional charges under Sakenergo's standard policy.

SINGLE POINT DELIVERY

The charges under this rate schedule are based upon the supply of service through a single delivery and metering point and at a single voltage. If service at the substation is supplied through more than one delivery point (meter) or at different voltages, the supply of service at each delivery and metering point and at each different voltage shall be separately metered and billed.

RESALE POWER RATES
Residential Schedule RF (Firm)
April 1, 1998

AVAILABILITY

This rate shall apply only to electric service to a single-family dwelling (including its appurtenances if served through the same meter), where major the use of electricity is for domestic purposes such as lighting, household appliances, and the personal comfort and convenience of those residing therein. Service shall be available on a full-time basis and not subject to interruption for conservation purposes.

CHARACTER OF SERVICE

Alternating current, single-phase, 50 hertz, up to 70 amperes. Voltage supplied shall be nominal 220 volts.

BASE CHARGES

Customer Charge:
40 tetri per delivery point per month.
Energy Charge:
4.5 tetri per kWh

ADJUSTMENT

The customer's bill for each month shall be increased or decreased in accordance with the current Adjustment Addendum published by Sakenergo.

MINIMUM MONTHLY BILL

The customer charge constitutes the minimum monthly bill for all customers served under this rate schedule except for those customers for which a higher monthly minimum bill is required under Distributor's standard policy because of special circumstances affecting Distributor's cost of rendering service.

PAYMENT

Above rates and charges are net. In the event that any bill is not paid within 15 days from date of bill, there shall be added to the bill an amount equal to 10 percent of the bill.

SINGLE POINT DELIVERY

The charges under this rate schedule are based upon the supply of service through a single delivery and metering point. If service is supplied to the same customer through more than one point of delivery or at different voltages, the supply of service at each delivery and metering point and at each different voltage shall be separately metered and billed under this rate schedule.

Residential Schedule R (interruptible)
April 1, 1998

AVAILABILITY

This rate shall apply only to electric service to a single-family dwelling (including its appurtenances if served through the same meter), where major the use of electricity is for domestic purposes such as lighting, household appliances, and the personal comfort and convenience of those residing therein.

Service may be interrupted as necessary for conservation purposes.

CHARACTER OF SERVICE

Alternating current, single-phase, 50 hertz, not to exceed 25 amperes. Voltage supplied shall be nominal 220 volts.

BASE CHARGES

Customer Charge:
None
Energy Charge:
4.5 tetri per kWh

ADJUSTMENT

None

minimum MONTHLY BILL

None

PAYMENT

Above rates and charges are net. In the event that my bill is not paid within 15 days from date of bill, there shall be added to the bill an amount equal to 10 percent of the bill.

SINGLE POINT DELIVERY

The charges under this rate schedule are based upon the supply of service through a single delivery and metering point. If service is supplied to the same customer through more than one point of delivery or at different voltages, the supply of service at each delivery and metering point and at each different voltage shall be separately metered and billed under this rate schedule.

Small Commercial Schedule CSF (Firm)
April 1, 1998

AVAILABILITY

This rate shall apply only to electric service to a commercial enterprise, including its appurtenances if served through the same meter.

Service shall be available on a full-time basis and not subject to interruption for conservation purposes.

CHARACTER OF SERVICE

Alternating current, single-phase, 50 hertz, up to 70 amperes. Voltage supplied shall be nominal 220 volts.

BASE CHARGES

Customer Charge:
40 tetri per delivery point per month.

Energy Charge:
4.5 tetri per kWh

ADJUSTMENT

The customer's bill for each month shall be decreased or increased in accordance with the current Adjustment Addendum published by Sakenergo.

MINIMUM MONTHLY BILL

The customer charge constitutes the minimum monthly bill for all customers served under this rate schedule except for those customers for which a higher monthly minimum bill is required under Distributor's standard policy because of special circumstances affecting Distributor's cost of rendering service.

PAYMENT

Above rates and charges are net. In the event that any bill is not paid within 15 days from date of bill, there shall be added to the bill an amount equal to 10 percent of the bill,

SINGLE POINT DELIVERY

The charges under this rate schedule are based upon the supply of service through a single delivery and metering point. If service is supplied to the same customer through more than one point of delivery or at different voltages, the supply of service at each delivery and metering point and at each different voltage shall be separately metered and billed under this rate schedule.

Small Commercial Schedule CSI (Interruptible)
April 1, 1998

AVAILABILITY

This rate shall apply only to electric service to a commercial enterprise, including its appurtenances if served through the same meter.

Service may be interrupted as necessary for conservation purposes.

CHARACTER OF SERVICE

Alternating current, single-phase, 50 hertz, not to exceed 25 amperes. Voltage supplied shall be nominal 220 volts.

BASE CHARGES

Customer Charge:

None

Energy Charge:

4.5 tetri per kWh

ADJUSTMENT

None

MINIMUM MONTHLY BILL

None

PAYMENT

Above rates and charges are net. In the event that any bill is not paid within 15 days from date of bill, there shall be added to the bill an amount equal to 10 percent of the bill.

SINGLE POINT DELIVERY

The charges under this rate schedule are based upon the supply of service through a single delivery and metering point. If service is supplied to the same customer through more than one point of delivery or at different voltages, the supply of service at each delivery and metering point and at each different voltage shall be separately metered and billed under this rate schedule.

General Power Schedule GSI (Interruptible)
April 1, 1998

AVAILABILITY

This rate shall apply to commercial, industrial, and governmental customers, and institutional customers including, without limitations, churches, clubs, fraternities, orphanages, nursing homes, rooming or boarding houses, and like customers. This rate shall also apply to customers to whom service is not available under any other resale rate schedule.

Service may be interrupted as necessary for conservation purposes.

CHARACTER OF SERVICE

Alternating current, single-phase or three-phase, 50 hertz. Voltage supplied shall be nominal 220 volts or other voltage available or agreed to by Distributor.

BASE CHARGES

Customer Charge:

< >

Demand Charge

< >

Energy Charge:

4.5 tetri per kWh

ADJUSTMENT

< >

MINIMUM MONTHLY BILL

< >

PAYMENT

Above rates and charges are net. In the event that any bill is not paid within 15 days from date of bill, there shall be added to the bill an amount equal to 10 percent of the bill.

SINGLE POINT DELIVERY

The charges under this rate schedule are based upon the supply of service through a single delivery and metering point. If service is supplied to the same customer through more than one point of delivery or at different voltages, the supply of service at each delivery and metering point and at each different voltage shall be separately metered and billed under this rate schedule.

SCHEDULE B

SCHEDULE OF RULES AND REGULATIONS

Applicable to all Classes of Service

1. Application for Service: Each prospective Customer desiring electric service may be required to sign Distributor's standard form of application for service or contract before service is supplied by Distributor.

2. Deposit: A deposit or suitable guarantee approximately equal to three times the average monthly bill may be required of any Customer before electric service is supplied. Distributor may at its option return the deposit to Customer after one year. Upon termination of service, deposit may be applied by Distributor against unpaid bills of Customer, and if any balance remains after such application is made, said balance shall be refunded to Customer. Deposits held more than six months shall earn interest from that date.

3. Point of Delivery: The point of delivery is the point, as designated by Distributor, on Customer's premises where current is delivered to building or premises. All wiring and equipment beyond this point of delivery shall be provided and maintained by Customer at no expense to Distributor.

4. Customer's Wiring Standards: All wiring of Customer must conform to Distributor's requirements and accepted modern standards, as exemplified by the requirements of the <Georgia Electrical Safety Code>.

5. Inspections: Distributor shall have the right, but shall not be obligated, to inspect any installation before electricity is introduced or at any later time, and reserves the right to reject and wiring or appliances not in accordance with Distributor's standards; but such inspection or failure to inspect or reject shall not render Distributor liable or responsible for any loss or damage resulting from defects in the installation, wiring, or appliances, or from violation of Distributor's rules, or from accidents which may occur upon Customer's premises.

6. Underground Service Lines: Customers desiring underground service lines from Distributor's overhead system must bear the cost incident thereto. Specifications and terms for such construction will be furnished by Distributor upon request.

7. Customer's Responsibility for Distributor's property: All meters, service connections, and other equipment furnished by Distributor shall be, and remain, the property of Distributor. Customer shall provide a space for, and exercise proper care to protect the property of Distributor on its premises, and, in the event of loss or damage to Distributor property arising from neglect of Customer to care for same, the cost of the necessary repairs or replacements shall be paid by Customer.

8. Right of Access: Distributor's identifies employees shall have access to Customer's premises at all reasonable times for the purpose of reading meters, testing, repairing, removing or exchanging any or all equipment belonging to Distributor,

9. Billing: Bills will be rendered monthly and shall be paid within fifteen (15) days, from date of bill at office of Distributor. Failure to receive bill will not relieve Customer from payment obligation. Should bills not be paid by due date, a termination notice will be sent within three (3) days after due date, advising that service will be terminated if bill is not paid within five (5) days. Bills paid on or before the end of the net bill period shall be paid at the net rates, but thereafter the gross rates shall apply, as provided in the Schedule of Rates and Charges. Should the final date for payment of the bill at net rates fall on a weekend or holiday, the business day next following the final date will be held as a day of grace for delivery of payment. If payments are not received by 4:30 P.M. on the due date at the offices of the Distributor, then the gross billing rate shall be due and owing.

10. Discontinuance of Services by Distributor: Distributor may refuse to connect or may disconnect service for the violation of any of its Rules and Regulations, or for violation of any of the provisions of the Schedule of Rates and Charges, for nonpayment of bill if payment has not been received by 4:30 P.M. on the date printed on "Notice of Service Disconnection," or of the application of Customer or contract with Customer. Distributor may discontinue service to Customer for theft of current or the appearance of current theft devices on the premises of Customer. The discontinuance of service by Distributor for any cause as stated does not release customer from his obligation of Distributor for the payment of minimum bills as specified in the application of Customer or contract with Customer.

11. Reconnection Charge: Whenever service has been discontinued by Distributor, as provided above, or a trip is made for the purpose of discontinuing service, a charge of not less than < 2 GEL. > may be collected by Distributor before service is restored. If service is discontinued, a charge not less than < 3 GEL > will be made for restoring service during normal office hours. If it is necessary to restore service after normal office hours, the emergency overtime work rate may be charged.

12. Termination of Contract by Customer: Customers who have fulfilled their contract terms and wish to discontinue service must give at least 3 days written notice to that effect, unless contract specifies otherwise. Notice to discontinue service prior to expiration of contract term will not relieve customer from any minimum or guaranteed payment under any contract or rate.

13. Service Charges for Temporary Service: Customers requiring electric service on a temporary basis may be required by distributor to pay all costs for connection and disconnection incidental to supplying and removing of service. This rule applies to circuses, carnivals, fairs, temporary construction sites, and the like.

14. Interruption of Service: Distributor will use reasonable diligence in supplying current, but shall not be liable for breach of contract in the event of, or loss for, injury or damage to persons or property resulting from, interruptions in service, excessive or inadequate voltage, single-phasing, or other unsatisfactory service, whether or not caused by negligence.

22. Billing Adjusted to Standard Periods: The charges set forth in the rate schedules are based on billing periods of approximately one month. In the case of the first billing of new accounts (temporary service and seasonal customers excepted) and final billings of all accounts (temporary and seasonal service excepted) where the period covered by the billing involves fractions of a month, the demand charges, other charges designed primarily to recover fixed costs, and the customer charges will be adjusted to a base proportionate with the period of time under which service is extended.

23. Connection Charges: Thirty-five (35) GEL will be charged for all new permanent locations. Five (5) GEL will be charged for previously served permanent meter locations.

25. Common Building Service: Customer meters located in or on an apartment or other multiple occupancy building which provides common services such as stairwell lighting, outdoor lighting, and elevators shall have added to the billings associated with said Customer meters an additional itemized charge of < 20 > tetri per month, or other such fixed amount as may be determined by Distributor as necessary to pay the cost of common building service.

26. Shortage of Electricity: In the event of an emergency or other condition causing a shortage in the amount of electricity for Distributor to meet the demand on its system, Distributor may, by an allocation method deemed equitable by Distributor, fix the amount of electricity to be made available for use by Customer and/or may otherwise restrict the time during which Customer may make use of electricity and the uses which Customer may make of electricity. If such actions become necessary, Customer may request a variance because of unusual circumstances including matters adversely affect the public health, safety, and welfare. If Customer fails to comply with such allocation or restriction, Distributor may take such remedial action as it deems appropriate under the circumstances including temporarily disconnecting electric service and charging additional amounts because of the excess use of electricity.

27. Scope: This Schedule of Rules and Regulations is a part of all contracts for receiving electric service from Distributor, whether the service is based upon contract, agreement, signed application, or otherwise. A copy of this schedule, together with Distributors Schedule of Rates and Charges, shall be kept open to inspection at offices of Distributor.

28. Revisions: These Rules and Regulations may be revised, amended, supplemented, or otherwise changed from time to time, without notice. Such changes, when effective, shall have the same force as the present Rules and Regulations.

29. Conflict. In case of conflict between any provision of any rate schedule and the Schedule of Rules and Regulations, the rate schedule shall apply.

SCHEDULE C

UNINTERRUPTIBLE POWER SUPPLY AGREEMENTS

**Supplement To
SCHEDULE OF RULES AND REGULATIONS**

Applicable to Distribution Substations, Distribution Transformers, and
Medium- and Low-voltage Feeders Where Firm Power is Contracted

Scope: This Supplement to Distributor's Schedule of Rules and Regulations applies to

To come later

MODIFICATION OF ELECTRIC SERVICE ENTRANCES

THE PURPOSES

1. Disconnection. One of the most fundamental requirements for the successful operation of a utility billing and collection program is the capability to disconnect service for non-payment. To be effective, the disconnecting means must:

- be located where it is always readily accessible by the utility, and
- be sealed, locked, and/or located so that re-connection by the customer cannot be done easily or covertly.

Disconnection by the utility is generally accomplished at either:

- the meter location,
- at the point where the service wires attach to the building, or
- at the point where the service wires are connected to the feeder or transformer.

In most cases, GEORGIA UTILITIES cannot effectively disconnect at the meter because the meter is located indoors and is not readily accessible. Furthermore, if the meter were disconnected, it can be easily and covertly reconnected by the customer. Nor can GEORGIA UTILITIES disconnect the service wires to individual customers in apartment buildings because they are usually concealed in the walls and are not immediately accessible.

Therefore, GEORGIA UTILITIES must adopt new electric service entrance standards which provide for an effective means of disconnection for non-payment of bills, and when property becomes vacant.

2. Meter Reading. A second most fundamental requirement for the successful operation of a customer billing program is regular monthly meter readings. These readings are essential for accurate billing of customers, and for the monitoring and accounting for kWh consumption and payments. Meter readings can be obtained in a number of ways, including:

1. The utility meter reader visits the site each month. This requires the meter be accessible to the reader at all times.
2. The customer delivers the meter reading to the utility by marking the reading on his billing stub at the time of payment each month. This assumes that the utility company prepares and delivers a bill to the customer each month, and the customer regularly delivers the payment (and billing stub) back to the utility within the prescribed time so that the next month's bill can be calculated.
3. The customer delivers the meter reading to the utility through a self-assessment program.
This has considerable advantages over option 2 (above) in that:
 - a. the payment for electricity used is received 30 days earlier, and
 - b. the expense of printing and delivering bills is avoided.

In the case of options 2 and 3, above, it is still necessary for the utility to obtain readings every 6 to 12 months in order to verify that the readings supplied by the customer are accurate. This also requires that the meter be located where it is accessible to the utility at all times.

Thus, GEORGIA UTILITIES must adopt new electric service entrance standards which require the meter to be located where it can be read and inspected by the utility at any time.

THE OPTIONS

There are a number of options which may be considered in the development of new service entrance wiring standards. They should be considered in the context of both new construction and retrofitting existing installations. The following discussion is not intended to be comprehensive, but focuses principally on apartment buildings, where the major problems exist regarding

3.1 Disconnect switch only. A disconnect switch may be installed at some location along the individual service wires between the point of connection to the building feeder and the customer's meter. The reason for considering this option independent of external meter installation is that some fear that the meters may be stolen for re-sale on the black market. This problem can be minimized within the Republic of Georgia by the adoption of a policy under which all meters are supplied by the utility companies. However, it is said that meters may still be stolen for export to Armenia or other countries where customers may still be required to supply their own meters.

If a disconnect switch is to be installed, it would need to be in a housing which is reasonably secure from tampering and can be sealed by the utility. The switch may be in the form of a circuit breaker, which would also provide over-current protection for the service.

The time and cost of retrofitting existing locations with disconnect switches is substantial, and approximately the same as would be required to move meters from an inside to an outside location.

3.2 External meter location. The preferred solution is to locate meters outside the house or apartment and incorporate the disconnect means as a part of the meter installation. If the meter is outside, the disconnection of service may be accomplished in one of two ways:

1. Use meters with a built-in switch or circuit breaker. If the switch handle is exposed, it must be configured so that it can be locked and sealed in the open position by the utility. Otherwise, it must be concealed by a cover plate which can be sealed.
2. Remove the energized conductor from under the terminal screw at the point of connection to the meter (A-base meters). The terminals are concealed behind a cover plate which can be sealed. While a knowledgeable customer may break the seal and reconnect himself, this can be readily detected if the meter is in an external, accessible location.

The relocation of meters can be implemented at substantially the same cost as the switch-only option described in 3.1, above, but may have a higher annual operating cost if the incidence of meter theft and replacement is significant.

3.3 Solving the meter theft problem. There are some actions which should be considered to mitigate the problem of meter theft. They include:

HAGLER BAILLY

1. The supply of meters only by the utility. GEORGIA UTILITIES should adopt the policy that all meters would be provided by the utility company, not the customer. this would essentially eliminate the domestic market for stolen meters. However, it immediately raises the issue of funding for the meters the utility will need to buy. Such funds may be provided through the collection of appropriate fees from the customers. Under the present system, the customer must pay for a meter purchased from some third-party source. Under the new plan, the customer would simply make this payment to the utility. This payment would not, however, be characterized as the "purchase of the meter," but simply be a part of a larger "service fee" that includes a number of unique costs associated with the extension or upgrade of the customer's electric service. To help the customer, this payment may be spread evenly over a 10-month period.
2. Joint action by neighboring Republics. Assigning that GEORGIA UTILITIES adopt the policy described in paragraph 1, above, Georgia utility and government officials would then request neighboring republics to adopt similar policies. This would greatly reduce, if not entirely remove, the foreign retail market for stolen meters.
3. Change meter styles. One further measure to reduce the incidence of meter theft would to change the style of meter used. Bottom-wired "A-base" meters are common throughout much of the world, but the socket-type "S-base" meters are the standard in North America. Socket meter are round, about 15 cm. in diameter, and plug into a 4-pronged socket. A hardened-metal band is used to keep the meter in the socket, and has provisions for sealing. Socket-type meters cost about the same as high-quality A-base meters, but there is some additional cost for the socket.

Socket meters' single-phase current capacity is typically 200 amperes, substantially greater than A-base meters, and capable of carrying any foreseeable future load. A-base meters are typically rated at 15, 30, or 40 amperes, and when loads reach 50 amperes, more expensive 3-phase meters are usually required.

Disconnection of service with socket-type meters is generally accomplished in one of three ways:

- a. Un-plug the meter from its socket and cover the socket with a blank cover plate. The cover plate may be opaque (metal) or clear (Lexan plastic), The blade cover is held in place and sealed with the same metal band used to hold the meter in place.
- b. Un-plug the meter and re-insert and seal it in the socket at a 45-degree angle so that the metal prongs of the niter do not contact the jaws in the socket.
- c. Un-plug the meter and place thin insulating plastic "boots" over the appropriate prong(s), and reinsert and seal the meter in its socket.

Methods b. and c., above, have the advantage of less paper-work when service is reconnected. Under method a., it is often not practical to keep separate the same meter for later re-installation at the same location, and if a different meter is used, it

is necessary to make changes in the meter number and meter reading in the customer files.

This discussion regarding socket meters is provided here because large numbers of used socket-type meters may be available from the U.S. Some U.S. utilities have undertaken massive replacement of conventional meters with electronic meters which have remote meter reading capabilities. These used meters are in good working order and may be made available through a non-profit U.S. agency at no initial cost to Georgia utilities except for packing and shipment. The meters would be made available through a "revenue sharing" program in which half of the calculated increase in revenue for the first 24 months of resulting from tire use of the meters would be paid back to the agency for the purpose of covering its overhead costs and funding other assistance programs to developing nations.

A small number of these meters are planned for use in the pilot project in order to familiarize Georgia utility managers with them, and determine if they would be suitable for use in Georgia. This would be considered an interim measure to meet the pressing need for meters at a minimum cost.

THE PROCEDURE

4. Locations where work is to be performed.

It will not be practical to undertake a systematic relocation of all meters in the utility until funding for such a program can be obtained. However, as an interim measure, the work may begin now with its focus on those locations where payment has not been made for two consecutive months. A Collector will visit such locations to advise the customers in writing that if they do not make payment arrangements within 7 days, a Work Order shall be issued to install an external meter and disconnection point.

4.1 Work Order Form.

The Work Order form will be filled in by the Collector and delivered to the Collections Office on the same date that the NOTICE is given to the customer. The fact that the NOTICE was left on the customer's premises will be entered on the customer's Ledger Card.

The Work Order form should have separate sections to be completed by (1) the collector who initiates the form, (2) the foreman of the crew which performs the work, and (3) the bookkeepers responsible for payments which may be received from the customer, and also payments made to the crew for work completed.

4.2 Work Order Files.

The Collection Office shall maintain a Log and two separate Files, one for Work Orders "Pending" and the other for Work Orders "Completed."

The Log. The Log will contain a listing of Work Orders submitted by the Collectors, with entries made in chronological order as the Work Orders are received at the Collection Office. It will show the status and dates of action for all Work Orders. While this Log may be kept by hand in a ledger book, it would be easier to use if it were maintained on a PC spreadsheet (such as the Excel program).

If the work to be done exceeds the capacity of the Service installation Crew(s), the Log will be used to establish the order of priority for the work to be done. Each month, following the completion of the billing report, the cumulative un-paid debt of customers who have Pending Work Orders shall be up-dated in the Log book. Customers with the largest unpaid amounts will receive priority for the assignment of work to the Crew.

The Files. Work Orders will be filed in both the Pending and Completed files in numerical order by account number. A Work Order shall not be issued from the Pending File before its 7-day-notice period had passed.

It is assumed that a crew can complete two jobs per day. In assigning work to be done, consideration should be given to the travel time between two jobs assigned for the same day. It may be more efficient to schedule a location nearby, even if it does not strictly adhere to the indicated order of priority.

(In view of the work crew 's travel and set-up lime, it may be expedient to convert all apartments fronting a stairwell landing (or possibly within an entire stairwell) at the same time that one of the services is being modified. This would especially be true if the payment histories of the other tenants fronting that landing or stairwell are irregular. If more than one customer fronting a landing is delinquent, their combined debt would be considered in establishing the order of priority for work at that location. If only one customer is delinquent, there may still be some economies to be gained by converting all services at that location at the same time, especially if ganged meter housings or meter sockets are available and desirable. There would be no conversion fee charged to customers at their location which are current in their bill payments.)

When the work is completed, the Work Order form shall be returned to the Collection Office so that customer records may be updated. The Work Order form will be placed in the "Completed" file for future reference.

5. Service Installation Crews

The modification of electrical service entrances may be done by independent contractors, by utility personnel, or a combination of both. The number of technicians required, their skills, and the true required per job is not presently known. Nor is it known how many customers will ignore the new payment procedures and require service entrance modification. One objective of the pilot project is to determine the time and cost for each job, and establish an average cost for labor and material for future planing purposes.

For the pilot project, it will be left to the judgment of the utility to establish the size of the team and recruit the technicians. While the technicians may be recruited from the Operations or other departments within the utility, they will be detached from their regular work and assigned to the Collection Office for daily work assignments during the period of the pilot project. For those days when there may be no service entrance modification work required, they may be released back to their normal work, at the discretion of the Collection manager. If the modification procedure is accepted and expanded beyond the pilot project, these technicians may be permanently reassigned to the Collection Office.

Close supervision and inspection of the work done should be provided by utility management in order to control the use of materials, and to reduce the likelihood of collusion with customers to

compromise the purpose of the installation. The nature and extent of supervision and inspection should be developed during the pilot project.

6. Dealings of the Crew with the Customer.

When the crew arrives at a location to begin the work directed by the Work Order, they will check to see if anyone is at home. If so, they will proceed as follows:

1. The foreman shall advise the customer that he has a Work Order to modify the customer's electrical service entrance and present to him the reason for the Order, along with the list of Customer Options (see Section 5).
2. If the customer agrees to settle his outstanding obligation with the Collection Office, the crew will not begin the work, but advise the customer that if satisfactory arrangement is made with the Office by the close of that business day, the work will not be done. If the customer fails to follow through with his agreement to settle the obligation at the Office, the crew will return at the same time the following (work) day to proceed with the modification.

If the customer agrees to settle, the crew will proceed to the next assigned location. Since many customers may settle when confronted, the crew should carry 6 or 8 Work Orders each day. The customer shall not be allowed to make payment to the installation Crew, but must make settlement at the Collection Office.

3. If the customer is not at home when the crew arrives, they will proceed with their assignment, since the work required to establish a new meter location and exterior disconnect point can all be performed outside the premises and without the consent or cooperation of the customer. A new or rehabilitated meter would be used in the new location. If necessary, the indoor meter may be abandoned. If the customer later delivers the old meter (undamaged) to the Collection Office, he will receive credit for it against the amount owed to the utility. The recovered meter would be returned to the meter lab for rehabilitation and recalibration, to be used elsewhere.

7. Design and Specification. The utility should prepare (or contract the preparation of) specifications, instructions, and drawings for the service entrance modification work to be done. A number of different situations will be encountered, and instructions should indicate how each of the various situations should be dealt with.

8. Materials required. The quantities and types of material required to perform the service entrance conversion work will need to be prepared, sources of supply established, and methods of payment determined.

9. Inspection for illegal connections. While the Installation Crew is on the premises, they should make careful inspection of the exterior of the building and the attic, looking for illegal connections. If any are found, the following actions should be taken, depending upon whether the customer is present or not:

1. **Customer present.** An "Unmetered Connection" form (see Section 5) shall be filled out by the foreman and acknowledged by the customer.

2. **Customer not present.** The foreman will call the Collection Office to report the finding and request that a person from the Office come to the site to verify the finding. (This is for two purposes: (1) to acquaint the Collection Office staff with the circumstances for follow-up with the customer regarding appliances connected, and (2) to avoid any claim by the customer that the crew filed a false report). In this case, the Collection Office person will fill out the "Unmetered Connection" form.

Following the performance of either 1. or 2., above, the crew shall disconnect and re-route the unmetered wiring so that energy used in the future will pass through the newly located meter. It is recommended that two actions follow the discovery and correction of such illegal connection:

1. The rewiring crew shall receive a bonus for each illegal connection found and corrected.
2. An estimate of the amount of electricity stolen will be prepared and entered into the customer's record as a "conditional un-paid bill," that is, it will be held in abeyance and no effort will be made to collect it so long as the customer remains current in the payment of monthly bills in the future. If, however, the customer is disconnected for non-payment at some time in the future, this old debt will be added to the amount that will need to be repaid before service is reconnected.

10. Increase service entrance capacity. It is thought that many of the illegal connections which presently exist were made because the customer's service entrance was not sufficiently large to handle new electrical loads which have been added. The customer could not or did not want to spend the money to upgrade this electrical service, so simply bypassed the meter and its associated circuit breakers.

The relocation of the meter provides an opportunity to simultaneously upgrade the service entrance capacity of the customer at no appreciable additional cost. Assuming the replacement meters of sufficient capacity can be provided, the service wires could be replaced with conductor of suitable size between the building feeder and the customer's present meter location. Any breaker or over-current protection which was provided on the illegal circuit could be moved to the old meter cabinet. There should be sufficient space in this cabinet for this addition since the old meter is no longer required and should be removed.

Even if the existing load does not require an upgrade of capacity, such upgrade should be considered so that the location will not require additional re-wiring in the future when electric heating, water heating, cooking or other large loads may be added.

THE FULL-SERVICE PHASE-IN PLAN
A PROGRAM FOR THE FINANCIAL RECOVERY
OR GEORGIAN ELECTRIC DISTRIBUTION COMPANIES

There is no quick solution to the electric supply and payment problem in Georgia, regardless of how much money may be provided by the development banks or strategic investors. Financial recovery requires that customers pay their bills on time and in full. Those who cannot pay, either through their own resources or through government assistance programs, may have to do without electricity. Meanwhile, efforts should be directed toward providing 24-hours per day electric service to those people who have the ability and willingness to pay.

A MODEL FOR SOLVING THE PROBLEM

One model which may be adapted for solving the problem is the same one used to electrify rural America 50 years ago. The procedure then was to go door-to-door "signing up" customers. Service was provided on a feeder-by-feeder basis only after sufficient numbers of customers signed agreements which would assure the financial feasibility of each proposed line extension project. The process required the prospective customer to:

- pay a small initial amount, and
- sign an agreement to pay monthly bills, including a minimum monthly amount.

The parallel application for Georgia today would be to go door-to-door signing up customers for 24-hour service. The utility would agree to provide 24-hour service on a feeder-by-feeder basis if all the customers on the feeder:

- paid an initial amount (a 3-month deposit as a guarantee of his bill), and
- agreed to pay on a regular monthly basis or have service disconnected.

SOME PREREQUISITES FOR THE PROGRAMM

Computerized Billing. A fundamental change required in the distribution company's commercial operations is a computerized billing system that would monitor individual customer payments each month so that service could be promptly disconnected for those customers who do not pay. The billing and collection system must be highly immune to employee embezzlement. *See Attachment a for plan computerized billing accounting*

Protected Feeders. The program will require close coordination with Sakenergo management and dispatchers so that feeders can be scheduled one-by-one for commitment to the 24-hour service program, and be protected from disconnection under the rotating blackout schedule., *See Attachment B for the criteria selecting suitable feeders.*

Threshold for Participation. The feeder must have 100% sign-up in order to be protected and receive 24-hour service. This will be extremely difficult to accomplish where there are many poor people and pensioners served by the feeder. Some options for achieving 100% sign-up are:

1. begin in the most affluent areas where the highest percentage of customers have the means to pay monthly bills;
2. arrange for government subsidies to augment the obligations of the very poor;
3. add a surcharge to bills of those who can pay to cover the shortfall created by those who cannot pay; and
4. disconnect service to all customers who cannot or will not sign up for the program.

Employee Incentives. The employees engaged in this program need to be paid substantially above present levels in order to establish their loyalty to the company and eliminate the practice of collaborating with the customers against the company. The pay system should include higher pay for higher collections. *See Attachment C for discussion of employee pay plan options..*

SOME NECESSARY ASSUMPTIONS

1. The principal constraint to 24-hour electric service in Georgia is money to buy fuel for the Gardabani plant, or to pay for imported power from neighboring countries. The money is not presently available because so many customers do not pay for their usage.
2. A very large number of customers can afford to pay for their electricity (some think the number is as high as 80%), and would do so if they could have normal 24-hour service.
3. The very poor who cannot pay for their own electricity may be accommodated to some degree by some type of government social welfare program.
4. While the transmission and distribution system is in poor repair, it is generally adequate¹ to deliver electric service at presently required levels on a 24-hour basis.

¹There are likely some overloaded residential circuits where electric heating has come into heavy use.

COMPUTERIZED BILLING

CONVERSION TO COMUTERIZED BILLING

Computerized billing does not require much money to implement. Both tire software and hardware can be installed at a relatively modest cost. The number of customers which should be converted to the billing program initially is about 4,000, and can be expanded in a matter of weeks to include all of the customers served by a single 110 kV to 10/6 kV substation. The limiting factor is the time required to enter customer data into the database.

(more details to follow)

Protected Feeders

Selecting the target area

The procedures outlined herein are expected to apply to any distribution company undertaking the "24-hour Phase-In" program. The concepts are to be tested in a pilot program beginning early in 1998.

1. Obtain road maps of the distribution company service territory on which a one-line diagram of the distribution network can be drawn.
2. Show on the maps the location of the distribution substations (110 to 10/6 kV), and the source of the 110 kV transmission lines feeding the substations. Does (or can) the 110 kV transmission line remain energized all the time? *The 24-hour Phase-In Program requires that the substation remain energized at all times.*
3. Show on the map the routing of the 10/6 kV feeder lines. Do each of the 10/6 kV feeder lines have switches at the substation which can be used for disconnecting individual feeders? *The 24-hour Phase-In program requires the capability to disconnect and reconnect individual 10/6 kV feeders at the distribution substation.*
4. Where the distribution network has the capability to back-feed one 10/6 kV feeder from another, show the "normally open" switch location, and the locations of other switches which can be used to isolate or connect feeder line segments.
5. Mark on the map the more affluent areas of the service territory which would be the best candidates for the 24-hour service proposal.
6. Determine the switching required to keep these targeted areas energized while other areas are disconnected under the rotating blackout (conservation) schedule.
7. In each case where feeder line segments can be kept energized on a 24-hour basis, mark the location and number of each distribution transformer (10/6 kV to 0.4 kV) on those feeder line segments, and the number of customers each transformer serves.
8. Prepare a table showing, in order of priority, the feeder segment,¹ transformer numbers, number of customers, and account numbers, somewhat as follows:

Feeder Segment	Transformers	Number of customers	Customer Ledger Books
4a	401, 402, 403	758	34, 35, 35, 38
4b	404, 405, 406, 407	920	33, 37, 44, 45, 46
1a	101, 102, 103, 104	840	10, 11, 14, 15

¹The word "segment" is used to indicate that only a portion of the feeder may remain energized, not necessarily all of it.

Confirm dispatching capability

When the potential feeder segments have been identified from the distribution standpoint, the next step would be to confirm with Sakenergo dispatchers and management that it would be physically possible to schedule switching in such a manner as to keep the designated feeders energized 24 hours per day. Note, however, that this step only addresses the technical issues, not the financial and administrative issues, which are elaborated below.

Specify terms and conditions of 24-hour wholesale supply

The 24-hour Phase-In program introduces two classes of customer service into the Georgia power sector. These classifications may be designated "full service" and "limited service," and it would be appropriate to charge a higher retail rate per kWh to customers receiving full service (for example, 5 tetri per kWh instead of 4.5). On the other hand, it may also be appropriate to charge a lower wholesale rate at delivery points (substations) where the electric bill is paid in full and on time. This might be addressed best as a discount for prompt payment (or penalty for late payment) of the wholesale power bill.

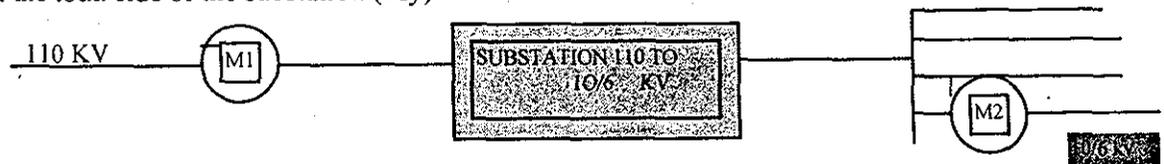
Wholesale bills and payments accounted for on a substation-by-substation basis

During the Phase-In period, wholesale power bills from Sakenergo to the DistCo should be submitted and paid on a substation by substation basis. This would allow a distinction between areas with full service and those with limited service. Billing rules for full-service feeders would be as follows:

Assume that the 110 to 10/6 kV substation is metered (M 1) on the *supply* side.



The basic requirement would be that the wholesale power bill for this substation must be paid in full and by the due date in order to maintain 24-hour service. However, during the Phase-In period, this will not be possible for the entire substation, so the requirement will need to be modified. This would require appropriate metering to be installed on one or more of the 10/6 kV feeders on the *load* side of the substation (M₂).



Under this scenario, the entire substation would remain energized 24 hours per day, but all of the 10/6 kV feeders would be subject to *conservation disconnects* except the *24-hour feeder* metered at M₂. In order to protect this feeder from conservation disconnects, the kWh metered by M₂ must be paid in full by the specified due date.

The itemized bill for this substation would appear somewhat as follows:

kWh delivered at M1
less 3% transformer loss
 Sub-total
less full-time use at M2
limited-use energy

Energy
50,000 kwh
 1,500
48,500 kw11
32 000
16,500 kWh

@ 3.2 tetri/kWh
@ 3.2 tetri/kWh

Amount

1,024 GEL
528 GEL

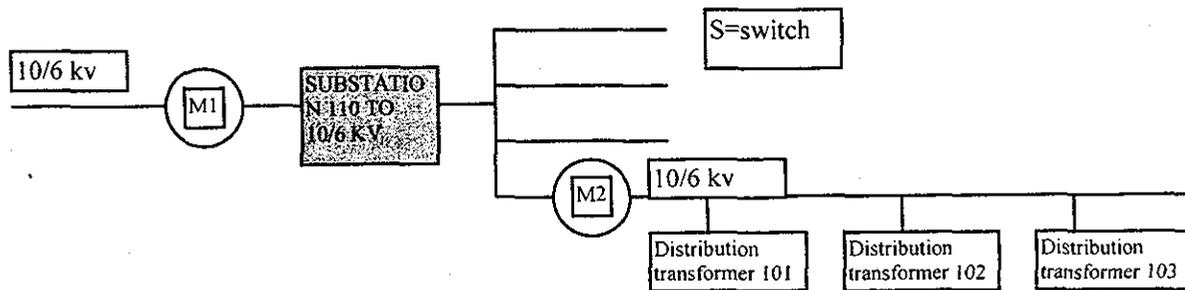
Payment to Sakenergo would be due within 10 days of the billing, and the amount that must be paid to maintain 24-hour service at the substation would be 100% of the *full-time* usage and 50% of the *limited-use* energy.

In order to assure that revenue from other circuits or other substations is not being used to subsidize the bill payment for the full-time circuit, there will be two requirements placed on the DistCo:

1. electronic recording meters will be required on the 24-hour circuits, and a printout of their monthly recordings must be submitted with the payment; and computerized
2. customer billing and payment records will be required, and a copy of the computerized billing ledger showing the amounts collected for the period must be submitted with the bill payment.

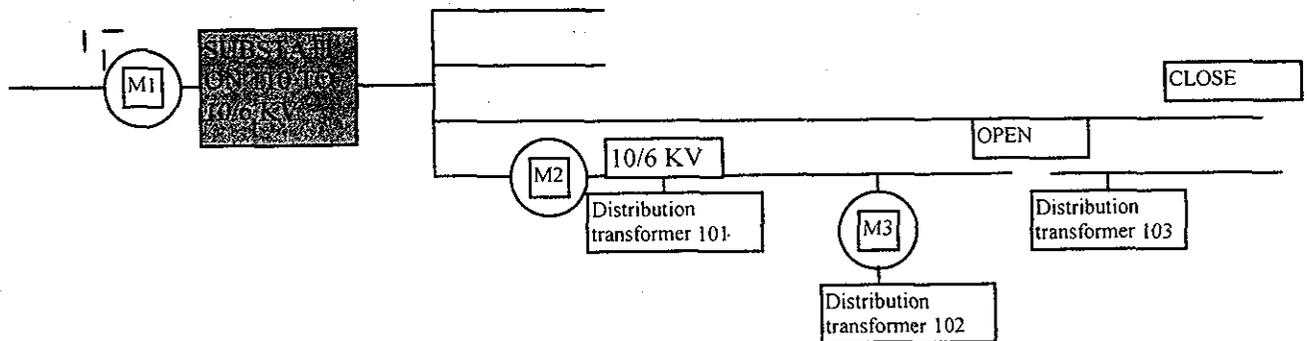
The above illustration is a very simplified scenario in that it assumes that all of the customers on the full-time circuit are subscribers to full-time service. While this may ultimately be true, there will be a long transition period before this becomes a reality, considering the large number of customers served by a single feeder.

Therefore, it will be necessary to develop additional methods of managing and accounting for full-time usage during the transition period. This will require a closer analysis of the 10/6 feeder which is to remain energized 24 hours per day. In the illustration below, this would be feeder number 1. This feeder will be supply a number of *distribution transformers* (10/6 kV to 0.4 kV). In this illustration only 3 transformers are shown, although there may be many more on the feeder



It is likely that the Phase-In of *full service* will occur one transformer at a time, and indeed, probably one 0.4 kV feeder at a time. Therefore, it will be necessary to provide switching and metering in such a manner as to isolate and measure consumption by distribution transform, and/or individual 0.4 kV feeders.

There are two approaches to isolating *full-service* transformers from *limited-service* transformers, and a combination of both techniques may be used, as in the following illustration, wherein only *transformer 10Z* is to receive full service.



In the above illustration, *feeder 1* will be opened at some appropriate switching location and back-fed by *feeder 2*. The load on all *down-stream* transformers on *feeder 1* would then be fed by *feeder 2*. This presumes that *feeder 2* has the capacity to carry the additional load.

Any transformers on the *upstream* side of the open point would continue to be fed by *feeder 1* through the meter M2, and would remain energized 24 hours a day. In the above illustration, it would be necessary for the distribution company to disconnect and reconnect transformer 101 individually in order to deny it 24-hour service. It would also be necessary to install a meter (M₃) on *transformer 102* in order to measure the kWh used under the full-service classification. The *full-service* feeder segment should be kept as short as possible in order minimize the number of *regular-service* transformers attached to it, and to reduce the possibility of other customers making illegal direct taps to the feeder. As the Phase-In program expands to include more and more customers, the switching and metering complexity may be minimized by expanding sequentially to contiguous transformers served by the same feeder. In other words, using the above illustration, when all the 0.4 kV feeders on *transformer 102* have full service, expand next to *transformer 101*, then proceed to 103.

There should probably be a Sakenergo rule that any feeder where *full-service* is undertaken must be completely converted to *full service* before a second feeder will be allowed *full-service* status. The reason for this is to (1) minimize the metering and billing complexity, and (2) force the distribution company to convert complete feeders as quickly as possible, not allowing a feeder project to drag on half finished for an indefinite period.

Until all of the transformers metered through M2 on *feeder 1* are on *full service*, the wholesale power bill calculations would not use the M2 readings, since some of that electricity would be delivered to *transformer 101*, which is on regular service. Therefore, in the above example, the Mg reading on *transformer 102* would be used in the wholesale power bill calculations, as follows:

kWh delivered at MD less 3%
transformer loss
Sub-total
less full-time use at M3 limited-
use energy

Energy
50,000 kWh1
1,500
48,500 kWh11
- 4000
44,500 kWh

@ 3.2 tetri/kWh
@ 3.2 tetri/kWh

Amount

128 GEL
1,424 GEL

Meter all 10/6 kV feeders at the substation

The above example describes the minimum metering that would be required to implement the rule of 100% payment for 24-hour service. However, as a practical matter, the Regulatory Commission may require that all 10/6 kV feeders from a 24-hour substation should be metered, and all billing ledgers for those feeders be provided for inspection to assure that the DistCo is not using *regular-service* revenue to subsidize the *full-service feeders*.

Once all feeders at a substation were fully subscribed to 24-hour service, the wholesale power bill would be based on the full substation meter reading, and the sub-metering of feeders or individual distribution transformers would no longer be a factor in calculating the bills for that substation.

Dealing with 0.4 kV feeders

It would be very desirable to convert all of the 0.4 kV feeders at each 10/6 kV to 0.4 kV transformer at the same time in order to minimize the complexity of administration and billing. If this is not possible, it will then be necessary to meter and switch the individual 0.4 kV feeders in somewhat the same manner as outlined above for the 10/6 kV feeders

APPENDIX B

"PROTECTED FEEDERS"

Protected Feeders

Selecting the target area

The procedures outlined herein are expected to apply to any distribution company undertaking the "24-hour Phase-In" program. The concepts are to be tested in a pilot program beginning early in 1998.

1. Obtain road maps of the distribution company service territory on which a one-line diagram of the distribution network can be drawn.
2. Show on the maps the location of the distribution substations (110 to 10/6 kV), and the source of the 110 kV transmission lines feeding the substations. Does (or can) the 110 kV transmission line remain energized all the time? *The 24-hour Phase-In Program requires that the substation remain energized at all times.*
3. Show on the map the routing of the 10/6 kV feeder lines. Do each of the 10/6 kV feeder lines have switches at the substation which can be used for disconnecting individual feeders? *The 24-hour Phase-In program requires the capability to disconnect and reconnect individual 10/6 kV feeders at the distribution substation.*
4. Where the distribution network has the capability to back-feed one 10/6 kV feeder from another, show the "normally open" switch location, and the locations of other switches which can be used to isolate or connect feeder line segments.
5. Mark on the map the more affluent areas of the service territory which would be the best candidates for the 24-hour service proposal.
6. Determine the switching required to keep these targeted areas energized while other areas are disconnected under the rotating blackout (conservation) schedule.
7. In each case where feeder line segments can be kept energized on a 24-hour basis, mark the location and number of each distribution transformer (10/6 kV to 0.4 kV) on those feeder line segments, and the number of customers each transformer serves.
8. Prepare a table showing, in order of priority, the feeder segment,¹ transformer numbers, number of customers, and account numbers, somewhat as follows:

<u>Feeder Segment</u>	<u>Transformers</u>	<u>Number of customers</u>	<u>Customer Ledger Books</u>
4a	401, 402,	758	34, 35, 35, 38
4b	403	920	33, 37, 44, 45, 46
1a	404, 405, 406, 407 101, 102, 103, 104	840	10, 11, 14, 15

¹The word "segment" is used to indicate that only a portion of the feeder may remain energized, not necessarily all of it.

Confirm dispatching capability

When the potential feeder segments have been identified from the distribution standpoint, the next step would be to confirm with Sakenergo dispatchers and management that it would be physically possible to schedule switching in such a manner as to keep the designated feeders energized 24 hours per day. Note, however, that this step only addresses the technical issues, not the financial and administrative issues, which are elaborated below.

Specify terms and conditions of 24-hour wholesale supply

The 24-hour Phase-In program introduces two classes of customer service into the Georgia power sector. These classifications may be designated "full service" and "limited service," and it would be appropriate to charge a higher retail rate per kWh to customers receiving full service (for example, 5 tetri per kWh instead of 4.5). On the other hand, it may also be appropriate to charge a lower wholesale rate at delivery points (substations) where the electric bill is paid in full and on time. This might be addressed best as a discount for prompt payment (or penalty for late payment) of the wholesale power bill.

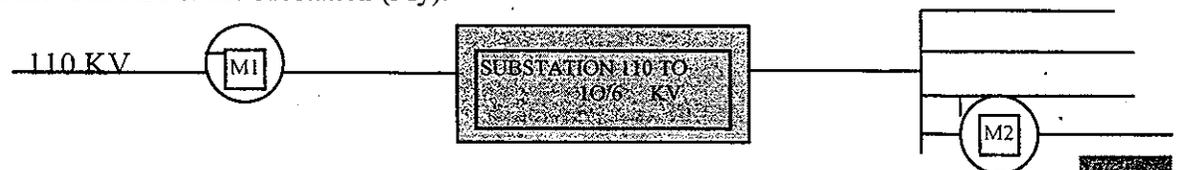
Wholesale bills and payments accounted for on a substation-by-substation basis

During the Phase-In period, wholesale power bills from Sakenergo to the DistCo should be submitted and paid on a substation by substation basis. This would allow a distinction between areas with full service and those with limited service. Billing rules for full-service feeders would be as follows:

Assume that the 110 to 10/6 kV substation is metered (M 1) on the *supply* side.



The basic requirement would be that the wholesale power bill for this substation must be paid in full and by the due date in order to maintain 24-hour service. However, during the Phase-In period, this will not be possible for the entire substation, so the requirement will need to be modified. This would require appropriate metering to be installed on one or more of the 10/6 kV feeders on the *load* side of the substation (My).



Under this scenario, the entire substation would remain energized 24 hours per day, but all of the 10/6 kV feeders would be subject to *conservation disconnects* except the *24-hour feeder* metered

at M2. In order to protect this feeder from conservation disconnects, the kWh metered by M2 must be paid in full by the specified due date.

The itemized bill for this substation would appear somewhat as follows:

kWh delivered at M1
less 3% transformer loss
 Sub-total
less full-time use at M2
limited-use energy

Energy
50,000 kwh
 1,500
48,500 kw11
32 000
16,500 kWh

@ 3.2 tetri/kWh
@ 3.2 tetri/kWh

Amount

1,024 GEL
528 GEL

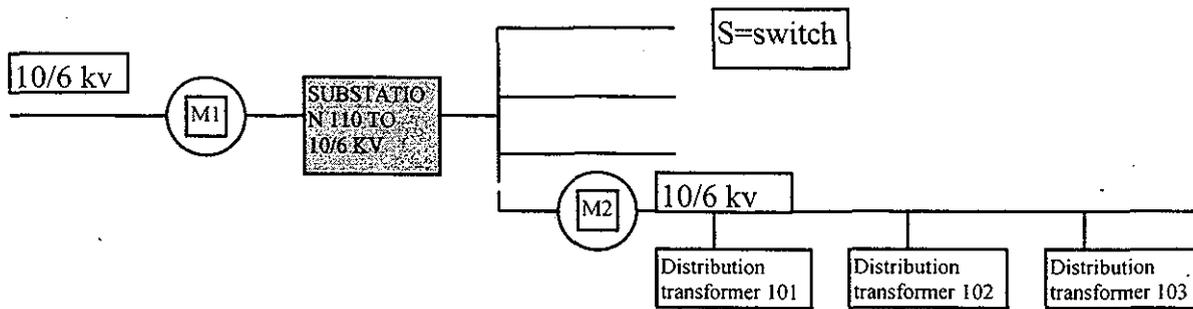
Payment to Sakenergo would be due within 10 days of the billing, and the amount that must be paid to maintain 24-hour service at the substation would be 100% of the *full-time* usage and 50% of the *limited-use* energy.

In order to assure that revenue from other circuits or other substations is not being used to subsidize the bill payment for the full-time circuit, there will be two requirements placed on the DistCo:

1. electronic recording meters will be required on the 24-hour circuits, and a printout of their monthly recordings must be submitted with the payment; and computerized
2. customer billing and payment records will be required, and a copy of the computerized billing ledger showing the amounts collected for the period must be submitted with the bill payment.

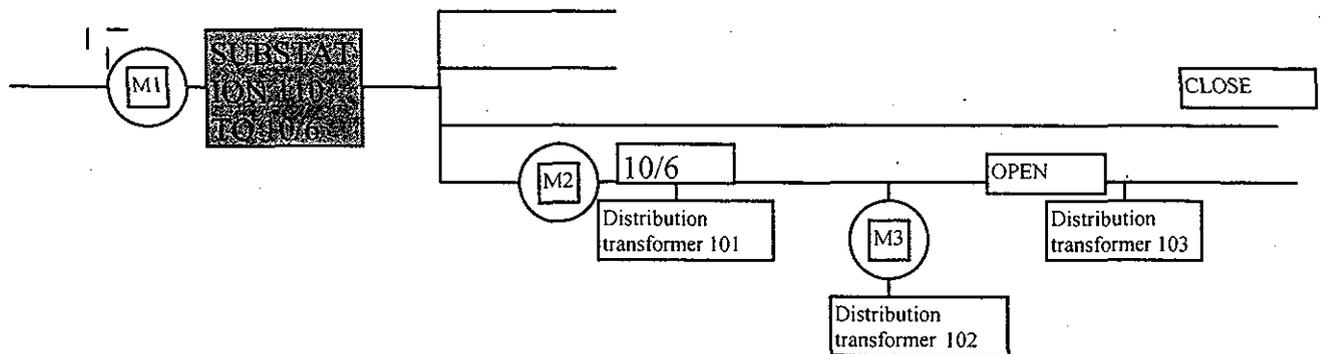
The above illustration is a very simplified scenario in that it assumes that all of the customers on the full-time circuit are subscribers to full-time service. While this may ultimately be true, there will be a long transition period before this becomes a reality, considering the large number of customers served by a single feeder.

Therefore, it will be necessary to develop additional methods of managing and accounting for full-time usage during the transition period. This will require a closer analysis of the 10/6 feeder which is to remain energized 24 hours per day. In the illustration below, this would be feeder number 1. This feeder will supply a number of *distribution transformers* (10/6 kV to 0.4 kV). In this illustration only 3 transformers are shown, although there may be many more on the feeder



It is likely that the Phase-In of *full service* will occur one transformer at a time, and indeed, probably one 0.4 kV feeder at a time. Therefore, it will be necessary to provide switching and metering in such a manner as to isolate and measure consumption by distribution transform, and/or individual 0.4 kV feeders.

There are two approaches to isolating *full-service* transformers from *limited-service* transformers, and a combination of both techniques may be used, as in the following illustration, wherein only *transformer 102* is to receive full service.



In the above illustration, *feeder 1* will be opened at some appropriate switching location and back-fed by *feeder 2*. The load on all *down-stream* transformers on *feeder 1* would then be fed by *feeder 2*. This presumes that *feeder 2* has the capacity to carry the additional load.

Any transformers on the *upstream* side of the open point would continue to be fed by *feeder 1* through the meter M2, and would remain energized 24 hours a day. In the above illustration, it would be necessary for the distribution company to disconnect and reconnect transformer 101 individually in order to deny it 24-hour service. It would also be necessary to install a meter (M₃) on *transformer 102* in order to measure the kWh used under the full-service classification. The *full-service* feeder segment should be kept as short as possible in order minimize the number of

regular-service transformers attached to it, and to reduce the possibility of other customers making illegal direct taps to the feeder. As the Phase-In program expands to include more and more customers, the switching and metering complexity may be minimized by expanding sequentially to *contiguous* transformers served by the same feeder. In other words, using the above illustration, when all the 0.4 kV feeders on *transformer 102* have full service, expand next to *transformer 101*, then proceed to *103*.

There should probably be a Sakenergo rule that any feeder where *full-service* is undertaken must be completely converted to *full service* before a second feeder will be allowed *full-service* status. The reason for this is to (1) minimize the metering and billing complexity, and (2) force the distribution company to convert complete feeders as quickly as possible, not allowing a feeder project to drag on half finished for an indefinite period.

Until all of the transformers metered through M2 on *feeder 1* are on *full service*, the wholesale power bill calculations would not use the M2 readings, since some of that electricity would be delivered to *transformer 101*, which is on regular service. Therefore, in the above example, the Mg reading on *transformer 102* would be used in the wholesale power bill calculations, as follows:

kWh delivered at MD less 3%
transformer loss
Sub-total
less full-time use at M3 limited-
use energy

Energy
50,000 kWh
1,500
48,500 kWh
- 4000
44,500 kWh

@ 3.2 tetri/kWh
@ 3.2 tetri/kWh

Amount
128 GEL
1,424 GEL

Meter all 10/6 kV feeders at the substation

The above example describes the minimum metering that would be required to implement the rule of 100% payment for 24-hour service. However, as a practical matter, the Regulatory Commission may require that all 10/6 kV feeders from a 24-hour substation should be metered, and all billing ledgers for those feeders be provided for inspection to assure that the DistCo is not using *regular-service* revenue to subsidize the *full-service feeders*.

Once all feeders at a substation were fully subscribed to 24-hour service, the wholesale power bill would be based on the full substation meter reading, and the sub-metering of feeders or individual distribution transformers would no longer be a factor in calculating the bills for that substation.

Dealing with 0.4 kV feeders

It would be very desirable to convert all of the 0.4 kV feeders at each 10/6 kV to 0.4 kV transformer at the same time in order to minimize the complexity of administration and billing. If this is not possible, it will then be necessary to meter and switch the individual 0.4 kV feeders in somewhat the same manner as outlined above for the 10/6 kV feeders

APPENDIX C

MONTHLY BILLING PROCEDURES

Quick Reference Menu Paths to Billing Functions

1. Print Meter Readings Sheets

Menu	Select:
Main Menu	F4 Maintenance Menu
Maintenance Menu	F2 Customer Maintenance
Customer Maintenance Menu	F10 List Customers
Customer Listing Menu	F5 List Meter Reading Sheets

2. Read Meters (not presently a computerized function)

3. Enter Meter Readings

Menu	Select:
Main Menu	F2 Billing Menu
Billing Menu	F2 Meter Reading Entry
Meter reading Entry Menu	F3 Enter Reading

4. Compute Bills

Menu	Select:
Main Menu	F2 Billing Menu
Billing Menu	F3 Compute Bills
Bill Computation Menu	F3 Compute Bills for a Range of Route Books

5. Print Billing Statistics (Preliminary, for edit)

Menu	Select:
Main Menu	F3 Report Menu
Report Menu	F2 Print Billing Statistics
Billing Statistics Menu	F3 Summarize Bills for a Range of Books

6. Print Bills

Menu	Select:
Main Menu	F2 Billing Menu
Billing Menu	F4 Print Bills

7. Print Billing Statistics (Final; same path as 5.)

8. Update Bills

Menu	Select:
Main Menu	F2 Billing Menu
Billing Menu	F5 Update Bills
Bill Updating Menu	F3 Update Bills For A, Range of Route Books

8a. Review Non-Updatable Bills

Menu	Select:
Main Menu	F2 Billing Menu
Billing Menu	F5 Update Bills
Bill Updating Menu	F4 Print a Non-Updatable Report

9. Run Accounts Receivable Report

Menu	Select:
Main Menu	F3 Report Menu
Report Menu	F3 Print an Accounts Receivable Summary

10. Clear Payments

Menu	Select:
Main Menu	

11. Deliver Bills (not a computerized function)

12. Enter Payments

Menu	Select:
Main Menu	F2 Billing Menu
Billing Menu	F2 Billing Menu
Payment Menu	F7 Payment Menu
Main Menu	F3 Enter Payments For Regular Customers

APPENDIX D

PROJECT SUPERVISORY POSITION DESCRIPTION

POSITION DESCRIPTION

METER READER

PURPOSE:

To provide individual customer meter readings to the billing office so that accurate electric bills can be produced every month.

REPORTS TO:

1. Project Manager - for administrative matters.
2. Billing Supervisor - for daily work direction.

DIRECTS:

None

PERFORMS PERSONALLY:

1. Examines existing customer ledger books and makes field investigations to assist in the grouping of customers into logical meter readings routes, each route consisting of the number of meters that can be comfortably read in an 8-hour work day. Assists in establishing, and revising from time to time, the most efficient route walk sequence of customers as they appear on meter reading sheets.
2. Reads customer meters on the schedule provided by the billing supervisor. The monthly schedule will contain 20 routes, each to be read during a single work day, and each route shall be read on approximately the same day every month, with adjustments as necessary to accommodate weekends and holidays.
3. Records each customer meter reading by pencil in the designated space on computer-generated meter reading sheets provided by the Billing Supervisor. The completed sheets are to be delivered to the billing office at the close of each work day, and the new sheets for the route to be read the next day to be picked up at the same time.
4. Where the meter is not readily accessible for reading, such as inside apartments or behind locked gates, attempts to gain access to obtain readings. Where access cannot be obtained, marks the account as "not accessible," indicating that an estimated reading will need to be used in preparing the bill. (The meter reader will not make the estimate).
5. Delivers informational fliers or instructions from the utility as required to customers on the route
6. Answers routine customer questions regarding electric consumption and bill payments, when appropriate.
7. Observes and reports cases of damaged meters, meter tampering, illegal connections, and wiring hazards.

APPENDIX D
POSITION DESCRIPTION

7. Performs daily backup of customer data in accordance with instructions and assures that backup disk(s) are safely stored.
8. Performs other duties as required or directed.

QUALIFICATIONS:

Persons assigned to this position shall have:

1. sufficient computer keyboard speed and dexterity as to perform computer data entry promptly and with minimum error.
2. general knowledge of and experience with programs, equipment and peripherals.
3. the ability to deal courteously and effectively with other employees in the normal course of work.

SALARY:

Paid at the first of each calendar month, based upon the number of full days worked during the previous calendar month.

Rate: 5 GEL per day

POSITION DESCRIPTION

BILL COURIER

PURPOSE:

To hand-deliver electric bills and other communications from the company to the customers.

REPORTS TO:

1. Project Manager - for administrative matters.
2. Billing Supervisor - for daily work direction.

DIRECTS:

None

PERFORMS PERSONALLY:

1. Delivers each day to the customer location electric bills which were produced the previous day. If customer is not present, leaves bill secured in a conspicuous place at the doorway, assuring it is protected from wind and rain.
2. For each bill which has been calculated from an estimated reading, and if customer is found at home, obtains actual meter reading and reports it to the billing office. If there is a significant difference between the actual and estimated reading, advise the customer he may request an adjustment in this month's bill when payment is made at the payment station. Otherwise, any difference will be automatically compensated for on the following month's bill.
3. Delivers informational or instructional memoranda or fliers to customer as directed. This would include, for example, disconnection notices, locations of payment stations, notices of special events, and changes in rules, procedures or tariffs.
4. Observes the customer premises for evidence of illegal or hazardous electric supply, and provides written reports on each case found to the billing office.
5. Responds courteously to customer inquiries about bills, payment procedures, and conditions of service. Provides answers personally where possible; otherwise directs customer to the proper office.
6. Familiarizes self with other functions of the billing office, including meter reading, bill preparation, and teller functions so that he may provide assistance on a part-time or temporary basis when appropriate, so long as it does not interfere with the performance of primary duties.
7. Performs other duties as required or directed.

QUALIFICATIONS:

Persons assigned to this position shall have:

1. the ability to read names and addresses, and use street maps and/or customer maps to find meter locations.
2. knowledge of metering equipment, house wiring, and utility service wiring to the extent that abnormalities can be recognized and reported.
- 3, the ability to deal courteously and effectively with customers encountered in the field in the normal course of work.

SALARY:

Paid at the first of each calendar month, based upon the number of full days worked during the previous calendar month.

Rate: 5 GEL per day

POSITION DESCRIPTION

SERVICE INSPECTOR

PURPOSE:

To patrol feeder lines, building wiring, customer service connections and metering equipment; to remove any unmetered connections to the distribution network; and to disconnect customers and remove services where payment is not made for electricity used.

REPORTS TO:

1. Project Manager - for administrative matters.
2. Billing Supervisor - for daily work direction.

DIRECTS:

None

PERFORMS PERSONALLY:

1. Inspects each day on a systematic basis designated 0.4 kV feeders, building wiring and customer connections.
2. Cuts down and removes all illegal wiring and apparatus which provides unmetered electric service to customers.
3. Disconnects metered service connections to individual customers who do not pay their electric bills, as directed by the Billing Supervisor. This will include the removal of wiring and meters as necessary to preclude self-reconnection by customer.
4. Reconnects service and reinstalls meters at disconnected locations after customer makes required payments; as directed by work orders provided by the Billing Supervisor.
5. Reports faulty and hazardous equipment and conditions to Operations and Maintenance supervisor for correction. Makes minor corrections which are within the scope of his abilities and in accordance with published directions.
6. Responds courteously to customer inquiries about bills, payment procedures, conditions of service, and disconnection rules. Provides answers personally where possible; otherwise directs customer to the proper office.
7. Familiarizes self with other functions of the billing office, including meter reading and bill delivery, so that he may provide assistance on a part-time or temporary basis when appropriate, so long as it does not interfere with the performance of primary duties.
8. Performs other duties as required or directed.

QUALIFICATIONS:

Persons assigned to this position shall have:

1. The ability to read names and addresses, and use street maps and/or customer maps to find meter locations.
2. Knowledge of metering equipment, house wiring, and utility service wiring to the extent that abnormalities can be recognized.
3. Knowledge and skills in the installation and removal of wiring connections and metering.
4. The ability to deal courteously and effectively with customers encountered in the field in the normal course of work.

SALARY:

Paid at the first of each calendar month, based upon the number of full days worked during the previous calendar month.

Rate: 5 GEL per day

POSITION DESCRIPTION

TELLER

PURPOSE:

To receive payments for electric bills from customers, provide receipts to customers, and to properly account for all cash received.

REPORTS TO:

1. Project Manager - for administrative matters.
2. Billing Supervisor - for daily work direction.

DIRECTS:

None

PERFORMS PERSONALLY:

1. Maintains on a daily basis, and during specified hours of operation, a cash drawer at a *secure office* location within a municipal building or other designated location.
2. Receives electric billing statement and cash from individual customers who come to the office to pay their bills. Determines the amount due, makes change, gives receipt to customer, and places billing stub and cash in drawer.
3. At end of day, and at other times as may be directed, counts cash received and balances against payment stubs in drawer.
4. Delivers cash and associated payment stubs to supervisor as directed. May also be required to fill out various daily cash receipt forms which may be required for accounting purposes.
5. Responds courteously to customer inquiries about bills, payment procedures, conditions of service, and disconnection rules. Provides answers personally where possible; otherwise directs customer to the proper office.
6. Familiarizes self with other functions of the billing office in order to provide assistance on a part-time or temporary basis when appropriate, so long as it does not interfere with the performance of primary duties.
7. Performs other duties as required or directed.

QUALIFICATIONS:

Persons assigned to this position shall have:

1. the ability to quickly and accurately count cash and make change.
2. the ability to use an electronic calculator and other office equipment.
3. neat and legible hand-writing.
4. the ability to deal courteously and effectively with customers encountered in the normal course of work.

SALARY:

Paid at the first of each calendar month, based upon the number of full days worked during the previous calendar month.

Rate: 5 GEL per day

APPENDIX E

PROJECT EMPLOYMENT AGREEMENTS

INDIVIDUAL EMPLOYMENT AGREEMENTS

EMPLOYEES

Personnel engaged in full-time support of the project shall be terminated from any present position in order to assume full-time employment with Hagler Bailly for the duration of the pilot project. Some employees may be engaged for shorter periods of time to perform specified functions in support of the project. In

either case, they are expected to devote a minimum of 40 hours per week exclusively to the work of the project. They shall be paid at a daily rate for 5 days per week. Payment will be made on or about the first day of each calendar month, based upon the number of days worked during the previous month. Position openings will be advertised in the Rustavi newspaper.

CONSULTANCIES

Supervisory personnel whose services are required in planning and administering the pilot project shall be retained as part-time consultants to Hagler Bailly. They shall assist Hagler Bailly in the development of plans and shall coordinate and integrate the work of pilot project employees with the normal activities of the Company. Specific tasks shall be enumerated, and milestones will be identified which will mark the successful completion of well-defined phases of the project. Compensation to consultants will be paid upon successful completion of project phases.

POSITIONS TO BE FILLED:

Full-time employee positions for billing operations for duration of pilot project:

Meter Reader

(1) _____

Billing Computer Operator

(2) _____

Bill Courier

(1) _____

Teller

(2) _____

Service Inspectors

(2) _____

Part-time employees for metering and service entrance relocation (to work on a daily basis as required in support of service entrance modification and feeder meter installations):

Meterman

(2) _____

Service Wiremen (4)

Policeman (as required to assist in enforcement of service disconnection)

Supervisory Consultants:

Project
Management _____

Computer
Operations _____

Customer Accounting
Operations _____

Field
Installations _____

INDIVIDUAL EMPLOYMENT AGREEMENT

(SAMPLE)

METER READER

This Employment Agreement is made by and between Hagler Bailly Consulting and

Name

Address

for the purpose of executing duties as described in the attached position description in support of a Commercialization Pilot Project in Rustavi, under the following terms and conditions:

1. Duration: Beginning _____ and continuing until the Rustavi pilot project is completed on or before December 31, 1998.
2. Hours of work: 8 hours per day, 5 days per week. If presently employed in another capacity, the individual shall take a formal leave of absence from that position and work full time (and only) on Pilot Project duties during normally scheduled working hours, Monday through Friday of each week.
3. Compensation: Payment for work performed under this agreement shall be at the rate of 5 Lari per day, paid in cash following the end of each calendar month. The payment rate is gross pay, and subject to normal payroll taxes and deduction.
4. Termination: This employment agreement may be terminated by the employer at any time that it is determined, in the sole judgment of the employer, that the performance of the employee is unsatisfactory, or for any other good and sufficient reason.

Signed

Employee

Date

Signed

Hagler Bailly

Date

Hagler Bailly Consulting

INDIVIDVAL CONSULTANCY AGREEMENT

(SAMPLE)

PILOT PROJECT ADMINISTRATION

This Agreement for Consulting Services is made by and between Hagler Bailly Consulting and

Name _____ Address _____

for the purpose of providing support as described in the attached Consultancy Requirement in the administration of a Commercialization Pilot Project in Rustavi, under the following terms and conditions:

1. Duration: Beginning _____ and continuing from Phase to Phase as outlined in the attached outline, or any amendments thereto.
2. Hours of work: Performance of the described consulting services shall be provided on a daily basis as required until each Phase of work is completed.
3. Compensation: Payment for work performed under this agreement shall be made in one lump sum upon the successful conclusion of any described Phase of work.
4. Reports: The consultant shall use the attached outline of work as a checklist of tasks to be performed. Starting and completion dates shall be recorded for each task. Supporting evidence of successful completion may be required by Hagler Bailly.
5. Termination: This employment agreement may be terminated by Hagler Bailly at any time that it is determined, in their sole judgment, that the performance of the consultant is unsatisfactory; and the consultant has failed to correct within a reasonable period of time any deficiencies in performance which have been reported to him/her in writing..

Signed _____
Consultant _____ Date _____

Signed _____
Hagler Bailly _____ Date _____

APPENDIX F

SPECIFICATIONS FOR CONSTRUCTION WORK TENDER

teqnikuri
specifikacia #2
samusaota-moculoba
14b-raionSi, romelic
ikvebeba-72, 73, 77
qvesadgurebidan

Technical Specification #2
Work in the 14b-th region fed by
substation: 72,73,77

CONTRACT FORMAT
Including
TECHNICAL SPECIFICATION
for
CUSTOMER ELECTRICAL CONVERSION WORKS
AT RUSTAVI

kontraqtis forma
rustavSi momxmarebelTa eleqtrogayvanilobis modifikaciis
teqnikuri specifikaciis
CaTvlit

Including: Labor and equipment for customer service
entrance modifications, basement rehabilitations, and
substation repairs.

TandarTulia: xelsawyoebis da samusaos daxasiaTeba saWiro
momxmarebelTa eleqtrogayvanilobis modifikaciisaTvis,
Senobebis sardafebis eleqtrogayvanilobaTa rehabilitaciisaTvis da
qvesadgurebis SesakeTblad

1. DEFINITIONS

Performer of work is hereinafter referred to as "the
Contractor" and USAID is hereinafter referred to as "the
Purchaser".

1. ganmartebani

samuSaos Semsrulebeli SemdgomSi moxseniebulia rogorc
~Semsrulebeli~ da USAID rogorc ~damkveTi~

2. QUANTITIES, AND PAYMENT

A. Customer Meter Relocation

1. The Purchaser shall purchase equipment and labor from the Contractor to move customer meters to new meter boxes at a central location for each stairway, and rehabilitate basement electrical installations, for all electricity customers living in buildings # 14 Leonidze st., #40 of microregion 14b (fed by substation 72) and buildings ## 10, 11, 12 of Microregion 14b and #10a Meskhishvili st. (fed by substation #73), ##22,24,26 Leonidze st. and buildings ##44,45 of Microregion 14b (fed by substation 77). A total of 822 customer meters shall be relocated in 41 stairways, and a total of 41 basement electricity installations shall be rehabilitated. At first basement must be rehabilitated in each stairway.
2. This work shall include the removal of meters from customer apartments, their installation in new boxes, new wiring (of at least a six millimeter cross-section) from new boxes to customer apartment connections on each landing, suitable conduit protection for new wiring (or placement in existing conduit) to prevent theft of electricity, cable connection from new boxes to existing distribution box installations in the basement, and other works.
3. All wire runs are to be protected in new conduit runs or in existing conduit. There shall be no surface runs of wiring or non-metal conduit or wiring covers. New conduit runs are to be at minimum of metal casing suitably shaped and attached to walls. The Contractor

2. raodenoba da godaxda

a... momxmarebelTa
mricxvelebis binebidan
gamotana

1. damkveTma unda Seisyidos da Semsrulebelma unda gayidos xelsawyoebi da Sroma, romelic saWiroa momxmarebelTa mricxvelebis binebidan gamosatanad TiToeuli sadarbazos qveda sarTulze dadgmul yuTebSi da sardafebis eleqtruli mowyobilobebis aRsadgenad. samusaobi unda ganxorcieldes rustavis 14b mikroraiionSi, leonizis q. 14, da s.m.k. saxli 40 (ikvebeba 72-e qvesadguridan), me-14 mikroraiionis #10, 11, 12 korpusebi da mesxivilis q.#10a (ikvebeba #73 qvesadguridan), leonizis q. #22,24,26 da 44-e,45-e korpusebi (ikvebeba 77-e) qvesadguridan). mTlianad saWiroa 41 sadarbazos 822 mosaxlis mricxvelebis binebidan gamotana da mTlianad 41 sardafis eleqtrul mowyobilobaTa aRdgena. amave dros TiToeul sadarbazosi upirveles yovlisa unda moxdes sardafis rehabilitacia.
2. samusaos unda moicavdes momxmarebelTa binebidan mricxvelebis gamotanas, maT dayenebas axal yuTebSi, axali

- gayvanilobis gakeTebas (minimum 6mm² mavTulis gamoyenebiT) oxlad damontajebuli yuTebidan sarTulze ganlagebul momxmarebelTa binebTan SemoerTebel sadenebamde, sadenebis saTanadod Casmas axial gamtarSi (an Zveli gamtaris gamoyenebas), raTa Tavidan iqnas acilebuli eleqtroenergiis moparva, mricxvelebis axali yuTis kabeliT mierTebas sardafSi ganlagebul ganawilebis yuTtan da sxva samuSaoebs.
3. yvela sadeni unda moTavsdes sadenebis axial gamtarSi an amisaTvis unda gamoyenebul iqnas arsebuli gamtarebi; arcerTi sadeni ar unda gadiodes zedapirze da sadenis gamtarod ar unda iyos gamoyenebuli arametalis konstruqciebi. axali sadenebi rogorc minimum unda moTavsebuli iqnas metalis budeebSi, romlebic saTanadod iqnebian kedelze mimagrebuli. ~Semsrulebelmo~ yoveli sadarbazos SemTxvevaSi unda daakonkretos Tu rogor moxdeba amis gakeTebo da unda SeuTanxmos es winaswar damkveTs.
 4. sarTulis yvela gamanawilebeli yuTi unda daiketos da bolti mWidrod moeWiros; ar unda arsebobdes dauxuravi gamanawilebeli yuTebi da daufaravi sadenebi.
 5. yovel sadarbazosi unda Catardes samuSaoebi, romlebic aucilebelia yoveli sarTulis saerTo ganaTebis gayvanilobis misaerTeblad sardafSi moTavsebul naTurastan da saerTo ganaTebis mricxvelTan, romelic damontajdeba mricxvelebis axal yuTis. naTuris Casamagrebili bude sardafSi unda moTavsdes 1m manZilze arsebuli ganawilebis yuTidan, 1.5m simaRleze iatakidan da magrad unda miemagros kedelze ori aranakleb 5m sigRzis boltiT (Surupi). calfaza saerTo moxmarebis eleqtroenergiis (ganaTebis) mricxveli unda damontajdes mricxvelebis yovel axal yuTis. masTan erTad amove yuTis saerTo moxmarebis eleqtroenergiaze unda damontajdes 5 amperi simZlavis avtomaturi amomTveli.
 6. mricxvelebis yovel axal yuTis unda iyos adgili yvela saWiro mricxvelisa da yoveli abonentis calfaza gamTisvelisaTvis.
 7. mricxvelebis axali yuTi unda iyos sakmaod mtkice konstruqciis, raTa Tavidan acilebul iqnas eleqtroenergiis qurdoba da vandalizmi (minimum 1.5mm sisqis), aRWurvili unda iyos saTanado saketebiT (ori mtkice petliT da ori magari saketiT, karebsa da korpuss Soris RreCos zoma ar unda aRematebodes 2mm-s, ar unda iyos gaRunuli da iolad unda iketebodes da iRebodes), myarad unda iyos kedelze mimagrebuli (pistoletis saSualebiT, SeduRebiT da ~Semsrulebelis~ mier miTitebuli sxva meTodebiT), unda SeiRebos da saTanado warwerebi gauketdes. Tu yuTebi iseT adgilas idgmeba, sadac kedlis zedapiri uswormasworoa da sadac darCenili RreCos (kedelsa da yuTs Soris) zoma 2mm-ze metia, unda Catardes saTanado modifikacia da RreCoebis imqvarad daxurva, rom darCenili RreCos zoma ar aRematebodes maqsimum 2mm-s. yvela axali yuTi saWiroo saTanadod iyos donulebuli. yuTis karebs unda hqondes fanjrebi, TviToeuli mricxvelis anaTvalis wasakiTxad, mricxvelebis yuTebi ise unda ganlagdes, rom mis karebebTan da saketebTan sakmao adgili iyos normaluri midgamisaTvis momsaxureobis gawevisaTvis. mricxvelebis axali yuTi unda moTavsdes Senobis meore sarTulze. yuTis Casaketad gamoyenebuli saketebi kontraqtorma winaswar unda aCvenos

- must specify how this will be achieved in every stairway, and reach agreement with the Purchasers representative.
4. All junction boxes shall be closed and screwed tight, there shall be no open junction boxes or otherwise exposed wires.
 5. For each stairway, wiring works shall be performed to connect common service lighting on each floor, and one light socket in the basement, to a common service meter located in each new meter box. The basement light socket shall be located in the basement within 1 meter distance of basement distribution box installations and at a height of 1.5 meters above the floor level and shall be strongly fixed to the wall with at least two bolts of length five centimeters. Space shall be provided in each new box for a one-phase common service meter for metering of this common service circuit. A one-phase disconnect and 5 Amp automatic disconnect shall be provided and installed for the common service circuit in each new box.
 6. Each new meter box shall provide space for all required meters, and shall contain a one-phase disconnect switch for each customer meter.
 7. The new box should be of strong enough construction to deter theft and vandalism (minimum wall thickness 1.5mm), should include suitable locking mechanisms (at least two strong hinges and two strong locks with minimum clearance between door and box in closed position of 2mm, with no binding edges between door and box, or warp in door), should be suitably affixed to the wall (by welding of box to steel rebar in wall – or by other suitable means specified by the Contractor), and should be appropriately painted and labeled. Where new boxes are installed against a surface that does not entirely cover the back of the box, and where greater than a 2mm gap occurs, then suitable modifications and sealing should be performed to assure adequate sealing of the box (2mm gap maximum). All new boxes should be appropriately electrically grounded. Meter boxes shall be located so that all meter box doors, locks, and latches have appropriate clearances for normal access and service. The doors shall have small windows for each meter. New meter boxes shall be located on the second floor of apartment buildings. The type of all locks and locking mechanisms that the Contractor proposes to use for new meter boxes should be demonstrated to the Purchaser and agreement should be reached with the Purchaser on the exact type of lock and locking mechanism to be used for all installations. All keys shall be numbered by the Contractor.
 8. To have the equal loads on each phase of power cable, Contractor has to distribute the loads by the following way: a) phase must supply the power to the 1,2,3 floors of the building, b) phase – to 4,5,6 floors, c) phase – to 7,8,9 floors (or only floors 7 and 8 in case of 8 floor buildings). Each phase shall be colored using red, yellow and green colors.
 9. Contractor must not use wires produced in Turkey (bad insulation). Contractor must check insulation of the

damkveTs da am or mxores Soris unda moxdes SeTanxmeba am saketebis gamoyenebis Sesazleblobis Sesaxeb. yvela gasaRebs saWiroa daedos saTanado damRa (nomeri) Semsruleblis mier.

8. imisaTvis rom datvirTvebi Tanabari iyos yovel fazoze, Semsrulebelma unda moaxdinis datvirTvis Semdegi ganawileba a) faza unda owodebdes eleqtroenergias 1,2,3 sarTuls, b) faza - 4,5,6 sarTuls, xolo g) faza - 7,8,9 sarTulebs (an mxolod 7 da 8 sarTuli, roca Senoba 8 sarTuliania). yoveli Semomyvani faza unda SeiRebos Sesabamisi ferit: wiTeli, yviTeli, mwvane.
9. Semsrulebelma ar unda gamoiyenos Turquli warmoebis mavTuli (cudi izolaciis gamo). Semsrulebelma unda Seamowmos izolacia megeriT.
10. Semsrulebeli unda darwmundes, rom momxmarebelTa binebi arWurvilia saTanado mcvelebiT an avtomaturi amomrTvelebiT. amisaTvis Semsrulebelma saWiroebisamebr unda Secvalos arsebuli dazianebuli moyyobitobani 32a avtomaturi amomrTvelebiT.
11. mricxvelebis axal yuTSi sxvadasxva fazis SiSveli gamtarebi da maTi mierTebani erTmaneTisagan daSorebuli unda iqnas aranakleb 30mm-iT. garda amisa, mricxvelebis yuTSi Semomavali Zalovani kabelis mierTebani erTmaneTisagan gamoyofili unda iyos saTanado izolatoriT (rogoricaa teqstolitis firfiTa aranakleb 3mm sisqisa), romelic 1sm-iT gadafaravs Ria gamtars yvela mimarTulebiT.
12. axali gayvanilobis ZvelTan SeerTebisas gamoyenebuli unda iqnas saTanado gadamyvanebi, gansakurbebiT ki maSin, roca xdeba spilenZis gamtars aluminis gamtarTan mierTeba. es saWiroa gamtarTa xarisxiani meqanikuri da eleqro mierTebebis uzrunvelsayofad. damatebiT saWiroa gamtars Ria nowilis izolaciit dafarva. im adgilebiT sadac xdeba aluminis alumize gadabma, saWiroa mavTulebis gadaxvevis sigrZe aranakleb 5sm-isa iyos da dafarul unda iqnas saizolacio lentis ori feniT moine (ara iafi Turquli warmoebis). kontraqtorma unda miuTitos Tu rogor apirebs mavTulebis erTmaneTze gadabmas da es winaswar unda SeuTanxmos damkveTis warmomadgenels.
13. ~Semsrulebelma~ unda ganaxorcielos mis mier dayenebuli mricxvelebis yuTis mierTeba sardaSi arsebul ganawilebis yuTidan sakutari, mosalodneli datvirTvis Sesabamisi, saTanado izolaciis mgone kabeliT. kabelis boloebi unda daiwnixos (daboloebebi). arcerTi es gamtari ar unda iyos zedapirze da unda iyos daculi da gayvanili ise, rogorc es 3-e punqTSia miTitebuli.
14. mricxvelebis gantagebis gegma mocemuli unda iyos yuTSi, raTa gaadvildes maTi wakiTxva. amis garda, mricxvelebis yuTidan momxmareblamde gakeTebuli gayvanilobis sqematuri diagrama unda mocemuli iyos yuTis kedelze Siga mxridan. sodarbazos gamanawilebel karadaSi mricxvelebis danomrva unda warmoebdes zemodan qvemoT, marcxnidan marjvni, TiToeul mricxvelze misamarTis miTitebiT; aseve yvela denmkveTi unda iyos danomrili misamarTebis mixedvit, marjvni dan marcxniv.
15. am samuSaos Semsrulebisas kontraqtorma unda moxsnas yvela aralegaluri mierTeba da momxmarebelTa sxva mavTulebi da unda moaTavsos isini aranakleb 2m-isa axali gayvanilobidan

wires using a magger.

10. Contractor must ensure, that all customer apartments are served with electricity by a suitable fuse or automatic disconnect. To accomplish this, Contractor shall replace broken equipment with 32Amp automatic disconnects.
11. Within new meter boxes all phase-to-phase bare wire and other connectors should be separated by at least 30 millimeters distance. In addition, main three phase wiring connections within new meter boxes should be separated by suitable insulating material (such as textalite plate of no less than three millimeters thickness) extending 1 cm in all directions around bare wiring.
12. Suitable connectors should be used for the connection of all wiring, particularly when copper and aluminum wires are connected together. This is to assure appropriate electrical and mechanical connections of all wiring. In addition, all connections shall be insulated so that no energized wire is exposed to contact. For aluminum to aluminum connections, twisted connections will be adequate although at least five centimeters of wire-to-wire twisting is required and at least two layers of insulation should be used (though not cheap thin Turkish insulation tape). The Contractor must specify how all connections are to be made, and reach agreement with the Purchasers representative on how connections will be made.
13. The Contractor shall make an electrical connection between his installations and the existing feeder distribution box located in the basement of the apartment building by means of a cable supplied by the Contractor suitably sized for load and insulated; all cable ends shall be connected by means of pressed cable shoes. None of this wiring shall be exposed, and should be protected by adequate conduit as described in section 3 above.
14. All meter locations within boxes shall be clearly labeled to facilitate easy meter reading. In addition, a schematic of stairwell wiring from the meter box to apartments must be located on the inside door of all meter cabinets. Meters in the new meter box must be numbered from the top to the bottom and from the left to the right, showing corresponding apartment numbers. Also all disconnectors must be numbered from the left to the right according to the apartment numbers.
15. In the process of performing this work the Contractor shall remove all "left lines" and other unofficial, unauthorized, or other customer wiring to a distance of at least two meters from all installations described in this technical specification.
16. It is understood that the Contractor will provide completed works in accordance with existing electricity industry rules, Georgian laws, and will be responsible for all tax and other required payments.
17. If, when performing work, the Contractor encounters a situation or equipment configuration that may present a danger of operation, then the Contractor must consult with the Purchaser's representative for guidance on resolving the matter in a suitable fashion.

da dayenebuli mowyobilobebidan.

16. iTvleba, rom ~Semsrulebeli~ Seasrulebs mTel samuSaos eleqtrawarmoebis wesebis dacviT, saqarTvelos kanonmdებობის Sesabamisad da valdebulia yvela gadasaxadze.
17. Tu samuSaos Semsrulebis Semsrulebeli gadaawydeba mowyobilobaTa an situaciis iseT mdgomareobas, rac momavaliSi safrTxes Seuqmnis eqspluatacias, maSin igi unda moeTaTbiros damkvetis warmomadgenelis raTa moxdes am problemis soTanado gadaWra.

b. sardafebis reabilitacia

1. damkveTma unda Seisyidos da Semsrulebelma unda gayidos xelsawyoebi da Sroma, rac unda ganxorcieldes rustavis 14b mikroraiონSi, leonizis q. 14, da s.m.k. saxli 40 (ikvebeba 72-e qvesadguridan), me-14b mikroraiონის #10, 11, 12 korpusebi da mesxivilis q.#10a (ikvebeba #73 qvesadguridan), leonizis q. #22,24,26 da s.m.k 44, 45 korpusebi (ikvebeba 77-e qvesadguridan). mTlianad saWiroa 41 sardafis eleqtrul mowyobilobaTa aRdgena. sardafis eleqtro-gayvanilobebSi igulisxmeba eleqtroenergiis ganawilebis yvela yuTi, arsebuli eleqtrogayvaniloba, liftis gamonawilebeli da eleqtrosazomi xelsawyoebi da yvela sxva eleqtromowyobiloba, romelic emsaxureba Senobis eleqtromomoragebas, magram ar aris aq moyvanili.
2. Semsrulebeli valdebulia aRadginos mTliani eleqtrogayvaniloba Senobis Semyvanidan momxmarebelTa mricxvelebis yuTebTan SemaerTebl gayvanilobamde, liftis gayvanilobamde da sxva wredebamde, garda tumboebis, sardafebis ganaTebis da momxmarebelTa sxva arakanonieri mierTebebisa, romlebic CaiWreba Semsruleblis mier da romlebic SemdgomSi mierTebul unda iqnas mricxvelebze relasis TanamSromlebis mier sardafebis reabilitaciis damTavrebis Semdeg.
3. 14-e mikroraiონის saxlebis sardafebSi ZiriTadad arsebobs ori tipis gayvaniloba da ganawilebis yuTebis ganlageba. esenia:
 - *sardafebi ori Zalovani gamonawilebeli yuTiT.* erTi yuTi awvdis eleqtroenergiას liftს, xolo meore momxmarebelTa wredebs.
 - *sardafebi erTi Zalovani gamonawilebeli yuTiT.* am yuTidan miwodeba eleqtroenergia roგoc liftებს, iseve momxmareblebs.
4. yvela sardafis gayvanilobaTa aRdgenisas Semsrulebelma unda aRadginos an saWiro SemTxvevaSi Secvalos yvela arsebuli Zalovani ganawilebis yuTi. am samuSaos mizans warmoadgens is, rom aRdgenili gayvaniloba funqcionirebdes normalurad, usafrTxod, Sesazlebeli iyos misi Semdgomi momsaxureoba da aRkveTil iqnas eleqtroenergiის moparvis Sesazlebloba. am miznebis misaRwevod samuSooTa moculoba unda moicavdes (magram ar Semoifarglebodes amiT) Semdeგs: Tu amas zemoTmoxseniebuli miznis Sesruleba moiTxovs Seicvalos an aRdგes daJanquli panelebi da sxva

B. Basement Rehabilitation

1. The Purchaser shall purchase equipment and labor from the Contractor to rehabilitate all electricity installations in the basements of apartment buildings # 14 Leonidze st., #40 of microregion 14b (fed by substation 72) and buildings ## 10, 11, 12 of Microregion 14b and #10a Meskhishvili st.(fed by substation #73), ##22,24,26 Leonidze st. and buildings ##44,45 of Microregion 14b (fed by substation 77). A total of 41 basement electricity installations shall be rehabilitated. Basement electricity installations include distribution boxes, conduit runs, junction boxes, elevator switchgear and metering equipment, and all other electricity installations not expressly mentioned herein.
2. The Contractor shall be charged with the rehabilitation of all electricity-related installations from the entrance in apartment buildings of distribution feeders to the connection of basement electricity installations with wiring serving customer meter boxes, elevators, and other circuits – except for unauthorized wiring for customer water pumps, basements, and other customer devices that shall be disconnected by the Contractor and shall be rewired through metered circuits by Relasi staff after rehabilitation.
3. There are basically two types of basement wiring and distribution box layouts in the basements of each stairway of buildings in the 14-th micro region. They are:
 - *Stairway basements with two electricity distribution boxes in the basement.* One of these boxes supplies power to elevator wiring; the other to customer wiring.
 - *Stairways with one electricity distribution box in the basement.* This box supplies power to both elevator and customer wiring.
4. For all basement wiring and distribution box configurations, the Contractor shall rehabilitate or replace all existing distribution boxes. The objective of this work is to achieve functionality, security, safety, facilitate access for service, and to deter determined efforts to steal electricity. To achieve these goals work shall include, but not be limited to: replacement of, or additions to, rusted paneling and other structural, support, and fixation members; replacement and/or addition of all required panels and doors; securing, with adequate locks, hinges, and other suitable means, the doors of all junction boxes and distribution boxes; the provision of at least two locks on all distribution box doors; and, the fitting of doors to minimum clearances of five millimeters on all edges of distribution and junction boxes. In addition, the distribution boxes

struqturuli elementebi, sayrdenebi da samagrebi; yvela panelisa da karebebis Secvla an/da damateba; saTanado saketebiT, karebis petlebiTa da sxva saWiro mowyobilobebiT aRWurva; Zalovani gamowilebis yuTebis karebebis saTanadod gamagreba; TiToeuli karebi aRWurvili unda iyos ori sakeliT mainc da karebebi maqsimalurd mWidrod unda ixurebodes, ise rom darCenili RreCos sidide ar aRematebodes 5mm-s gamowilebis yvela Zalovani da sarTulis gamanawilebeli yuTis yoveli napiridan. amis garda yuTebi unda sakmaod gamagrdes, raTa Tavidan acilebuli iqnas gurdoba da vandalizmi; amisaTvis yvela yuTis unda mieces Tavdapirveli saxe da simagre. yuTis Casaketad gamoyenebuli saketebi kontraqtorma winaswar unda aCvenas damkveTs da am or mxares Soris unda moxdes SeTanxmeba am saketebis gamoyenebis Sesazleblobis Sesaxeb.

5. yvela Zalovan gamanawilebel yuTsi Semsrulebelma unda Secvalos an aRadginos yvela mowyobiloba. am samuSaos mizans warmoadgens miRweul iqnas gamarTuli teqniki funqcionireba, momsaxureobis gowevis Sesazlebloba da eqspluataciis usafTxoeba. am miznis misaRwevad samuSaoTa moculoba unda moicavdes (magram ar Semoifarglebodes amIT) Semdegs: arsebuli amomrTelebis, izolatorebis, danebis, gufkebis, mcvelebis, salteebis, SemaerTelebis da sxva mowyobilobaTa aRdgena an gamocvla. yvela mowyobiloba unda iyos imave an imaze ukeTesi xarisxis, rac Tavdapirvelad iyo. unda gasufTavdes zedmeti mierTebebisagan yvela Semovali da gamovali xazi da unda dovrwmundeiT rom meqanikuri da eleqtruli mierTebebi kargi xarisxisaa. yvela aralegaluri gamomavali xazi unda godaiWras (magaliTad, romelic emsaxureba sardafis ganaTebas da wylis tumboebis). yvela Semomyvani faza unda SeiRebos Sesabamisi ferIT: yvITeli, mwvane da wTeli.
6. Semsrulebelma unda aRadginos yvela sarTulis gamanawilebeli yuTi, gamtarebi da sardafesi arsebuli sxva eleqtruli mowyobiloba, romlebic aucilebelia sardafesi ganlagebuli eleqtruli mowyobilobebis kargi funqcionirebisaTvis, momsaxureobis Semdgomi gowevisaTvis, eleqtraenergiis maparvis xelis Sesazlelad da eqspluataciis usafTxoebisaTvis. am miznis misaRwevad saWiro samuSaoTa moculoba unda moicavdes (magram ar Semoifarglebodes amIT) Semdegs: sarTulis gamanawilebeli yuTebis daxurva da dakelva, sadenebis saTanadod damagreba, yvela tipis yuTis aRdgena, sxvadasxva mowyobilobaTa saTanadod damagreba, yvela arsebuli gayvanilobis inspeqcia da dazianebul gayvanilobaTa, izolaciis da SemaerTelebis Secvla.
7. am samuSaos Sesrulebisas kontraqtorma unda moxsnas yvela aralegaluri mierTeba da momxmarebelTa sxva mavTulebi da unda moaTavsos isini aranakleb 2m-isa axali gayvanilobidan da dayenebuli mowyobilobebidan.
8. iTvleba, rom Semsrulebeli mTel samuSaos atarebs eleqtrasamuSaoebTan dokavSirebuli wesebis, saqarTvelos kanonmdებlobis, usafTxoebis teqniki normebis dacviT da pasuxismgebeli aris yvela godasaxodebze.
9. Tu samuSaos Sesrulebisas Semsrulebeli gadaawydeba mowyobilobaTa an situaciis iseT mdgomareobas, rac momavaliSi safrTxes Seuqmnis eqspluataciis, maSin igi unda moeTaTbiros damkveTis warmomodgenels raTa moxdes am

should be hardened enough to deter theft and vandalism: to this end all boxes shall be rehabilitated to their original design specifications of strength. The type of all locks and locking mechanisms that the Contractor proposes to use for new meter boxes should be demonstrated to the Purchaser and agreement should be reached with the Purchaser on the exact type of lock and locking mechanism to be used for all installations.

5. In all distribution boxes, Contractor shall replace or recondition all equipment. The objective of this work is to achieve technical functionality, facilitate access for service, and achieve safety in operation. To achieve these goals work shall include, but not be limited to: the rehabilitation or replacement of existing disconnectors, insulators, knives, gripping jaws, fuses, bus bars, connectors, fasteners, and other equipment. All equipment should be of equal or superior materials to original equipment. All connections with incoming and outgoing wiring should be cleaned and appropriate mechanical and electrical connections shall be ensured. All unauthorized outgoing cables shall be cut (such as those serving customer basement wiring and water pumps). Each phase must be colored using red, yellow and green colors.
6. The Contractor shall rehabilitate all junction boxes, conduit, and other electrical equipment in apartment building basements to ensure good functionality of basement electricity installations, facilitate access for service, to deter determined efforts to steal electricity, and to ensure safety and security in operation. This includes, but is not limited to, the closing and locking of junction boxes, the appropriate fixation of conduit, junction boxes, distribution boxes, and other equipment to appropriate mountings, and the inspection of all wiring and the replacement of all damaged wiring, insulators, and connectors.
7. In the process of performing this work the Contractor shall remove all "left lines" and other unofficial, unauthorized, or other customer wiring to a distance of at least two meters from all installations described in this technical specification.
8. It is understood that the Contractor will provide completed works in accordance with existing electricity industry rules, Georgian laws, and safety regulations, and will be responsible for all tax and other required payments. Georgian laws, and will be responsible for all tax and other required payments.
9. If, when performing work, the Contractor encounters a situation or equipment configuration that may present a danger of operation, then the Contractor must consult with the Purchaser's representative for guidance on resolving the matter in a suitable fashion.

C. Substation Roofs

1. The Purchaser shall purchase equipment and labor from

problemis soTanado gadaWra

g. qvesadgurebis saxuravebi

1. damkveTma unda Seisyidos da Semsrulebelma unda gayidos xelsawyoebi da Sroma, romelic soWiroa rusTavis 14-e mikroraionis 72, 73, 77 qvesadgurebis sareabilitaciad.
2. am kontraqtiT gansaxorcielebeli samuSaoebi gulixmobs yvela zemoTxsenebuli qvesadguris saxuravebis reabilitacias.
3. qvesadgurebis reabilitaciis mizans wormoadgens maTi funqcionirebis da usafTxoebis Tavdapirvel saproeqta doneze aRdgena. am miznebis misaRwevad unda Sesruldes qvemoTmoyvanili samuSaoebi. Sesrulebuli samuSaos xarisxi minimum iseTi mainc unda iyos, rogorc es 21-e mikroraionis qvesadgurebSia, risTvisac kontraqtorma unda inaxulos es qvesadgurebi.
4. Semsrulebelma unda ganaxorcielos saxuravebis dafarva ruberoidis ori feniT, risTvisac winaswar unda ganaxorcielos soWiro mosamzadebeli samuSaoebi. saxuravs unda gaukeTdes wylis Camosasvleli Rari ise, rom saxuravze fagrovili wyalis ar asvelebdes qvesadguris kedlebs. gadaxurva unda uzrunvelyofdes qvesadguris srul dacvas wimimis wylis Casvlisagon.
5. *parapetebi*: Semsrulebels ar evaleba parapetebis gakeTeba qvesadgurebis Senobebis saxuravebze. mas aseve ar evaleba zogierTi qvesadguris saxuravze arsebuli parapetebis reabilitacia.
6. iTvleba, rom Semsrulebeli mTel samuSaos atarebs eleqtrosamuSaoebTan dakavSirebuli wesebis, saqarTvelos kanonmdeblobis, usafTxoebis teqniki normebis dacvit da pasuxismgebeli aris yvela gadasaxadebze.

d. qvesadgurebi

1. damkveTma unda Seisyidos da Semsrulebelma unda gayidos xelsawyoebi da Sroma, romelic soWiroa rusTavis 14b mikroraionis 72,73 da 77 qvesadgurebis sareabilitaciad.
2. am kontraqtiT gansaxorcielebeli samuSaoebi gulixmobs yvela arsebuli qvesadgurebis dabali mxaris reabilitacias.
3. qvesadgurebis reabilitaciis mizans wormoadgens maTi funqcionirebis da usafTxoebis Tavdapirvel saproeqta doneze aRdgena. am miznebis misaRwevad unda Sesruldes qvemoTmoyvanili samuSaoebi. Sesrulebuli samuSaos xarisxi minimum iseTi mainc unda iyos, rogorc es 21-e mikroraionis qvesadgurebSia, risTvisac kontraqtorma unda inaxulos es qvesadgurebi.
4. *karebebi*. qvesadgurebis dabali mxareze unda daidgas rkini karebebi Tavisi CarCoebiT. karebebi unda SeiRebos, hqondes ori magari petli, erTi Sida saketi da ori gare saketi. karebebi ar unda iyos imaze patara da susti, vidre es 21-e mikroraionis qvesadgurebSi hagler bois mier

the Contractor to rehabilitate the roofs of substations 72,73, 77 of Rustavi's 14-th microregion.

2. Substation rehabilitation to be performed under this contract includes labor and equipment to rehabilitate the roofs of all specified substations.
3. The objective of substation rehabilitation to be performed under this contract is to restore the functionality, security, and safety contemplated by the original design and construction of the substations. To achieve these goals work described in the following shall be performed. For an example of the minimum quality of workmanship and materials required by this technical specification, the Contractor should inspect the recently rehabilitated substations in microregion 21.
4. The Contractor shall cover the roofs of the substations by two layers of a ruberoid. Before it the Contractor shall perform a necessary preparatory work. The roofs must have special canals for water to avoid the walls of the substations to get wet during a rain. Quality of work shall guarantee a full protection of the substation from water drainage during a rain.
5. **Parapets**: The Contractor is not responsible for construction of parapets on the roofs of the substations. If a substation already has the parapets, the contractor is not responsible for their rehabilitation.
6. It is understood that the Contractor will provide completed works in accordance with existing electricity industry rules, Georgian laws, and safety regulations, and will be responsible for all tax and other required payments.

D. Substations

1. The Purchaser shall purchase equipment and labor from the Contractor to rehabilitate substations 72,73 and 77 in the 14b micro region of Rustavi.
2. Substation rehabilitation to be performed under this contract includes labor and equipment to rehabilitate low side installations at all specified substations.
3. The objective of substation rehabilitation to be performed under this contract is to restore the functionality, security, and safety contemplated by the original design and construction of the substations. To achieve these goals work described in the following shall be performed. For an example of the minimum quality of workmanship and materials required by this technical specification, the Contractor should inspect the recently rehabilitated substations in microregion 21.
4. **Doors**. Steel substation low-side switchroom doors and door frames shall be repaired or installed. Doors shall be painted, have at least two strong hinges, one inside lock, and two outside locks. All aspects of the doors shall be no smaller or weaker than the new doors installed by Hagler Bailly at substations in the 21-st microregion.
5. **Panels**. Panel doors within the low-side switch room shall be adjusted so that they close flush against

dayenebuli karebebia.

5. *panelebi*. qvesadgurSi dabali Zabvis mxoreze panelebis karebebi ise unda iqnas morgებული, rom iolad da mWidrod ixurebodes da iolad iRebodes.
6. *arrixva*. qvesadgurebis yvela fiderze kontraqtorma unda daayenos eTi an ori mricxveli, romlebsac mas hagler bai miawvdis. kontraqtorma unda moaxdinis denis transformatorebisa da mricxvelebis Sesabamisi mierTebani. Semsrulebeli valdebulia yvela denis transformatorisa da saWiro mavTulebis SeZenaze.
7. *mricxvelebis yutebi*. kontraqtorma unda daamzados mricxvelebis TiTo yuTi TiTo qvesadgurisaTvis. yuTis zoma sakmarisi unda iyos masSi yvela mricxvelis dasayeneblad. qvesadgurebSi dadgeba amerikuli mricxvelebi da amitom kontraqtorma unda miRos informacia damkveTisagan am mricxvelebis zomebis Sesaxeb. mricxvelebis yuTs unda hqondes ori petli da ori gare saketi. yuTi damzadebuli unda iyos 1.5mm furclovani liTonisagan mainc, karebsa da korpuss Soris RreCo ar unda aRematebodes 2mm-s, karebi ar unda iyos gaRunuli da boloebi ar unda uSlidnen xels mis Tavisufflad gaReba-daxurvas.
8. *amomrTvelebi*. yvela 0.4kv fiderebze kontraqtorma unda gamocvalos an aRadginos yvela mowyobiloba. am samuSaos mizania miRweul iqnas teqniki funqcionireba, momsaxureobis gawewis Sesazlebloba da eqspluataciis usafrTxoeba. am miznebis misaRwevad samuSao unda moicavdes, magram ar Semoifarglebodes SemdegiT: arsebuli amomrTvelebis, izolatorebis, danebis, gulkebis, mcvelebis, salteebis, godamyvanebis da sxva mowyobilobaTa reabilitacia an gamocvla. yvela mowyobilobas unda hqondes Tavdapirveli an ukeTesi saxe. yvela Semomyvani da gamovals xazebis SeerTebis adgilebi unda gaiwmindos da moxdes maTi saTonadod gadaerTeba.
9. iTvleba, rom Semsrulebeli mTel samuSaos atarebs eleqtrosamuSaoebTan dakavSirebuli wesebis, saqarTvelos kanonmdებლობის, usafrTxoebis teqniki normebis dacvit da pasuxismgebeli aris yvela godasaxadebze

e. mricxvelebi da amomrTvelebi

1. damkveTi Semsrulebels godascems dasayeneblad saWiro roodenobis eleqtromricxvelebs, raTa yvela momxmarebels gaaCndes mricxveli (bevri arsebuli mricxveli moparuli an dazianebuli iqneba). saWiroo rusuli 40a mricxvelebis dayeneba garda sadarbazos saerTo ganaTebisa da palara binebisa, sadac SeiZleba gamoyenebuli iqnas 5a an 17a rusuli mricxvelebi;
2. Semsrulebeli valdebulia uzrunvelyos yvela gareT gamotanili mricxvelis, saerTo moxmarebis eleqtroenergiis da liftis mricxvelebis dayalibebo da maTze soxelmwifo luqis dadeba.

supports and do not freely swing open or are difficult to close.

6. **Metering.** The Contractor shall install one or two meters provided by Hagler Bailly on feeders within the substations. The Contractor shall make appropriate cable connections between meters, CTs, and other installations. The Contractor shall provide all required CTs, wire, and other materials.
7. **Meter Boxes.** The Contractor shall fabricate one meter box per substation. The meter box will be large enough to contain all required meters. The Purchaser intends to use US electronic meters in substations and so the Contractor should get dimensions of these meters from the Purchaser before designing or fabricating any boxes. The meter boxes shall be made of at least two hinges and two outside locks. Boxes shall be of at least 1.5mm steel thickness, shall have door and other gaps no greater than 2mm, and doors shall not be warped, bind to edges, or be restricted in opening to provide clearance for any required meter servicing.
8. **Switches.** For all 0.4 kV feeders, the Contractor shall replace or recondition all equipment. The objective of this work is to achieve technical functionality, facilitate access for service, and achieve safety in operation. To achieve these goals work shall include, but not be limited to: the rehabilitation or replacement of existing disconnectors, insulators, knives, gripping jaws, fuses, bus bars, connectors, fasteners, and other equipment. All equipment should be of equal or superior materials to original equipment. All connections with incoming and outgoing wiring should be cleaned and appropriate mechanical and electrical connections shall be ensured.
9. It is understood that the Contractor will provide completed works in accordance with existing electricity industry rules, Georgian laws, and safety regulations, and will be responsible for all tax and other required payments.

E. Meters and Disconnectors

1. The Purchaser will provide all meters required to ensure that all customers have an adequate meter (many meters will be stolen, missing, or broken). At least standard Russian 40-Amp meters are required, though in some situations – such as common service meters and smaller apartments – 5 and 17-Amp meters can be used.
2. The Contractor is to provide for the calibration and State Standard Board sealing of all customer meters moved outside apartments, all common service meters, and all lift meters.
3. The Contractor is to work closely with the Purchasers representative to ensure that an excess number of meters are not used. All meters that are not used for customer installations under this contract are to be returned to the Purchaser or Purchaser's representative.
4. The Contractor shall replace as needed the old damaged disconnectors of customers with a new automatic

3. Semsrulebelma mWidrod unda iTanamSromlos damkveTTan imaSi dasarwmuneblad, rom gamoyenebuli ar iqneba zedmeti mricxvelebi. yvela is mricxveli, romelic gadarCebo Semsrulebels unda dabrundebs damkveTs an mis warmomadgenels.
4. Semsrulebelma momxmarebels saWiroebisamebr unda Seucvalos dozianebuli amomrTvelebi da dauyenos axali 32a avtomaturi amomrTveli. sadarbazos ganaTebaze unda dodges 5a avtomaturi amomrTveli. amomrTvelebi adeqvaturi unda iyos im simensis firmis amomrTvelebisa, romelic hagler baim daayeno 21--e mikroraionSi.
5. Tu momxmarebeli SeiZens liffis mricxvels da Sesabamis denis transformatorebs, Semsrulebelma unda uzrunvelyos maTi damontaJeba.

v. gadaxda

1. kontraqtze xelmoweris Semdeg damkveTma unda gadauxadas Semsrulebels kontraqtis safasuris noxevari winaswar, saWiro masalebis Sesazend.
2. donarCeni nawili gadaxdil unda iqnas samuSaos samuSaos dasrulebis da miReba-Caborebis aqtis gaformebis Semdeg damkveTsa da Semsrulebels Soris.
3. mTeli samuSao unda dasruldes (SeTanxmdeba damkveTTan) — samuSao dRis ganmavlobaSi, im dRidan, roca damkveTi gadauxdis Semsrulebels masalebis Rirebulebas. Tu moxda dagvianeba kontraqtis SesrulebaSi Semsrulebeli yovel gadacilebul dReze dajarimdeba kontraqtis Rirebulebis 0.5%-iT. Tu damkveTi droulad ar gadauxdis fuls Semsrulebels, igi yovel gadacilebul dReze dajarimdeba darCenili gadasaxdeli Tanxis 0.5%-iT. **“damkveTis” mier 3.1. punqtSi moyvanili valdebulebebis Seusruleblobis SemTxvevaSi (eleqtroenergiis miwodebis uzrunvelyofa) samuSaos Sesrulebis vada gaizrdeba Sesabamisi droiT.**

3. kontraqtis Sesruleba

- 3.1 ‘damkveTis~ warmomadgeneli Semsruleblis~ mier kontraqtis Sesrulebaze aris kompania hagler bai. hagler bai daniSnavs da meTvalyureobas gauwevs kontraqtis koordinators samuSao adgilze, saWiro momsaxurebis (eleqtroenergetikuli momsaxureba) miwodebis mizniT kontraqtis koordinatori kontraqtis mTeli drois ganmavlobaSi unda iyos Sesrulebis adgilze.
- 3.2 damkveTis warmomadgenelis mier koordinaciis Seusruleblobis SemTxvevaSi Semsrulebelma werilobiT unda acnobos —

disconnector of at least 32-Amp size, though adequately suited for electricity capacity of wiring and metering installations. For common service circuits 5-Amp disconnectors shall be used. Disconnectors should be equivalent or superior in manufacture and functionality to the Siemens disconnectors used recently by Hagler Bailly in Rustavi’s region 21.

5. In cases when customers purchase lift meters, CTs, and required wiring during the period of execution of this contract, the Contractor shall install these meters.

F. Payment

1. After signing this contract the Purchaser shall make a payment of a half of the contract amount to cover the purchase of materials required for the performance of this contract.
2. The balance of the contract value shall be paid after the completion, satisfactory thorough inspection, and signing a reception report by the Purchaser.
3. All work shall be finished by the Contractor within _____ (TO BE SPECIFIED BY CONTRACTOR) working days of the date when the Purchaser makes a cash payment to the Contractor for materials. Delays in completion by the Contractor shall be penalized by a daily discount of 0.5% in the balance due from the Purchaser upon completion of work. Any delay in payment by the Purchaser shall be penalized by a daily surcharge of 0.5% of the balance owed. In case of non-performance by the Purchaser of the task specified in the Clause 3.1 below (provision of electricity service), the work time shall be extended by corresponding period.

3. PERFORMANCE OF CONTRACT

- 3.1 The Purchaser’s representative for the performance of this contract shall be Hagler Bailly. Hagler Bailly will appoint and supervise a contract coordinator to assure appropriate workspace, provision of required services (such as electricity service for power tool operation). The contract coordinator will be available on-site to the Contractor at all times during the period of performance of this contract. All old reinstalled materials must be passed to the Purchaser.
- 3.2 Any non-performance of required coordination by Purchaser’s representative should be immediately reported by the Contractor in writing to _____ (TO BE SPECIFIED) at USAID in Tbilisi.
- 3.3 It is understood that the Contractor will provide completed works according to existing rules and consistent with all relevant Georgian laws. Particular attention shall be paid to ensure compliance with all safety and security regulations and rules.
- 3.4 It is understood that a rigorous inspection of installations shall be performed before payment is made. However, there may be some follow-up or clean-up

(დავსტდება USAID-ის მერ).

- 3.3 კონტრაქტორი შესრულებს მთელ სამუშაოს საკარტველოსი მოგმედი
wesebisa და კანონდებლობის შესაბამისად. განსაკუთრებული
yuradReba unda დაქმნის უსაფრთხოების wesebis დაცვას.
- 3.4 არივ მხარე დაქმნება, რომ გადავადმდე unda მოხდეს
შესრულებული სამუშაოს დეტალური ინსპექტირება. ამასთან ერთად
შესაზღვრება, რომ გადავადის შემდეგ საურო იყოს რაიმე
დამატებითი სამუშაო ან გომმენდის სამუშაო. ამისათვის
შესრულებელმა unda უზრუნველყოს მუშახელი, რათა საუროების
შემტყვევასი შესაზღვრული იყოს მცირე მოცულობის დასრულების და
გომმენდის სამუშაოების დატარება.

4. გარანტიები

- 4.1 შესრულებული იქნება გარანტიის, რომ შესრულებული სამუშაოს და
მასალებს არ ეგნება დეფექტები.
- 4.2 შესრულებული იქნება გარანტიის შესრულებული სამუშაოების
ხარისხიანობაზე კონტრაქტის დასრულებისათვის ტანხის გადავადთან
ერთი წლის ვადით.

5. ფორს მაჯორი

- 5.1 ვინამდებარე კონტრაქტის შესრულებლობა, გომოვუელი პირობებით,
რომელიც არ ევმდებარება მხარეთა კონტროლს, როგორცაა
ბუნებრივი კატასტროფებით, ამინდის ეგსტრემალური პირობები,
ხანჯარი, ომი, გაფიცვები, გადატანის სასუალებათა არარსებობა,
სამოგალაყო არეულობები, სახელმწიფოს დატყვევება, ან
ევმდებარება არავითარ პასუხისმგებლობას. ფორს მაჯორი
ავტომატურად ვრდის ამ კონტრაქტით გატვირთვების
ვალდებულებების შესრულების პერიოდს. თუ ფორს მაჯორი გრძელდება
ეგვს ტვეზე მეტ ხანს, მხარეებს შეუზღუდონ გომოვითონ კონტრაქტი.
- 5.2 ფორს მაჯორული სიტუაციის განმავლობასი როგორც დამკვეთი, ისე
შესრულებული თავისუფლდება 2 პუნქტის დაწერილი ვიროების
გადავადისაგან.

6. მტლიანი კონტრაქტი

- 6.1 ვინამდებარე კონტრაქტი შეიცავს მტლიანი ინფორმაციის მხარეთა
შესახებ.

work that may be required after payment is made. For this purpose, it is understood that the Contractor shall make available workers to perform such works to the extent required for reasonable follow-up and clean-up.

4. WARRANTY

- 4.1 The Contractor warrants that the installations shall be free of defects in material and workmanship.
- 4.2 The Contractor warrants the quality of workmanship of all works for a period of one year after the payment of the balance upon completion of this contract.

5. FORCE MAJEURE

- 5.1 No liability shall result from the non-performance of any obligation of this Contract caused by circumstances beyond the control of the non-performing party such as but without prejudice to the generality of the foregoing, natural catastrophes, extreme weather conditions, fire, war, strikes, non-availability of means of carriage, hostilities, civil unrest, governmental interference, for that period commencing from the time at which notice of the existence of the Force Majeure is given by the non-performing party and termination when the Force Majeure has ended or would have ended had the non-performing party taken those steps which it could reasonably have been expected to take in order to overcome the Force Majeure. Force Majeure shall automatically extend the period for performing the obligations under this Contract. If a Force Majeure continues for more than six months, either party may terminate this Contract as to the Products not yet delivered.
- 5.2 During any period of Force Majeure circumstances both the Contractor and the Purchaser are released from the payment penalties described in section 2 above.

6. ENTIRE CONTRACT

- 6.1 This Contract contains the entire understanding of the parties with respect to its subject matter.
- 6.2 USAID is empowered to enter into this contract for execution of these works under its agreement with the Mayor of Rustavi, and the Relasi distribution company, to perform the distribution commercialization pilot project in Rustavi.

7. LIABILITY

- 7.1 The maximum liability of Contractor to the Purchaser arising out of or in connection with any sale or use of any claim based upon contract warranty, tort including negligence or otherwise, shall, save as relates to claims

6.2 USAID uflbamოსილი დანაშაულებანი დასაბუთებულია უსაფრთხოების რეგულაციების, განათლების კომპანია რეგულაციების დასაბუთებით განათლების კვალიერის კომერციალიზაციის საპილოტო პროექტის განხორციელებად რუსეთის მე-14 მიკრორაიონში.

7. ვალდებულებანი

7.1. მაქსიმალური ვალდებულება შემსრულებლისა დამკვეთსადმი, რომელიც შეიძლება გამოწვეული იყოს ნებისმიერი საცირიტ (კონტრაქტის გარანტიის შესახებ, შემსრულებლის დადებითი გამოწვეული ზიანი (ან სიკვდილი)) არც ერთ შემთხვევაში არ შეიძლება აღრმობდეს დამკვეთის მიერ შემსრულებლისთვის გადახდილ ტანხას. დამკვეთი ტანხაში, რომ შემსრულებელი არ არის პასუხისმგებელი მომხმარებლის მოგების დაკარგვაზე ან ნებისმიერ არაპირდაპირ დაზიანებებზე მოტი უარმოსობის მიუხედავად.

arising from death or personal injury as a result of the Contractor's negligent acts or omissions, in no case exceed the actual amount paid to the Contractor by the Purchaser for performance of this contract. The Purchaser agrees that in no event shall the Contractor be liable for any loss of profit or any indirect incidental or consequential damages however arising.

8. ARBITRATION AND GOVERNING LAW

- 8.1 All disputes which arise out of or in connection with this Contract shall be settled by means of negotiations between the Parties.
- 8.2 If the Parties cannot settle any dispute within ninety (90) days after the first conferring, then such dispute shall be settled according to Georgian legislation.

For the Contractor
Purchaser

For the

8. არბიტრაჟი და მმართველი კანონი

- 8.1 დანაშაულებანი კონტრაქტის დაკავშირებული ყველა უთანხმოება და გადაწყვეტის მხარეა შორის მოლაპარაკებით.
- 8.2 თუ მხარეები ვერ გადაწყვეტენ უთანხმოებას 90 დღის განმავლობაში პირველი უთანხმოების უარმოსობიდან, უთანხმოება და გადაწყვეტის საკარტველოს კანონმდებლობის მიხედვით.

შემსრულებელი

დამკვეთი

APPENDIX G

PUBLIC INFORMATION PROGRAM

PUBLIC INFORMATION PROGRAM

PROMOTING CUSTOMER ACCEPTANCE OF COMMERCIAL REFORM

In order for the Commercial Reform program to be successful, customers and other interested parties must be fully informed regarding:

- the overall objectives of the program,
- the methodologies being employed, and
- the rationale behind the methodologies.

The strategy should be to use various media often in order to keep the issue constantly before the people, raise their awareness, gain their support, and encourage them that things are getting better by keeping them informed of progress.

There are several audiences for the Public Information program

1. Customers directly involved in the Pilot Project.
2. Other Customers of the utility.
3. Other employees of the utility not directly involved in the Pilot Project.
4. Local municipal officials.
5. Government of Georgia officials, including other distribution companies.
6. Members of the International Community working within Georgia who are involved in electric power related issues.

The general message to be delivered to all customers, whether Pilot Project participants or not includes information regarding:

- the true condition of the electric power delivery system in Georgia,
- what needs to be done to improve it,
- the steps being undertaken by the Distributor, and
- the degree of participation and commitment required of the customers.

In order to educate the customers, the "message" must be defined and refined to its simplest, most fundamental terms, and then all practical media must be used to deliver the message. The message to consumers may be divided into four elements, as follows:

a. THE PROBLEM: NON-PAYMENT

The shortage of power and the daily blackouts in Georgia can be resolved only if people pay fully for the electricity they use. Payment is necessary to buy fuel for the power plants, or to import power from other countries when necessary. The Government of Georgia does not have the tax revenue to subsidize power generation costs beyond the present level.

b. THE SOLUTION: DISCONNECTION FOR NON-PAYMENT

The only solution to the problem of daily blackouts is to terminate electric service to people who cannot, or will not pay for its use. This will then allow utilities to

provide full-time service to those who pay their electric bills in full and on time. It is widely estimated that 80% of the people can pay for electric service but many do not do so simply because there are no consequences for not paying.

The termination of electric service would seem a harsh measure to impose on the poor, but in reality, a complete cut-off of 20% of the people is hardly worse than the present circumstance where they, and all of their neighbors, are limited to a few hours of service each day, and the hours of operation are unpredictable and uncertain.

c. THE PLAN:

The plan for recovery has a number of elements which will be tested in pilot programs and then expanded to other customers as quickly as possible. They include the following two basic steps:

- (1) Increased accountability. A computerized customer accounting system will be introduced which replaces the present inspector-collection procedure with monthly meter readings and billings. Customer payments are to be made no later than the designated day every month at a neighborhood payment station. Failure to pay will result in disconnection of service.
- (2) Full-Service Subscribers. When the computerized billing program has been established, customers will be afforded the opportunity to subscribe to full-time (24-hour-per day) electric service. This will be done on a feeder-by-feeder, transformer-by-transformer basis as minimum subscription levels can be achieved, and contingent upon the ability of Sakenergo and the Distributor to switch individual feeders to maintain full service. The threshold for full service would be the subscription of 60% of the customers served by the feeder or transformer. When that level is reached, the remaining customers who do not subscribe will be disconnected, and full service implemented on the feeder or transformer.

d. ENFORCEMENT:

Individual customers who fail to make regular monthly payments, will be individually disconnected from the network. This will include removing some or all of the wiring between the customer's meter and its point of connection to the feeder. If the meter is accessible to the workmen, the meter shall also be removed.

Service Inspectors will monitor feeder lines on a continual basis and remove all illegal connections. Check meters will be installed on buildings and feeders, and where theft or other un-compensated usage exceeds 5%, the entire feeder may be disconnected. This rule is to encourage customers who have subscribed to and are paying for their service to report customers who are stealing electricity to the utility, or to assist poor customers in paying for their service.

2. POLITICAL AND GOVERNMENT LEADERS.

Local and national political and government leaders should be informed early and often about plans and progress, and their public support solicited. The basic message should be: "The economic recovery of Georgia begins with a sound infrastructure, and no factor is more important to commerce and industry than reliable full-time electric service. This can be made possible only if everyone pays for the electricity they use."

A list of political and government leaders should be prepared, and Hagler Bailly staff assure that copies of all news releases and progress reports are delivered to those people.

3. THE MEDIA

The new program, its purpose, and periodic progress reports will need to be publicized very intensively in the areas where the program is scheduled for implementation.

a. Mass Media.

Publicity should be city-wide, and announced repeatedly in the newspapers, radio, and television during the weeks leading up to the beginning of the pilot program. All customers should be made aware of the plan, and the fact that it will start as a pilot program in a selected area of the city. Customers should be encouraged to contact the utility to express their interest in having the program expanded to their area as soon as the pilot program is determined to be successful.

b. Fliers.

As each area is schedule for inclusion (first) into the monthly billing program, and (secondly) into the full-time service program, hand-bills or fliers should be prepared and delivered door-to-door in the targeted area. These would reiterate all of the points made in the public announcements regarding the program, specify the period in which the customers in the targeted area would become involved and/or be offered the opportunity to participate.

It should be noted that the billing program will be implemented without the consumers' consent, and the message should be that this is a prerequisite to full-time service. The customer would be advised at this time of the schedule for offering full service and the requirements for eligibility.

4. NEWSLETTER.

In a further effort to keep government officials and the international agencies apprised of plans and progress, a periodic newsletter should be produced and delivered to all the local and national decision-makers on a regular (e.g., monthly) basis. This newsletter would keep the program before the public and report on the increasing numbers of people in the monthly billing program, the number of people signed-up-for and receiving full-time service, percentage increases in kilowatt hour sales and revenue, individual human-interest "success stories" from satisfied customers, and various schemes being employed to accommodate the poor people in the new commercial environment.

5. PARTICIPATING CUSTOMERS

A number of flyers should be developed for use with participating customers. These would include specific instructions regarding what is expected of them at various stages of the program. These flyers would include explanations at the time of::

- Initial meter reading.
- Delivery of the first bill.
- Delivery of a bill with a Past Due amount shown.
- Finding of power theft.
- Disconnection of service for non-payment.
- Application for full-time service.

Samples of these flyers are attached.

6. NEWS RELEASES

An information office should be established for the purpose of providing information on a continuing basis to all interested news media. It should be emphasized that these are news stories of general public interest, and not advertisements to be placed in space paid for by the utility. Whenever practical, public statements should be attributed to the highest local government official (e.g., the mayor). This would require that the utility's manager coordinate all publicity with the mayor's office.

Involvement of the highest municipal officials is important because political support of the program, especially disconnection policies, is important to the program's success.

Attached are a series of sample news releases. They are for illustrative purposes. Timing and details will need to be adjusted to fit the actual schedule and results.

#1

INITIAL ANNOUNCEMENT

For release week of March 2, 1998

To all news media.

Press Conference in Rustavi.

Copies to key Rustavi municipal officials.

Copies to GERNC, appropriate Ministries, selected Parliamentarians, Office of the President.

Copies to be delivered to 1, 700 participants in the Pilot Project.

Copies posted at the Rustavi Electric Company office for all employees to read.

Translate this and deliver a copy to Zurab Kokaia, Vice Mayor of Rustavi as soon as possible (say, by February 18). Find out if it is possible to get this program before the City Council, get the Council's endorsement, and to get the Mayor to call a press conference to provide the following press release and answer questions. Someone from Hagler Bailly should be present at the City Council meeting and any press conference to help the city officials answer questions about the program. Note that we have not tried to cover all details or answer all questions in this initial news release. There should be at least one news release each week for the first month of the program. Some further examples are attached.

Rustavi Mayor Announces Plan to Restore Full-time Electric Service

Rustavi Mayor announced today the approval by the city council of a program that should make available 24-hour electric service throughout the city within the next 12 to 18 months. Success of the plan will depend primarily upon the willingness of citizens to pay fully for their electric service, (mayor) said.

First step in the recovery program is the implementation of a computerized customer billing procedure, similar to that used in European and other free-market countries, according to Vasiko Kobiashi iji Director of (Electric Company). A pilot program involving 1,700 Rustavi households will begin in March, using computers and billing software provided by the U.S. Agency for International Development (USAID).

(Mayor) said the monthly billing program is an essential first step in that it helps re-establish a payment discipline among electric customers, and it provides (the Electric Company) with accurate and current data on which customers are paying their bills, and which are not.

The monthly billing program differs from past collection systems in that it eliminates on-site collections by individual Inspectors. In compliance with Presidential Decree, which requires payment for electric services to be made at banks, post offices, or other cash stations, Mayor (mayor) said a bill payment station is being established in the municipal

building located at-----This station is convenient to the
-----area, where the billing program will begin.

The plan calls for a meter reader to read the customers' meters each month. A computer will calculate and print the bills the following day. The bills will then be delivered to the customers. The new procedure requires customers to make payment at the payment station within 15 days. Customers who do not pay their bills will have electric service disconnected, (mayor) said.

After one or two months' successful operation in the pilot area, the billing program will be expanded as quickly as practical to other electric customers, Kobiashvili stated.

"The reason for the present restrictions on electric service in Rustavi, and throughout Georgia, is the lack of money to buy fuel," (mayor) said. This power shortage is the direct result of customers not paying their electric bills, according to the mayor.

In the past, electric service was provided to households at artificially low tariffs, Director t(A~ ~ Kobiashvili said. This was because residential service was previously subsidized by industrial users. "With the shut-down of most industry, and the shortage of tax payments into the Government Treasury, there is no source of funds to continue to subsidize residential electric service," Kobiashvili stated. "Customers need to realize they must pay for their electricity, or do without," he added.

Mayor (mayor) said that while Presidential Decrees and World Bank officials have called for the privatization of the electric distribution companies throughout Georgia, the timing and effectiveness of the privatization program is uncertain. (mayor) explained that the new billing program and other reforms being contemplated by the city are similar to those which would be implemented if an International Investor bought the company and applied Western techniques and standards to the commercial operations.

"We do not feel it is necessary to wait for some private investor to come in and 'rescue' us from our present situation," (mayor) said. "We know what the problems are, and we have the staff that can solve them," he said.

"Electric costs are a small part of the income of most families," according to (mayor), and he called upon on all electric customers to give a higher priority to the payment of their electric bills. "This is the first step toward full-service electricity for our city," he stated.

The Rustavi Electric Company is being assisted in the training of employees and implementation of the computerized billing program by the American company Hagler Bailly Consulting, Inc.

#2

SECOND ANNOUNCEMENT

For release week of March 9, 1998

To all news media.

Copies to key Rustavi municipal officials.

Copies to GERNC, appropriate Ministries, selected Parliamentarians, Office of the President.

Copies posted at the Rustavi Electric Company office for all employees to read.

Translate this and deliver a copy to Utility Director for comment and approval, and delivery to local media. Have him or Mayor's office try to get local news photographer and local TV cameraman (if there is one) to accompany bill deliverer as bills are being delivered in an apartment building. Get photos of courier handing bill to customer.

First Monthly Bills Delivered to Rustavi Electric Customers Under New Billing Program

Electric customers in the _____ area of the city began receiving their first monthly electric bills this week as part of the Rustavi Electric Company's plan to restore full-time electric service to the city. This new program was announced by Rustavi Mayor (mayor) last week.

About 200 electric bills are produced and delivered each day to customers in the Pilot Project area. Customers are instructed to make payment at the _____ municipal building within 15 days. The payment window is open from 10 a.m. until 6 p.m., Monday through Friday.

If bills are not paid before the next monthly bill is delivered, the customer's electric service is subject to disconnection, according to Rustavi Electric Company Director Vasiko Kobiashvili.

A small staff is presently engaged in this project, including two meter reader, two computer operators, two pay station tellers, and two service inspectors. There are 1,700 customers in the initial billing group, but this number is expected to increase to 5,000 or 6,000 over the next two or three months as the staff gains experience with the new procedures.

Customers in the pilot project are divided into 20 billing groups, with the meters for a different group being read each day. The day following a group's reading, bills will be calculated and printed. Bills will then be delivered to customers on the third day of the group's billing cycle.

Each customer's billing and payment history is recorded in a computerized database. Payments are posted daily so that management can have an up-to-date printout of all customers who are delinquent in payments, the amount owed, and the age of any unpaid. The computer can print each day the names of customers whose grace period for payment has expired, and who are to be scheduled for disconnection for non-payment.

As explained by Mayor (mayor) in his news conference last week, the billing program is the first step in establishing individual accountability and payment discipline among electric customers. The computer provides utility management with the information necessary to accurately and fairly enforce collection procedures.

Director Kobiashvili said that neither government nor industrial customers have the money to subsidize residential electric bills as in the past. "All customers need to realize they must pay for their own electric use, or do without,"

If early experience is successful, the Rustavi Electric Company expects to have the billing program extended to most of the city by the end of the summer. The billing software and computers are being provided by the U.S. Agency for International Development, with assistance in implementation by Hagler Bailly Consulting, In

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#3

THIRD ANNOUNCEMENT

For release week of March 16, 1998.

To all news media.

Copies to key Rustavi municipal officials.

Copies to GERIVC, appropriate Ministries, selected Parliamentarians, Office of the President.

Copies posted at the Rustavi Electric Company office for all employees to read.

Interview Utility Director to fill in blanks; include additional information. Translate this and deliver a copy to Utility Director for comment and approval, and delivery to local media.

Rustavi Electric Company Moving on Two Fronts to Deliver 24-Hour Service to its Customers

The Rustavi Electric Company has two experimental programs in progress designed to bring 24-hour electric service to the city. In addition to the recently announced computerized billing program in the _____ district, the company has also been experimenting in the _____ district with an "all or none" program for entire apartment buildings.

"The key to 24-hour service is full payment for electricity used," according to Electric Company Director Vasiko Kobiashvili. "The limiting factor to electricity supply in Georgia is money to buy fuel for Gardabani or to import power from neighboring countries," said Kobiashvili. "The only source of that money is the customers who are using the power. We can no longer expect subsidies from the government or industrial customers," he added.

In the _____ district, _____ apartment buildings with _____ customers have been receiving all-day service contingent upon full payment for all electricity delivered to the building. Instead of the Electric Company collecting individually from each occupant, one person in the building is designated to collect the money to pay for all the electricity delivered to the building.

The payment is based upon electricity measured by a "check meter" installed on the feeder to the building. If the payment cannot be made, service to the entire building is disconnected.

The theory is that the majority of customers want all-day electric service and can afford to pay for it. If they have neighbors in the building who have tampered with or bypassed their meters, they will bring pressure on those people to stop stealing and pay for the electricity they use.

Furthermore, where there are truly indigent households, the neighbors in the building may chip in and share in paying the cost for those families.

So far, this program has had mixed results. Over a period of _____ months, _____ buildings with _____ customers have made required payments on schedule and maintain all-day service. On the other hand, _____ customers in _____ buildings have had service disconnected because of failure to meet required payments.

The _____ area was selected for this experiment because a feeder in the area remains energized 24-hours a day to provide electric service to communications and hospital facilities in the neighborhood.

Director Kobiashvili says that if this experiment proves successful, its concept can be extended to other areas in the city.

Results from the experiment in the _____ area will not be known for several weeks. That program involves first the establishment of a computerized monthly billing program that will provide accurate and current information on individual customer usage and payments.

After that, it is proposed to offer all-day service on a customer-by-customer basis, one feeder at a time. If sufficient customers on a feeder agree to full payment, all-day service will be provided. Disconnection of non-paying customers would be promptly and strictly enforced.

#4

FOURTH ANNOUNCEMENT

For release week of March 23, 1998

To all news media.

Copies to key Rustavi municipal officials.

Copies to GERNC, appropriate Ministries, selected Parliamentarians, Office of the President.

Copies posted at the Rustavi Electric Company office for all employees to read.

Translate this and deliver a copy to Utility Director for comment and approval, and delivery to local media. Have him or Mayor's office try to get local news photographer and local TV cameraman (if there is one) to go to meter installation site. Get photos of metermen installing ABB electronic meters.

**New Electronic Meters to Monitor,
Analyze Electric Power Losses**

Electric metering equipment, like much of the electric distribution equipment in Georgia, is old, in bad repair, and not too reliable, according to Soso Kapanadze, Chief Engineer at Rustavi Electric Company.

However, the Rustavi Electric Company has received some brand new electronic meters which will help it establish more precisely where and how electricity is being lost on its system.

Kapanadze explained that some electricity is lost as it travels along the wires, through connectors, and through transformers. These are called "technical losses" because they relate to the design and maintenance of the electric network.

There are accepted norms for technical losses on electric systems, but these may not apply where equipment has not been well maintained or has been subjected to severe overloads. That is the case throughout Georgia, including Rustavi, according to Kapanadze. The new meters will allow Rustavi engineers to measure actual losses across transformers and along feeder lines.

When precise technical losses are known, utility managers can then establish the level of "non-technical" losses and take corrective actions. Kapanadze said that non-technical losses include power theft by customers, and poor customer accounting practices by the electric company. Some studies have shown that as much as half of the electricity delivered to the residential sector in Georgia is stolen, or otherwise unaccounted for.

The new electronic meters are manufactured by ABB (ASEA Brown Boveri), a leading international supplier of electrical utility equipment. They are accurate to 0.1% over a very wide range of voltages and currents.

Kapanadze said they are provided to Rustavi by the U.S. Agency for International Development (USAID) as a part of a program to reduce losses and improve the financial condition of the company.

Sixty-two of the meters have been delivered. They will be used in various places to monitor both technical and non-technical losses.

Delivered to Rustavi with the meters was a small portable computer which allows the extraction of large amounts of stored data from the meters. For example, 12 of the meters have been programmed to store electric usage hour-by-hour for over a month. This information can be extracted electronically by the computer and turned into tables and graphs called "load profiles," which allow the study of load characteristics of feeders and transformer on a daily, monthly and annual basis. This, in turn, allows engineers to make changes in procedures to operate the system more efficiently.

#5

FIFTH ANNOUNCEMENT

For release week of April 6, 1998

To all news media.

Copies to key Rustavi municipal officials.

Copies to GERNC, appropriate Ministries, selected Parliamentarians, Office of the President.

Copies posted at the Rustavi Electric Company office for all employees to read.

The headline below is based on the presumption that the percentage of bills paid as a result of monthly billing will be low. This conclusion will have to be based upon response to the first weeks' bills, possibly as many as 1,000. Content of this news release will need to be coordinated and approved by both the mayor and the Utility Director. Translate the draft, review it with them, and edit as appropriate. have them deliver it to the local media.

Customer Response to Monthly Electric Billing Program is Slow

Customer response to the new monthly billing program begun by the Rustavi Electric Company last month was disappointing, but not surprising, according to Vasiko Kobiashvili, Director of the company.

The second month's billing cycle began last week, and of the _____ bills produced the first week of March, only _____ had been paid 30 days later. The second month's bills showed only _____% of the amount billed 30 days earlier had been paid at the time the subsequent bills were prepared.

Kobiashvili said the low response was expected because customers have not yet been made fully aware of the changes taking place in the electric power sector. "There will be a period of time during which it will be necessary to 're-educate' customers to the necessity for paying for their electricity," the director said. "Based on their past experience, they think it is still 'business as usual,' where there were no consequences for not paying electric bills."

Kobiashvili said that bills being delivered to customers this week showing last month's bill has not been paid include a written warning that the bill must be paid promptly, or service to the customer will be disconnected.

Mayor (mayor) said the electric company has the full support of the city council in regard to the disconnection of service for non-payment. "Customers need to re-order their spending priorities and put the payment of electric bills at the top if they expect to continue to use electricity," the mayor said.

"To a very large degree the economic recovery of Georgia is dependent upon restoring reliable full-time electric service to the population and industry. This can only happen if the people using the electricity pay for it fully, and on schedule," the mayor said.

#6

SIXTH ANNOUWCEMENT

For release week of April 13, 1998

To all news media.

Copies to key Rustavi municipal officials.

Copies to GERNC, appropriate Ministries, selected Parliamentarians, Office of the President.

Copies posted at the Rustavi Electric Company office for all employees to read.

Same review and approval process as #5. This is a direct follow-on of 05, coming the next week and raising the level of public warning to the customers.

**Delinquent Electric Customers
Disconnected for Non-payment**

The Rustavi Electric Company made good this week on its promise to begin the disconnection of customers for non-payment of bills.

Company Director Vasiko Kobiashvili said ___ customers were disconnected for non-payment during the past ___ days. "It hurts me deeply to have to disconnect electricity to these people," Kobiashvili said. "Many are truly suffering under severe financial hardships."

The Director added, however, that "no one should expect the electric company to supply free electricity anymore than the would expect the fuel station to supply free kerosene, or the kiosk operator to provide cigarettes or bananas without payment."

Mayor (mayor) echoed this sentiment, sympathizing deeply with the hardship on the very poor, but conceding that many customers who could pay have enjoyed free electricity far too long because there were no consequences for not paying under previous utility practices.

The mayor proposed an open meeting of the council where citizens might come and propose methods of neighborhood support to help the very poor, not only with their electric costs, but the provision of food and other financial support. He was quick to point out, however, that neither the city nor the Georgian government could offer direct financial relief, because tax collections have been as poor as electric collections for the past few years.

"Families and neighbors of the elderly, the infirm, and the very poor will need to play a bigger role in their support, either assisting with their present living arrangements, or moving them into a more affordable situation," the mayor suggested.

Some of the disconnected customers complained that people in other parts of the city have not been disconnected for non-payment. They feel discriminated against, being singled out for harsh treatment because of being located in the pilot project area.

Director Kobiashvili sympathized with this view, but said other areas of the city would be included under the new policies as quickly as the program could be expanded. He said it was not possible to implement the program city-wide from the beginning. "We needed to start somewhere on a small scale to develop the procedures and train employees. We expect another 4,000 customers to be included in the billing program by the end of this month, and the entire city to be included by the end of the year," he said.

Kobiashvili added that "customers in the initial pilot project area will be the first to be offered all-day service in exchange for full payment."

#7

SEVENTH ANNOUNCEMENT

For release week of April 28, 1998

To all news media.

Copies to key Rustavi municipal officials.

Copies to GERNC, appropriate Ministries, selected Parliamentarians, Office of the President.

Copies posted at the Rustavi Electric Company office for all employees to read.

This announcement will require substantial discussion and coordination with the utility Director. The complete plan for full service must be discussed and agreed to with the senior staff. Arrangements for the proposed community meeting will need to be made. A special flyer will also need to be prepared and delivered to all customers in the selected area. This is a meeting/function/news release which may be repeated in different areas at different times as the full-service program is expanded.

**Community Meeting Scheduled to
Promote All-Day Electric Service
in _____ District**

Rustavi Electric officials have scheduled a community meeting for Sunday, May 3 to present the company's new plan for providing all-day electric service to citizens in the area. The meeting will be held at the _____

Rustavi Electric Company Director Vasiko Kobiashvili has provided this newspaper with a tentative outline of the proposed full-service program. The plan is to phase in full service on a feeder-by-feeder basis as sufficient numbers of customers on each feeder sign up for the full-service.

Company officials said there are two basic criteria for an area to be eligible for full service: (1) the network switching must allow the proposed full-service feeder to remain energized while non-qualifying adjacent areas are cut off., and (2) the monthly billing program must be already implemented on full-service feeders.

Customers attached to feeders designated as full-service feeders, but who do not require or want full service, must still pay for all electricity used. They will be expected to restrict their use to a level which they can afford. If they do not pay bills fully on a regular basis, they will be disconnected.

Some of the details of the plan remain flexible, such as the number or percentage of customer commitments required before a feeder is designated as full-service. Company officials would like to have public comment on this and other factors before the plan is finalized.

Customers desiring full service will need to make written application. Copies of the application form will be provided at the community meeting on May 3. The principal purpose of the application is to establish the identity of person who will be responsible for payment of bills at a location.

There will be no application fee for full service, but if a customer is disconnected for nonpayment, he will be required to pay all old bills, trip charges, and a deposit against future bills, before service is reconnected.

Customers anxious to qualify their feeders for full service may assist the Electric Company in the sign-up of customers. Kobiashvili proposes that small groups organize to solicit their neighbors to sign applications. The utility will provide such groups with listing of other customers on their feeder, and provide application forms and instructions.

NOTICE TO CUSTOMERS

MONTHLY METER READINGS

Starting this month, your electric meter will be read every month for the purpose of preparing an monthly electric bill. However, payment is not to be made at the time of reading. A few days after the reading, a bill will be delivered to your house. You must pay this bill to the electric company cashier at the **West End Municipal Building** within two weeks after receipt. The payment office will be open from 10 a.m. until 6 p.m. Monday through Friday.

This is the first step in a broad new program being undertaken by the Rustavi Electric Company to restore full-time electric service to the city. The shortage of power and the daily blackouts in Georgia can be resolved only if people pay fully for the electricity they use. Payment is necessary to buy fuel for the power plant. The Government of Georgia does not have sufficient tax revenue to provide free electricity to customers.

Under the new program being developed, service to people who do not pay is to be disconnected.

NOTICE TO CUSTOMERS

PAY THIS BILL WITHIN TWO WEEKS AT THE WEST END MUNICIPAL
BUILDING

Starting this month, an electric bill will be delivered to you house each month. You must pay this bill to the electric company cashier at the **West End Municipal Building** within two weeks after receipt. The payment office will be open from 10 a.m. until 6 p.m. Monday through Friday.

This is part of a broad new program being undertaken by the Rustavi Electric Company to restore full-time electric service to the city. The shortage of power and the daily blackouts in Georgia can be resolved only if people pay fully for the electricity they use. Payment is necessary to buy fuel for the power plant. The Government of Georgia does not have sufficient tax revenue to provide free electricity to customers.

Under the new program being developed, service to people who do not pay their electric bills is to be disconnected.

NOTICE TO DELINQUENT CUSTOMERS

THE OLD BILL AMOUNT MUST BE PAID OR
SERVICE WILL BE DISCONNECTED

This bill shows you have not paid you last month's bill. If this bill is not paid within two weeks, your service will be scheduled for disconnection. You must pay this bill to the electric company cashier at the **West End Municipal Building**. The payment office is open from 10 a.m. until 6 p.m. Monday through Friday.

The shortage of power and the daily blackouts in Georgia can be resolved only if people pay promptly and completely for the electricity they use. Payment is necessary to buy fuel for the power plant. The Government of Georgia does not have sufficient tax revenue to provide free electricity to customers.

Under the new program being developed, service to people who do not pay their electric bills is to be disconnected.

NOTICE OF DISCONNECTION FOR NON-PAYMENT

Account Number _____ Past Due Amount _____
Address _____

Your electric service is being disconnected because you have not paid your electric bills. The past due amount is shown above. Electric bills must be paid promptly to the electric company cashier at the **West End Municipal Building**. The payment office is open from 10 a.m. until 6 p.m. Monday through Friday.

The shortage of power and the daily blackouts in Georgia can be resolved only if people pay promptly and completely for the electricity they use. Payment is necessary to buy fuel for the power plant. The Government of Georgia does not have sufficient tax revenue to provide free electricity to customers.

Under the new program being developed, service to people who do not pay their electric bills is to be disconnected.

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NOTICE OF DISCONNECTION FOR ELECTRICITY THEFT

Account Number _____ Payment Required for
Reconnection: _____
Address _____

Your electric service is being disconnected because you were found to be stealing electricity. The amount stolen has been estimated. In order to have service reconnected, you must pay THREE TIMES the amount stolen. The payment required for reconnection is shown above. This payment, and request for reconnection can be made at the electric company cashier at the **West End Municipal Building**. This office is open from 10 a.m. until 6 p.m. Monday through Friday.

The shortage of power and the daily blackouts in Georgia can be eliminated only if people pay promptly and completely for the electricity they use. Payment is necessary to buy fuel for the power plant. The Government of Georgia does not have sufficient tax revenue to provide free electricity to customers.

APPLICATION FOR FULL-TIME ELECTRIC SERVICE

Name _____ Account Number _____
Address _____ Date _____

I request that full-time electric service be provided to my household. I agree to abide by the rules and regulations of the electric company and pay all of my electric bills when due.

I understand the following conditions must be met before full-time service can be provided:

1. I must stay current in the payment of my bills at all times.
2. The feeder serving my location must have separate switching arrangements so it can remain energized all of the time.
3. **80%** of the customers on the feeder must be current in their bill payments.
4. I will report any cases of electricity theft to of which I have knowledge to the electric company.

Signed _____

Consulting, Inc.

APPENDIX H

"NOTICE TO ELECTRIC CUSTOMERS"

NOTICE TO ELECTRIC CUSTOMERS

PAY THIS BILL WITHIN TWO WEEKS AT THE WEST END MUNICIPAL BUILDING

Starting this month, an electric bill will be delivered to your house each month. You must pay this bill to the electric company cashier at the **West End Municipal Building** within two weeks after receipt. The payment office will be open from 10 a.m. until 6 p.m. Monday through Friday.

This is part of a broad new program being undertaken by the City of Rustavi to restore full-time electric service to the city. The shortage of power and the daily blackouts here and throughout Georgia can be resolved only if people pay fully for the electricity they use. Payment is necessary to buy fuel for the power plant and maintain the distribution system.

A monthly billing program has been started in a small section of the city. The program is to be expanded to the rest of the city over the next several months. It is based on a computerized billing system used by 185 municipal electric systems in the U.S. Its adaptation to Georgia is being paid for by the U.S. Agency for International Development as a part of its world-wide humanitarian aid program. U.S. consultants, including an experienced utility General Director, are supervising the installation and operation of the system in Rustavi.

The computerized billing procedure results in a much higher degree of personal accountability for bill payments among both utility employees and customers. It separates and spreads the functions of meter reading, bill calculation, and payment among different electric company employees. It assures that all payments collected from customers go to improve the service and reliability of the electric company.

The U.S. consultants are also providing a large number of sophisticated electronic meters to be installed at various locations to check on how much electricity is delivered; to determine how much money is being lost due to technical causes, theft, and failure to pay bills; and to help eliminate these losses.

As people begin to pay for the electricity they use, full-time service can be restored to the city. Those who do not pay must be disconnected. People with very low income must severely restrict their use of electricity if they wish to remain connected. Neither the municipal government nor the Government of Georgia have sufficient tax revenues to provide free electricity to the population.

APPENDIX I

"ON SUPPLY OF ELECTRICITY TO THE INDIVIDUAL CUSTOMER"

Agreement

On Supply of Electricity to the Individual Customers and Its Consumption

Rustavi _____ Date

Joint Stock Company "Relasi", hereinafter referred to as "Supplier" and represented by its director I. Kobadze and citizen _____, address _____, hereinafter referred to as "Consumer" enter into following agreement:

1. Supplier is responsible to:
 - 1.1 Supply Consumer with electricity during 24 hours.
 - 1.2 Based on the notice provide maintenance of electric network up to the Consumer meters.
 - 1.3 Prepare bills based on meter readings or installed capacity.
 - 1.4 Check the condition of Customer connection.
 - 1.5 Cut off Customers from the electricity network every month in case of 100 % non payment.
 - 1.6 Conduct explanatory work when requested.
 - 1.7 In case of reconnection require Customer to pay additional payment for the service _____ Lari.
 - 1.8 Supplier is not responsible for the interruptible electricity supply or bad quality of supply in the following cases:
 - a. Scheduled repairs of electric equipment,
 - b. Natural disasters and accidents caused due to them,
 - c. Limited supply of electricity from the network,
 - d. Receiving the bad quality of electricity from the network.
2. Customer is responsible to:
 - 2.1 Maintain the meter in proper condition.
 - 2.2 Fully cover the existing debt during _____ months, in average _____ Lari per month.

2.3 Pay for the electricity consumed during the current month in the bank no later than 15 days after receiving the bill.

2.4 After presenting the employment ID of JSC "Relasi" during the time period from 9.00 - 22.00 let him in the apartment for the purposes of checking the meter connection and proper consumption of electricity.

1. Terms and Provisions of the present Agreement is regulated by the existing Georgian legislation.
2. Dispute cases shall be resolved by negotiations between the parties.
3. When dispute cases can not be resolved by negotiation parties shall address appropriate bodies according to the existing legislation.

Agreement is written in two copies and both are originals. One of the copies is given to the Consumer, second - to the Supplier. Agreement is effective from the date of signing before one of the parties does not request the abolishment.

Business addresses:

JSC "Relasi"
3, Saakadze Str.
Phone: 19 25 66

Citizen _____ (name)
Address _____
Tel: _____

Hereby parties agree with all the provisions of the present Agreement and put signatures:

JSC "Relasi"
General Director
_____/I. Kobadze/

Citizen _____

APPENDIX J

DRAFT POLICIES AND PROCEDURES FOR COMMERCIALIZATION

POLICY 112
RULES AND REGULATIONS.

RULES AND REGULATIONS

PURPOSE:

To establish the Rules and Regulations under which electric service is to be supplied to customer of the Rustavi Electric Company (Relasi).

POLICY:

1. **Application for Service:** Each prospective Customer desiring electric service may be required to sign Relasi's standard form of application for service or contract before service is supplied by Relasi.
2. **Deposit:** A deposit or suitable guarantee approximately equal to three times the average monthly bill may be required of any Customer before electric service is supplied. Upon termination of service, deposit may be applied by Relasi against unpaid bills of Customer, and if any balance remains after such application is made, said balance shall be refunded to Customer.
3. **Point of Delivery:** The point of delivery is the point, as designated by Relasi, on Customer's premises where current is delivered to building or premises. All wiring and equipment beyond this point of delivery shall be provided and maintained by Customer at no expense to Relasi.
4. **Customer's Wiring Standards:** All wiring of Customer must conform to Relasi's requirements and accepted modern standards, as exemplified by the requirements of the Georgia Electrical Wiring Codes.
5. **Inspections:** Relasi shall have the right, but shall not be obligated, to inspect any installation before electricity is introduced or at any later time, and reserves the right to reject and wiring or appliances not in accordance with Relasi's standards; but such inspection or failure to inspect or reject shall not render Relasi liable or responsible for any loss or damage resulting from defects in the installation, wiring, or appliances, or from violation of Relasi's rules, or from accidents which may occur upon Customer's premises.

6. Underground Service Lines: Customers desiring underground service lines from Relasi's overhead system must bear the cost incident thereto. Specifications and terms for such construction will be furnished by Relasi upon request.

7. Customer's Responsibility for Relasi's property: All meters, service connections, and other equipment furnished by Relasi shall be, and remain, the property of Relasi. Customer shall provide a space for, and exercise proper care to protect the property of Relasi on its premises, and, in the event of loss or damage to Relasi property arising from neglect of Customer to care for same, the cost of the necessary repairs or replacements shall be paid by Customer.

8. Right of Access: Relasi's identified employees shall have access to Customer's premises at all reasonable times for the purpose of reading meters, testing, repairing, removing or exchanging any or all equipment belonging to Relasi.

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POLICY 112
RULES AND REGULATIONS

9. **Billing:** Bills will be rendered monthly and shall be paid within fifteen (15) days, from date of bill at office of Relasi. Failure to receive bill will not relieve Customer from payment obligation. Should bills not be paid within 30 days, a termination notice will be delivered advising that service will be terminated if bill is not paid within seven (7) days.

10. **Discontinuance of Services by Relasi:** Relasi may refuse to connect or may disconnect service for the violation of any of its Rules and Regulations, or for violation of any of the provisions of the Schedule of Rates and Charges, and for nonpayment of bill. Relasi may discontinue service to Customer for theft of current or the appearance of current theft devices on the premises of Customer. The discontinuance of service by Relasi for any cause as stated does not release customer from his obligation of Relasi for the payment obligations incurred.

11. **Reconnection Charge:** Whenever service has been discontinued by Relasi, as provided above, or a trip is made for the purpose of discontinuing service, a charge of not less than 2 GEL may be collected by Relasi before service is restored. If service is discontinued, a charge not less than 4 GEL will be made for restoring service during normal office hours. If it is necessary to restore service after normal office hours, the emergency overtime work rate may be charged.

12. **Termination of Contract by Customer:** Customers who have fulfilled their contract terms and wish to discontinue service must give at least 3 days written notice to that effect, unless the contract specifies otherwise. Notice to discontinue service prior to expiration of contract term will not relieve customer from any minimum or guaranteed payment under any contract or rate.

13. **Service Charges for Temporary Service:** Customers requiring electric service on a temporary basis may be required by Relasi to pay all costs for connection and disconnection incidental to supplying and removing of service. This rule applies to circuses, carnivals, fairs, temporary construction sites, and the like.

14. **Interruption of Service:** Relasi will use reasonable diligence in supplying current, but shall not be liable for breach of contract in the event of, or loss for, injury or damage to persons or property resulting from, interruptions in service, excessive or inadequate voltage, single-phasing, or other unsatisfactory service, whether or not caused by negligence.

15. **Voltage Fluctuations Caused by Customer:** Electric service must not be used in such a manner as to cause unusual fluctuations or disturbances to Relasi's system. Relasi may require Customer, at his own expense, to install suitable apparatus which will reasonably limit such fluctuations.

16. **Additional Load:** The service connection, transformers, meters and equipment supplied by Relasi for each Customer have definite capacity, and no addition to the equipment or load connected thereto will be allowed except by consent of Relasi. Failure to give notice of additions or changes in load, and to obtain Relasi's consent for same, shall render Customer liable for any damage to any of Relasi's lines or equipment caused by the additional or changed installation.

17. **Standby and Resale Service:** All purchased electric service (other than emergency or standby service) used on the premises of Customer shall be supplied exclusively by Relasi, and Customer shall not, directly or indirectly, sell, sublet, assign, or otherwise dispose of the electric

service or any part thereof.

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RULES AND REGULATIONS

18. **Notice of Trouble:** Customers shall notify Relasi immediately should the service be unsatisfactory for any reason, or should there be any defects, trouble, or accidents affecting the supply of electricity. Such notice, if verbal, should be confirmed in writing.

19. **Non-Standard Service:** Customer shall pay the cost of any special installation necessary to meet his peculiar requirements for service at other than standard voltages, or for the supply of closer voltage regulation than required by standard practice.

20. **Meter Tests:** Relasi will, at its own expense, make periodical tests and inspections of its meters in order to maintain a high standard of accuracy. Relasi will make additional tests or inspections of its meters at the request of Customer. If tests made at Customer's request show that the meter is accurate within 2%, slow or fast, no adjustment will be made in Customer's bill. In case the test shows meter to be in excess of 2%, fast or slow, an adjustment will be made in Customer's bill over a period of not over 30 days prior to date of such test, and cost of making test shall be borne by Relasi.

21. **Incorrect Customer Billing:** If Relasi determines that a Customer has been incorrectly billed for electric service, except as provided for Meter Tests (see Rule 20, above), then such incorrect billing shall be adjusted for either over-billing or under-billing. After a determination of over-billing or under-billing has been made by Relasi, an adjustment shall be made in Customer's bill. For these purposes, the adjustment for over-billing or under-billing shall be for any known or unknown causes (with the exception of Meter Tests) which result in incorrect bills for electric service including but not limited to incorrect constants, failure of current and potential transformer equipment, failure of any other related equipment involved in measuring consumption of electricity, improperly installed metering equipment, improper billing procedures, and other causes which result in incorrect billings for electric service to Customer. The period of adjustment for any under-billing or over-billing shall be based upon the period of time which said under-billing or over-billing occurred, subject only to the applicable period of limitation under Georgian law.

22. **Billing Adjusted to Standard Periods:** The charges set forth in the rate schedules are based on billing periods of approximately one month. In the case of the first billing of new accounts (temporary service and seasonal customers excepted) and final billings of all accounts (temporary and seasonal service excepted) where the period covered by the billing involves fractions of a month, the demand charges, other charges designed primarily to recover fixed costs, and the customer charges will be adjusted to a base proportionate with the period of time under which service is extended.

23. **Connection Charges:** Thirty-five (35) GEL will be charged for all new permanent locations meeting standard service criteria. Five (5) GEL will be charged for reconnecting previously served permanent meter locations. Definitions of standard service connections, and additional excess costs for non-standard or upgraded service connections payable by the customer will be furnished by Relasi upon request.

25. **Common Building Service:** Customer meters located in or on an apartment or other multiple occupancy building which provides common services such as stairwell lighting, outdoor

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POLICY 112
RULES AND REGULATIONS

lighting, and elevators shall have added to the billings associated with said Customer meters an additional itemized charge of 40 tetri per month, or other such fixed amount as may be determined by Relasi as necessary to pay the cost of common building service.

26. Shortage of Electricity: In the event of an emergency or other condition causing a shortage in the amount of electricity for Relasi to meet the demand on its system, Relasi may, by an allocation method deemed equitable by Relasi, fix the amount of electricity to be made available for use by Customer and/or may otherwise restrict the time during which Customer may make use of electricity and the uses which Customer may make of electricity. If such actions become necessary, Customer may request a variance because of unusual circumstances including matters adversely affect the public health, safety, and welfare. If Customer fails to comply with such allocation or restriction, Relasi may take such remedial action as it deems appropriate under the circumstances including temporarily disconnecting electric service and charging additional amounts because of the excess use of electricity.

27. Scope: This Schedule of Rules and Regulations is a part of all contracts for receiving electric service from Relasi, whether the service is based upon contract, agreement, signed application, or otherwise. A copy of this schedule, together with Relasi's Schedule of Rates and Charges, shall be kept open to inspection at offices of Relasi.

28. Revisions: These Rules and Regulations may be revised, amended, supplemented, or otherwise changed from time to time, without notice. Such changes, when effective, shall have the same force as the present Rules and Regulations.

29. Conflict. In case of conflict between any provision of any rate schedule and the Schedule of Rules and Regulations, the rate schedule shall apply.

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POLICY 121
METENNG INSTALLATIONS

METERING INSTALLATIONS

PURPOSE:

To provide electric meters at each customer location so that the amount of electricity used can be measured, and customer payments calculated in proportion to the amount of electricity used.

POLICY:

1. Electric meters are to be installed at each customer location and used to establish the amount of electricity (kilowatt hours) used by the customer during each monthly billing period.
2. Meters shall be selected, purchased, installed, owned, and maintained by the electric distribution company. Customers may not supply their own meters under any circumstances.
3. Meters shall be installed at an exterior location where they are in public view and accessible to utility personnel at all times. They shall be physically secured in such a way as to minimize the possibility of access or removal by non-utility personnel. They shall be sealed with numbered security seals of such design that would indicate if the metering installation had been tampered with.
4. Each meter installation shall include a readily accessible means of disconnection of service by the utility. The disconnect means should be physically secure and sealed in such a way that unauthorized access or tampering would be apparent to utility personnel.
5. Meters shall have the capacity to operate accurately under the peak load produced by all of electric equipment installed at the customer location.
6. Meters shall be tested and calibrated from time to time so as to maintain an accuracy of $\pm 2\%$.

PROCEDURE:

A number of problems exist regarding residential metering at Relasi and other distribution companies in Georgia. Most meters are presently located inside apartments and are not readily accessible by utility personnel. Where meters have been installed outside, many have been stolen and no replacements are available. The accuracy of a large number of meters is substantially outside the 2% allowable range or error.

Procedures for dealing with existing installations will be written when a source of residential meters can be established and the price per installation can be calculated. Procedures for new installations should be somewhat as follows:

1. The Metering Supervisor shall project the requirements for meters one year in advance and prepare a list showing types, quantities, and a schedule of deliveries to be made throughout the coming year.

POLICY 121

METERING INSTALLATIONS

2. The Metering Supervisor shall develop and maintain a list of approved vendors of metering equipment. The projected requirements for the next year shall be sent to the approved vendors, requesting them to submit bids for delivery of the meter specified.
3. The bids will be evaluated and the supply contract awarded to the vendor submitting the best proposal. The order may be split between two bidders as a hedge against fires, labor disputes, or other contingencies which may prohibit a vendor from delivering meters as required.
4. The delivery schedule should be designed to assure that meters will be available for installation as needed, with minimum warehouse inventory. The delivery schedule may be adjusted to conform with the utilities cash flow and ability to pay invoices for the meters.
5. Relasi Management shall establish customer connection fees and reconnection fees at a level that will provide the company with cash to pay some or all of the cost of the meters and the associated service connection costs. The fees should be established with due consideration of the customer's ability to pay. The following schedule' shall apply beginning (date):

Single Phase:	70 amperes or less	25 Lari
	Over 70 amperes	50 Lari
Three Phase:	100 amperes or less	75 Lari
	Over 100 amperes	150 Lari
For CTs add:	1,000 amperes or less	300 Lari
	Over 1,000 amperes	600 Lari
Primary metering:	at 6 kV	2,000 Lari

6. Relasi engineers will mark the exact location at the customer premises where the meter is to be installed. The customer shall provide mounting space at the designated location. The customer shall prepare at his own expense the structure on which the metering and associated switching is to be mounted to meet the structural strength and durability, security, and clearance requirements as specified by Relasi. The customer shall install at his own expense all wiring on the load-side of the metering point to conform to Georgia wiring standards. Relasi shall install all wiring on the supply-side of the metering point, and make all wiring connections on both the supply-side and load-side of the meter.
7. The meter mounting and protective housing shall be supplied by Relasi, and shall include a means for disconnecting service. The disconnect means shall be of such a nature as to make self-reconnection by the customer difficult, and readily apparent if it is accomplished.

(More specific instructions will be written for each type of metering or housing, when such types are established).

Numbers shown are for illustrative purposes. Actual numbers may be different.

POLICY 122
METER SEALS

METER SEALS

PURPOSE:

To establish a method by which utility personnel can readily determine if a meter has been removed by an unauthorized person.

POLICY:

1. All electric metering equipment and service disconnecting means shall be secured with a seal which bears unique marking to identify it as an official Relasi seal.
2. Meter seals shall be sequentially numbered and issued only to authorized Relasi employees.
3. The supply of meter seals shall remain in the custody of the Metering Supervisor and stored in a locked and secure place.
4. The Metering Supervisor shall maintain a log which shows the employee to whom the seals are issued. The seals will be issued in small blocks of 10, 25, or 50 at a time, depending upon the work assignments of employee. Generally, seals will be issued only to employees responsible for installing and removing meters.
5. Meter Readers are to inspect meters for broken seals, but shall not carry replacement seals. If they find a broken seal, it is to be reported. A meter installer shall then check the installation for tampering. If no tampering is evident, the meter will be left in place and resealed. If the meter has been tampered, service will be disconnected and the meter removed.

POLICY 131
METER READING

METER READING

PURPOSE:

To provide electric meter readings from each customer every month as a basis for calculating monthly electric bills.

POLICY:

1. Each customer location shall be visited by a meter reader once each month for the purpose of obtaining a meter reading.
2. Customers will be assigned unique numbers for identification purposes, and grouped into meter reading Routes. Each Meter Route will be assigned a unique identifying number. The number of customers in each Meter Route should not exceed the number of meters which can be visited during the course of a normal 8-hour work day.
3. Each Meter Route shall be assigned a specific day of the month on which readings are to be taken. The Route will be read on the same day of each month, plus-or-minus three days to accommodate weekends, holidays, and inclement weather. The Meter Reading Routes shall be divided evenly over 20 working days each month in order to spread the workload evenly throughout the month.
4. A schedule of meter readings shall be produced by the Billing Supervisor at the beginning of each month, and it shall be the responsibility of the Billing Supervisor to assure meters are read on the scheduled date.
5. Where a meter is not accessible or is missing, an estimated reading shall be calculated in accordance with rules and procedures established by the Billing Supervisor. This estimated reading shall be used in the calculation of bills for that month.

PROCEDURE:

1. Each day the Computer Operator shall produce meter reading sheets for each Meter Route scheduled to be read on the following day. The Billing Supervisor shall distribute the next day's Meter Reading Sheets to the assigned meter readers. The Meter Reading Sheets shall be attached to a rigid clip board in order to provide a smooth, hard writing surface.
2. The Meter Reading Sheets shall list the meters to be read in Route walk sequence, showing the account number, name, address, meter number, and any applicable notes. A space shall be provided for the Meter Reader to mark the reading shown on each meter register. The previous month's reading shall not be shown on the sheet. This is to reduce the likelihood that the meter reader will use the previous month's reading as a basis for estimating a reading, instead of obtaining an actual reading. The meter reader will use appropriate codes or words to indicate (1) those accounts where the customer did not respond and the meter could not be accessed to obtain a reading, and (2) where there is no meter installed. The Meter Reader shall not enter an estimated reading on the Meter Reading Sheet.

POLICY 131
METER READING

3. The completed Meter Reading Sheets shall be returned to the Billing Supervisor and the Computer Operator at the end of the work day.
4. Meter readings shall be entered into the computer database on the day after the readers are taken in the field. When actual readings are not available, the computer operator shall use techniques and procedures prescribed by the Billing Supervisor to calculate estimated readings to be entered. Until more refined techniques are established, one of the following methods is to be used:
 - a. Note the number of kWh billed the previous month (this will be shown on the "Enter Meter Reading" screen). Add that number to the previous month's reading and enter that number for the current month's reading. Press the F3 key to flag that reading as being estimated. The "estimated" code will then appear on the printed bill.
 - b. If no previous month's reading has been established, review the consumption of other customers in the same building. Select a consumption level which approximates the 75th percentile of other customers. The rationale for using a higher estimate is that if no meter is present, or readings are not being provided, the customer has no incentive to conserve, and electric use will typically be somewhat higher than average. If the customer complains that the bill is too high, arrange to gain access to read the meter, if one exists. While inside the premises, carefully inspect for meter tampering, meter bypass, and illegal alternate feeds. Also inventory the electrical equipment and use norms to calculate average monthly consumption.
 - c. If no customer meter is installed, but a check meter has been installed on the apartment building, divide the total consumption of the building by the number of apartments served, and use that average consumption to calculate the kWh to be billed to the customer. Select 0000 as the previous month's meter reading, and use the average kWh consumption to calculate the new meter reading for each succeeding month.

POLICY 132
SCHEDULING OF METER READERS

SCHEDULING OF METER READERS

PURPOSE:

To assure that meter readings are taken on the day scheduled, and that they are accurate and reliable.

POLICY:

POLICY 141
ELECTRIC BILL PREPARATION

ELECTRIC BILL PREPARATION

PURPOSE:

To provide an electric bill for each customer every month which is accurate and easily understood by the customer.

POLICY:

1. A bill for electric services received by each customer shall be produced once each month from a computerized customer database. The bill shall be based upon actual readings taken by a Relasi employee or agent. In the absence of an actual reading, an estimated reading shall be calculated and used by the billing office.
2. The customer billing form shall have two parts, each of which contains the billing data for the current month, including the amount of any unpaid old bills.
3. The bill shall show the present and previous meter readings, the dates the readings were taken, and the number of kWh used for the billing period.
4. The bill shall itemize the amount of charges at the basic tariff rate, any credits or discounts to which the customer is entitled, the amount of old bills which are past due, and the net amount to be paid this month.
5. The bills shall be printed on blank continuous-form paper, and then cut apart for delivery to customers.
6. Bills shall be produced in batches which correspond to the Meter Routes. Each batch is to be produced on the next work day following the meter readings for the Route, and released for delivery to customers on the next work day following printing.
7. Different batches of bills shall be scheduled for production every day so that the work load will be spread evenly throughout the month. If one day's work is delayed, the delay must not result in changing the schedule for the rest of the month. Schedule work at night or on weekends if necessary to maintain the schedule and complete the current billing cycle before the next billing cycle is scheduled to begin.

POLICY 123

METER TESTING AND CALIBRATION

METERING TESTING AND CALIBRATION

PURPOSE:

To provide electric meters at each customer location so that the amount of electricity used can be measured, and customer payments calculated in proportion to the amount of electricity used.

POLICY;

1. Relasi shall maintain a meter laboratory suitable for testing and calibrating its meters. This laboratory shall be inspected and certified annually by the _____
2. The Metering Supervisor shall establish a program of systematic testing of meters.
3. If a customer complains that his meter is running fast and requests a test, the meter lab shall perform such test and recalibrate the meter as necessary. If the meter is found to be more than 2% in error, bills for the past six months shall be recalculated and adjustments in the bills made. If the meter was found to be running fast, the overpayment will be credited to the customer's account and applied to future bills. If the meter was found to be running slow, the under-billed amount shall be added to the customer's next monthly bill.
4. The Meter Supervisor shall develop a file and maintain records of all new meters purchased by Relasi. The records shall show the make, serial number, date of purchase, purchase price, and technical characteristics of the meter. The record shall provide space to show the date, location, and meter reading each time the meter is installed, removed for testing, or returned to inventory. The record will also provide space to record the results of each test, including the percentage of error "as found," and "as left" following calibration,

POLICY 142
MONTHLY BILLING CYCLE

MONTHLY BILLING CYCLE

PURPOSE :

To provide a systematic procedure for assuring that all customers are billed each month on a regular schedule.

POLICY:

1. Each new meter route added to the billing program will be assigned a monthly meter reading date, from which all other functions in the billing cycle will be scheduled. The first 20 Meter Routes will be assigned separate days. For each 7-day week, only 5 meter reading days will be established, therefore the maximum number of work days scheduled for billing groups should be 20.
2. There are potentially 320 to 400 meter reading routes in Rustavi, so there may be ultimately as many as 16 to 20 meter routes to be read each day, with 2,000 bills to be prepared each day, and 2,000 bill payments due each day. The objective is to spread the meter reading dates, and thus all other billing related functions evenly throughout the month. Where sickness, inclement weather, or holidays interfere with task completion on the scheduled date, make-up work should be done in the evenings and on Saturdays and Sundays as necessary to assure that the monthly cycle is completed on schedule.
3. The Billing Supervisor shall produce a Billing Schedule before the beginning of each month which shows the actual day when each step in the billing cycle is to be performed for each route (or group of routes), taking into account weekends and holidays.

PROCEDURE :

The billing function for each Meter Route to be billed will occur during the first four days of the cycle, as shown below. During the remainder of the cycle, the only activity would be receiving payment and posting payment information into the customer database.

DAY 1

1. **Produce Meter Reading Sheets.** This is a listing of customers in each route. The list includes a space to mark the meter reading for each account. These sheets will be carried by the meter reader. The meter reading sheets will be printed from the computer database on the day before the route is to be read.

DAY 2

2. **Read Meters.** Daily meter reading assignments will be made in accordance with the master schedule. The meters to be read will be listed in sequential route walk order. Meter readings sheets should be attached to a clip board. A meter reader is expected to complete the assigned work by the close of each day. If one day's work is completed before the end of the day, work may begin on the next day's scheduled readings.

POLICY 142
MONTHLY BILLING CYCLE

DAY 3

3. **Enter Meter Readings.** The meter reading sheets will be returned to the computer room at the end of the day they are read. The next morning the billing clerk will enter the meter readings into the computer for each route read the previous day. Where a reading could not be obtained, an estimated reading will be entered by the clerk in accordance with instructions provided by the Billing Supervisor.
4. **Compute Bills.** After readings are entered and before bills can be printed, bills must be computed. This is an internal computer operation which is performed in a matter of seconds when instructed by the billing clerk.
5. **Print Billing Statistics (Preliminary, for review and edit).** This is a detailed listing of the bills which have been calculated. This printed report should be reviewed by the billing supervisor for apparent errors. This allows errors to be corrected before the bills are printed.
6. **Print Bills.** Bills will be printed on blank, fan-fold paper, 24 cm wide, 3 per page, using the dot-matrix printer. Provision will need to be made to separate individual bills (cut them apart). Bills should be printed the same day that readings are entered.
7. **Print Final Billing Statistics.** Same as paragraph 1, above. This copy may be kept available for quick reference by cashiers and supervisors who talk with customers about their bills, but do not have immediate access to a computer.
8. **Update Bills.** This procedure prepares the system for the next billing period. This should be done AFTER the Billing Statistics have been printed, and BEFORE any payments are entered. This adds the amount of the last bill to the customer's current balance, and moves the current meter reading to the "last reading" field in the database. The procedure requires only a few seconds, and is performed at the direction of the billing clerk.
9. **Run Accounts Receivable Report.** This report can be printed at any time within the billing cycle. It will reflect all payments received on the accounts since the last payment clearance and the balances currently owed. **Always print an Accounts Receivable report for all route books just before clearing payments at the end of the month.**
10. **Clear Payments.** This procedure prepares for entry of payments for the current period. The Payment Clearance procedure only clears payment information from the previous month so that those totals are not carried forward. It does not affect customers current balances. You should clear the previous periods payments before any payments are entered for the new period. You should clear payments only once during each period.

DAY 4

11. **Deliver Hills.** Bills should be delivered to customer locations the day after they are printed.

POLICY 151

LOCATION OF PAYMENT STATIONS

LOCATION OF PAYMENT STATIONS

PURPOSE:

To provide locations for payment of electric bills which are convenient to customers.

POLICY:

1. All electric bills are to be paid at an authorized payment station. A list of payment stations shall be available to customers. All payment stations will be marked with an external identification sign or poster stating "Pay Electric Bills Here," and be of a size no less than 20 cm x 30 cm. This identification sign shall include the hours of operation.
2. Payment station sites should be selected so that no customer is more than 1.5 kilometers from a payment station. The payment desk or booth shall be within sight of the front doorway of the building, or else prominent direction signs shall be posted showing the way to the teller location. There shall be sufficient space in front of the desk or booth to accommodate a small queue of up to 10 customers.
3. Hours of operation shall be no less than 10 a.m. to 5 p.m., Monday through Friday. If it is necessary for the teller to temporarily leave his/her position during the hours of operation, and no back-up person is available to receive payments during that period, the payment desk may be temporarily closed for no more than 5 minutes during normal hours of operation.
4. The payment station may be located in a bank, post office, municipal building, or other reasonably secure location. It may be staffed by Relasi employees, staff members of the bank or post office, or other contracted personnel. Persons handling cash for Relasi should be bonded¹ in an amount equivalent to their potential for loss through theft or embezzlement. Where more than one person is receiving payments, each shall maintain a separate cash drawers so that each may be held personally responsible for their own cash shortages or errors.
5. Locations selected for payment stations shall be heated and have available general room lighting, an electrical connection, nearby toilet facilities, 2 chairs, and a minimum work surface of .75 square meter. Barriers should be provided so that customers may not stand to the side or rear of the teller's position, and the cash drawer or box should be located out of view of the customers.

¹ Is surety bonding of people handling cash possible in Georgia? At what cost?

2/28/98

POLICY 151

LOCATION OF PAYMENT STATIONS

PROCEDURE.: (provide the following information for each payment station)

Payment Station Name: _____

Address: _____

Building/Facility Manager _____

Telephone number _____

Assigned Tellers: _____

Cashier who audits daily cash receipts and takes custody of the cash from Tellers:

POLICY 152
PAYMENT DUE DATES

PAYMENT DUE DATES

PURPOSE:

To advise customers of when payment of electric bills is expected, and establish dates which will trigger specific collection actions to be taken.

POLICY:

1. Electric bills are due when they are received by the customer. The bills cover the cost of electricity which was used over a 30-day period beginning approximately 35 days previously. Payment should be made promptly so that sufficient cash will be available to Relasi to pay the Sakenergo wholesale power bill when it becomes due.

OPTION 1

2. A late payment charge shall be added to the bill if it is not paid within 15 following its delivery. The amount of this charge shall be 10% of the net amount of the bill.' The late payment penalty shall be applied to the full amount of any bill paid after the delinquent date printed on the face of the bill. Failure to receive a bill will not relieve the customer of the obligation to pay the penalty.

OPTION 2

2. Interest shall begin to accrue on bills not paid within 15 days following delivery. The interest shall be computed at the rate of 0.07% per day, starting with the 16th day following the date of delivery, and including the date of payment.'
3. If a bill has not been paid before the production of the customer's next monthly bill, that subsequent bill shall include the amount of the unpaid bill (including any penalty charge). The customer shall be advised that if the bill is not paid in full within 7 days, an order will be issued to disconnect his electric service.
4. For any monthly bill which has not been paid within 7 days after the issuance of the subsequent month's bill to that account, an order to disconnect shall be issued by the Billing Supervisor, and the service to that customer shall be disconnected within 5 days. (See Policy _____, Disconnection for Non-Payment, for more details).

' It order to be effective in encouraging prompt payment, the late payment charge must be sufficiently large to cause the customer to want to avoid the penalty. It should be noted this penalty should not be implemented until approved by the Regulatory Commission.

' This procedure is not recommended, It does not result in sufficient cost to the customer to prompt immediate payment. A bill of 50 Lari would accrue a penalty of only 1.05 Lari per month, even when applying an annual interest rate of 25%.

POLICY 152
PAYMENT DUE DATES

PROCEDURE:

1. The Billing Supervisor shall prepare and maintain a supply of "Notice of Delinquency" forms (see next page). The Bill Courier shall take with him each day a sufficient number of these Notices to give one to each delinquent customer. The Courier shall look at each customer bill at the time of delivery. If it includes a "past due" amount, the Courier shall give to the customer a copy of the Notice along with his bill. If he sees the customer in person, he should explain the Notice of Delinquency, and encourage the customer to make payment as quickly as possible to avoid disconnection. The Courier may not accept any payment, but direct the customer to the local bill payment station.
2. On week day, the Billing Supervisor shall:
 - a. select the Meter Routes which were billed 7 days earlier,
 - b. print a customer list which includes all accounts which have not paid their previous month's bill,
 - c. print disconnect orders for those accounts, and
 - d. deliver the disconnect orders to the Disconnect Supervisor.
3. The Billing Supervisor shall prepare and maintain a supply of "Notice of Disconnection" forms to be given to customers at the time of disconnection. These forms will include the customer location and the unpaid amount. They will be filled out and given to the Disconnect Supervisor along with the Disconnect Orders.
4. The Disconnect Supervisor shall schedule sufficient crews to disconnect service to all customers for whom disconnect orders have been issued. A backlog of disconnect orders must not be allowed to accumulate. Disconnections should be scheduled on Saturday and Sunday if necessary to clear out all disconnect orders issued during that week.

POLICY 152

PAYMENT DUE DATES

NOTICE TO DELINQUENT CUSTOMERS

THE OLD BILL AMOUNT MUST BE PAID OR

SERVICE WILL BE DISCONNECTED

This bill shows you have not paid your last month's bill. If this bill is not paid within seven (7) days, your service will be scheduled for disconnection. You must pay this bill to the electric company cashier at the Northwest Budget Bank. The payment office is open from 10 a.m. until 6 p.m. Monday through Friday.

The shortage of power and the daily blackouts in Georgia can be resolved only if people pay promptly and completely for the electricity they use. Payment is necessary to buy fuel for the power plant. The Government of Georgia does not have sufficient tax revenue to provide free electricity to customers.

Under the new program being developed, service to people who do not pay their electric bills is to be disconnected.

NOTICE OF DISCONNECTION FOR NON-PAYMENT

Account Number _____

Past Due Amount _____

Date _____

Address _____

Your electric service is being disconnected because you have not paid your electric bills. The past due amount is shown above. In order to have service reconnected, pay all past due amounts, plus a 25 Lari reconnection charge. Payments may be made to the electric company cashier at the Northwest Budget Bank. The payment office is open from 10 a.m. until 6 p.m. Monday through Friday.

The shortage of power and the daily blackouts in Georgia can be resolved only if people pay promptly and completely for the electricity they use. Payment is necessary to buy fuel for the power plant. The Government of Georgia does not have sufficient tax revenue to provide free electricity to customers. Service to people who do not pay their electric bills is to be disconnected.

Please be advised that it is a crime to steal electricity in Georgia. Your service will be monitored to assure that no illegal connections are made to the electric distribution network.

POLICY 153

CASH CONTROL AND REPORTING

the bill stubs. The total from the bill stubs, the tally sheet, and the net cash in the drawer should always be equal.

8. All of the payments received by a single Teller during a single day shall be considered a "batch," identified by the date and Teller name or number. The bill stubs for a batch will be stapled together and delivered to the head cashier, along with the cash received, and the tally sheet.
9. The head cashier will count the money and add the bill stubs, and confirm that the amount of cash turned in matches the amount shown on the bill stubs. The head cashier will then take custody of the cash, prepare a deposit form, and be responsible for its delivery to the bank. The deposit form shall have written upon it the batch number or numbers included in the deposit.
10. On the day following collection, the bills stubs or the tally sheet shall be delivered to the Computer Operator so that the payments can be recorded into the customer database. When this is done, the bills stubs and tally sheets shall be returned to the head cashier for filing.
11. All bills stubs, tally sheets, and bank deposit receipts shall be maintained in secure files for a period of five years, and shall be available to both internal and external auditors for use in verifying that all bill payments have been properly recorded and deposited.
12. It should be noted that if payment is made, but not properly recorded to a customer's account, the customer's next bill will show that the previous bill has not been paid. In that case, the customer would be expected to complain to the office, and produce his receipt to prove that payment was made. The billing office would then refer to the bill stubs and deposit receipts to verify that payment was received and the cash deposited in the bank. This allows the billing office to correct any inadvertent errors, or alerts it to the possibility of embezzlement of funds by an employee.

' Net cash is the total cash less the amount in the cash drawer at the beginning of the day, provided for the purpose of making change.

POLICY 153

CASH CONTROL AND REPORTING

CASH CONTROL AND REPORTING

PURPOSE:

To assure that all cash received by Relasi employees or agents from customers in payment of their electric bills is properly recorded on the books of the company, and deposited on a daily basis in the appropriate Relasi bank account.

POLICY:

1. Bill payments shall be received only at designated payment stations by authorized tellers or cashiers. Payments for bills may not be made to, nor received by Relasi employees or agents at the customer premises or any other location except the designated payment stations.
2. The customer billing form shall have two parts, each of which contains the billing data for the current month, including the amount of any unpaid old bills. The left-hand part shall serve as the customer's receipt. The right-hand part shall be retained by the utility for the purposes of balancing the cash drawer, and posting the payment to the customer's file.

PROCEDURE:

1. The complete billing form shall be presented to the Teller along with the cash payment being made.
2. The Teller shall calculate the amount of change due to the customer, if any.
3. If full payment is made as indicated by the "Amount Due Now," the Teller will circle that amount on both the receipt and the bill stub, stamp both halves with a date stamp, and sign (or initial) both halves for the purpose of identifying the Teller who received the payment.
4. If partial payment is being made, the Teller will strike through the amount shown on the bill, and write in the amount actually paid on both the receipt and bill stub. Both sides will be date stamped and signed, as in 3, above.
5. The bill stub shall be separated from the receipt and placed in the cash drawer with the payment. The receipt shall be handed back to the customer, also with any change due.
6. A tally sheet shall be maintained on which the account number and amount paid is written at the time each payment is made. This will serve as a back-up record of the payment transactions for that day.
7. At the end of the day, or more often if desired or directed, the teller shall balance the cash in the drawer against the total amount paid in, as determined by adding the amounts shown on

POLICY 154
CUSTOMER PAYMENT RECORDS

CUSTOMER PAYMENT RECORDS

PURPOSE:

To assure that customer payments are promptly recorded to the proper customer accounts.

POLICY:

1. Customer records shall be maintained in such a way as to show the meter readings, amount billed, and amount paid for each month for each individual electric customer. These records shall be maintained for a period of 10 years.
2. Stubs' from bill payments made each day shall be delivered to the computer operator the following morning so that information regarding the date and amount of payment may be enter into the customer database.
3. Following entry into the computer, bill stubs will be bound together in one or more "batches," marked prominently with the date of payment, and filed chronologically so that they may be quickly located for reference in case there is a dispute regarding payments.
4. The computerized customer files shall provide a history of all customer billings and payments for the past 24 months. They shall be readily available to employees to help resolve any disputes regarding past billings or payments.
5. A copy of an individual customer's history may be printed and given to the customer. However, one customer may not have access the billing history of another customer, without the customer's written permission.

' A bill "stub" is that portion of the customer's bill which is tom off by the teller and kept in the cash drawer for the purpose of reconciling cash received with payments made at the end of each day.

DISCONNECTION FOR NON-PAYMENT

PURPOSE:

To deny electric service to customers who do not pay.

POLICY:

1. For any month in which the customer does not pay his electric bill by the date the next monthly bill is prepared, the new bill shall show the amount of the unpaid old bill.
2. At the time the new bill is delivered, the customer shall be advised that if the bill is not paid within seven (7) days, his electric service will be scheduled for disconnection, and he should expect such disconnection to take place during the following 7-day period. It should be noted that by the time of disconnection the customer will have 75 days of electric service without payment).
3. For all customers whose bills have not been paid at the expiration of the 7-day grace period, the Billing Office shall prepare a list of such customers and deliver it to the Operations Supervisor. (It should be noted that such a list should be delivered every work day for 20 days during the month, assuming that the billing groups have been scheduled evenly throughout the month).
4. The Operations Supervisor shall maintain a Disconnect Crew of sufficient numbers and experience to perform all of the disconnections ordered each day. The disconnect crew should be divided into two-man teams. They should travel as a group from building-to-building, disconnecting all of the delinquent customers in one building before moving to the next. Each day's work will be concentrated in a few buildings, since the disconnects will be normally be confined to the customers of one or two meter routes.

(It should be noted that under a levelized monthly work load schedule, a disconnection list should be delivered every day. Each list should be completed within one day, since a new list will be delivered the following day. If each list is not disposed of on a daily basis, a backlog of unfinished work will build up, and disconnections will not occur on schedule. If disconnects are threatened, and then are not performed, the customers will quickly learn that "nothing has really changed," and they can continue to ignore bill payments with no consequences).

5. The disconnections shall be performed in the most expeditious way that will minimize the likelihood of self-reconnection by the customer. The disconnection should not be performed at the customer meter location if the meter is inside the apartment, but at an external point where self-reconnection can be readily detected. If necessary, some or all of the service wire from the building feeder to the customer meter may be cut and removed.
6. If the disconnect crew arrives to perform disconnection and the customer offers to make payment to them, or begs for additional time to pay, the crew may defer disconnection until later in the day. The crew may not accept payment from the customer. The customer should

be told to go immediately to the payment office to make payment, or negotiate acceptable payment arrangements. If the customer returns with a receipt showing the delinquent bill has been paid, or a letter from the Billing Supervisor suspending the disconnect order, service may remain connected.

7. The disconnect order forms shall be returned to the billing office, showing which customers were disconnected, and which remain connected. This information shall be given to the Computer Operator so that customer records may be edited to show the disconnected customers as being "inactive."
8. Surveillance should be increased at disconnected customer locations to assure that they have not reconnected themselves. If a customer is found to have illegally reconnected himself to the network, procedures outlined in Policy 162 shall be followed.

PROCEDURE:

1. The Delinquent Disconnect Crew shall be under the supervision of the Operations Manager, or his designated representative.
3. The Billing Supervisor shall provide the Crew each morning with the list of delinquent customers whose services are to be disconnected that day. Generally, these should all be in the same meter route (or routes), and thus confined to a few apartment buildings.
4. Provide the Crew the necessary reporting forms and Customer Maps showing the location of the buildings where disconnections are to be made.
5. Arrange transportation and load all equipment and material required for the day's work.
6. The crew should be divided into two-man teams, with each team assigned to disconnect separate apartments. All teams should stay close to each other, working one stairwell or building at a time. This is to allow mutual protection and assistance, as necessary. As each team completes its work in one stairwell, it will move to the next adjacent stairwell to begin work.
7. Explain briefly to consumers encountered the reason the disconnection is being performed.
8. Inspect the wiring connections and premises to determine if the customer has also been engaged in electricity theft.
9. If the customer requests additional time to pay, any extension of time granted by the Disconnect Team would be only to allow payment to be made before the crew leaves the vicinity. The crew may not independently make arrangements to come back on a different day, as all scheduling must be done by the Billing Supervisor.

10. If the consumer becomes abusive and threatening, the Disconnection Team may withdraw, and return later when police protection can be arranged to protect the Team from harm while performing the disconnection.
11. When disconnection is performed, leave the point of disconnection secured and sealed in such a way as to make reconnection by the consumer difficult, and easy to detect should it occur.
12. Complete the report form for each disconnect and return it to the Operations Manager.
13. The Operations Manager should forward reports to the billing office which show that service has been terminated, the final reading on the meter register.

DISCONNECTION FOR THEFT OF ELECTRICITY

PURPOSE:

To provide a deterrent to meter tampering and electricity theft.

POLICY:

1. It shall be illegal to tamper with electric meters to cause them to under-register the amount of electric used; to by-pass the meter by connecting wiring to the service wires on the supply-side of the meter; or to attach wiring to the building feeders or to other network feeders outside the building for the purpose of using un-metered electricity.
2. All utility personnel whose work requires them to be on customer premises should be instructed in the methods of electricity theft commonly employed by customers, and be instructed to always look for evidence, and report cases of suspected electricity theft.
3. Forms shall be provided to field employees for the purpose of reporting suspected electricity theft. These shall be used for internal communications between departments, and recording findings and results. They shall be maintained in a permanent file for reference.
4. Suspected theft shall be reported to the supervisor of the Disconnect Crew. An Inspection Order shall be prepared, and the investigation and actual disconnection, if required, shall be performed by the Disconnect Crew.
5. All illegal connections shall be removed immediately by the Disconnect Crew, and metered service shall be disconnected until the customer has paid for the stolen electricity, plus the prescribed penalties.
6. Where theft is found to have occurred, the Disconnect Crew shall inventory the electric equipment in use, estimate how long the illegal connections have been in operation, and calculate the number of kilowatt hours stolen. This information shall be recorded on the Inspection Order.
7. Before electric service is reconnected, the customer shall be required to pay an amount equal to the stolen amount, multiplied by three.
8. Surveillance should be increased at disconnected customer locations to assure that they have not reconnected themselves.
9. While Georgian criminal law allows prosecution of customers for theft of electricity, such prosecution shall not be undertaken for a first or second offense. However, a complaint shall be filed with the appropriate offices so that each case of theft becomes a matter of record within the judicial system, and can be used as evidence in the event prosecution is sought at a later time because of repeated offenses. Only after the third offense shall the utility company prosecute the customer in the judicial system.

PROCEDURE:

1. The Disconnect Team shall be under the supervision of the Operations Manager, or his designated representative.
2. Field work should be scheduled at least one day in advance. Set daily operating hours as necessary to maximize the efficiency of the Team. This may include some after-dark work.
3. Provide the Team each morning with copies of the individual work orders and a schedule showing the order in which the work should be performed. A major consideration should be to minimize travel time.
4. Provide the Team the necessary reporting forms and Customer Maps showing the location of each job to be performed.
5. Arrange transportation and load all equipment and material required for the day's work.
6. Travel to the job sites in the sequential order as scheduled. Using the consumer map, crosscheck and match each service location to confirm the address, consumer name, and meter number. When in doubt, and the consumer is home, ask to see one of their electric bill receipts in order to confirm the location.
7. Explain briefly to consumers encountered the reason the disconnection is being performed.
8. Conduct the investigation of metering and wiring connections.
9. If a suspected theft report is determined to be erroneous, thank the consumer for his cooperation and apologize for any inconvenience caused.
10. If the consumer becomes abusive and threatening, the Disconnection Team may withdraw, and return later when police protection can be arranged to protect the Team from harm while performing the steps outlined in paragraph 11, below.
 11. If the purpose for the disconnection is theft of electricity:
 - 11.1 photograph or video-tape the evidence before removal, and during various steps of removal. If possible, use cameras which automatically show date and time in the corner of the picture;
 - 11.2 record all findings on the forms provided for that purpose, and draw sketches where helpful in describing the conditions found;
 - 11.3 remove and tag all apparatus used to perform the theft (show consumer name, account number, and date confiscated on the tag);
 - 11.4 conduct an inventory of electrical equipment at the location, and, using forms provided for that purpose, calculate:
 - the average monthly kWh usage for such electrical load;
 - the difference in the amount billed and the calculated amount of usage for the

- number of months over which the theft is thought to have occurred;
- the amount of penalty to be charged over and above the cost of electricity stolen; and
- the total amount which must be paid by the consumer in order to have electric service restored;

11.5 explain to the consumer all findings and the rules of the utility which dictated the actions taken by the Apprehension Team;

11.6 interrogate the consumer to try to determine:

- how long the pilferage apparatus has been in place;
- who advised or assisted in its installation; and
- does he have knowledge of others who have installed the same or similar apparatus (this consumer may share in rewards from other apprehensions resulting from "tips" provided by him, thereby reducing his own penalty charges).

11.7 give to the consumer a copy of the form which shows the calculations of amount to be paid, and which also provides instructions on the steps which the consumer must take in order to have electric service restored.

12. When disconnection is performed, leave the point of disconnection secured and sealed in such a way as to make reconnection by the consumer difficult, and easy to detect should it occur.
14. Complete the report form for each disconnect and return it to the Operations Manager.
15. The Operations Manager should forward reports to the billing office which show that service has been terminated, the final reading on the meter register.

SURVEILLANCE FOR ILLEGAL CONNECTIONS

PURPOSE:

To reduce the level of revenue lost through theft of electricity.

POLICY:

1. Relasi shall organize and maintain Surveillance Teams to systematically inspect the electric distribution system and customer service connections for evidence of electricity theft through illegal connections and meter tampering.
2. Surveillance Teams shall be provided daily with lists of customers who have just been disconnected for non-payment or electricity theft. These customers shall be the object of increased surveillance for a period of time following disconnection.

Procedure:

1. The organization and operation of the Surveillance Teams shall be under the supervision of the Operations Manager who also supervises the Disconnect Crew.
2. The daily work schedule should be prepared at least one day in advance. The work schedule may include areas to be covered under the systematic inspection program, and also other specific customers or buildings where disconnections have recently occurred.
3. Assemble and deliver to the Team Leader all schedules, forms, supplies, equipment and material required by the Surveillance Team to perform the day's assignments. These would include:
 - 3.1 a system map showing the location of the transformer(s) where the inspections are to occur;
 - 3.2 a consumer map showing the location of consumer account numbers in relation to each other, the distribution transformer, and various roads and landmarks (if such exists);
 - 3.3 a list of consumers served by the transformer(s), showing the name, address, account number, meter number, and the previous meter reading(s). This list would most logically be the meter reading book, or the meter reading list produced by the billing computer;
 - 3.4 blank forms upon which to record irregularities found, and a summary report of the days results;
 - 3.5 forms required to conduct and record an apprehension, if the Team is so authorized;

- 3.6 a clip board, blank paper, pencils and other drawing aids to assist in drawing field sketches to prepare (or correct) consumer account number maps;
 - 3.7 screw drivers, wire pliers, and other hand tools which might be useful in conducting the inspection and making minor corrections; and
 - 3.8 a supply of meter seals, electrician's tape, and other supplies which might be required to make minor corrections allowed within the scope of their activities.
4. Arrange for transportation of the crew to and from the area to be inspected.
 5. Locate each consumer connection to secondary lines fed by the designated distribution transformer.
 6. Explain briefly to consumers encountered that the utility is conducting a Customer Inventory to update its consumer files, and preparing consumer location maps.
 7. Cross-check and match each service location found to confirm:
 - 7.1 the address shown on the consumer list
 - 7.2 the account number shown on the consumer list;
 - 7.3 the name of occupant;
 - 7.4 the class of consumer (residential or commercial, to assure proper tariff is applied; also, whether consumer is pensioner or has other status which provides a discounted rate);
 - 7.5 the meter number;
 - 7.6 the present meter reading, to assure it is consistent with previous readings reported; and
 - 7.7 the account number is shown on the consumer map in the proper location relative to other accounts.

When in doubt, and the consumer is home, ask to see one of their electric bill receipts in order to confirm the location.

8. Mark all corrections on the Customer List and Customer Map.
9. Inspect carefully the secondary wiring, all service drops, and all meter installations. Look for:
 - 9.1 tampered, damaged, or stuck meters;
 - 9.2 connections to service wires on the line side of meters which enter the premises unmetered;
 - 9.3 service drops connected to houses where there is no meter (both occupied and unoccupied buildings);

- 9.4 meters which are tilted or loosely mounted (see if the meter can be readily lifted and removed from its mounting bolts, and left hanging sideways or inverted);
 - 9.5 broken or missing meter seals;
 - 9.6 discs turning in the wrong direction;
 - 9.7. swapped leads to the meter connections;
 - 9.8 insulated line-side neutral under the meter terminal screw (floating neutral);
 - 9.9 uninsulated splices or other bare spots on energized conductors where intermittent connections may be made (e.g., in the evenings) to steal electricity; and
 - 9.10 other conditions which may be contributing to system losses.
10. Test meter accuracy using the quick-test method. This will require additional time at the site and may be deferred to a later visit.
11. Interview consumers found with illegal connections or tampered meters to explain the Team's findings and decide how to proceed. Depending upon utility policy, this may include:
- 11.1 explaining the options and arranging for the rewiring of the premises such that all electrical equipment will be properly metered;
 - 11.2 calculating the amount of unmetered electricity which has been used, and calculating the cost to be recovered from the consumer; and
 - 11.3 preparing a Work Order for work to be done by the Rewiring Team;
- OR**
- 11.4 conducting an apprehension on the spot; or
 - 11.5 deferring any action, reporting the findings to the Apprehension Team or others for resolution.
12. Complete the appropriate reporting forms for each instance where further action is required by other utility staff.
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**Legal & Regulatory Reform
for Electric Distribution Companies**

The following factors are to be considered for inclusion in the commercialization pilot project for electric distribution companies in Georgia. This document presents a brief introductory discussion of each in order to acquaint the Regulatory Commissioners and others with many of the issues related to the reform of distribution commercial procedures. This is not necessarily a complete list of factors, nor does it provide complete solutions. It is intended primarily to open the dialog on the issues which should be considered.

In most cases, these reforms cannot be undertaken unilaterally by the distribution companies, but require authorization and/or a mandate from the Regulatory Commission or other government offices.

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8. Power Supply Contract

1. Criminalization of Power Theft

1.1 Types of theft actions covered

Provision. The theft, misappropriation, or malicious damage to electric utility property, plant and facilities of all types, including generation, transmission and distribution equipment and material, both in an operational status or in inventory shall constitute a felony, punishable under (applicable existing theft) statutes. The electric energy conveyed throughout the electric transmission and distribution network shall be considered the property of the electric utility company until delivered to the customer through an appropriate metering device installed by the utility company.

The theft of electric power shall be defined as any deliberate action or activity which results in the use of electricity by an individual or corporate entity (beneficial user) without such use being properly metered and billed to the consumer by the power supplier. Such actions shall include, but not be limited to:

- any action which alters the normal sensing or recording mechanism of the electric meter,
- unauthorized alteration of the meter register,
- connections to the service wires on the utility's side of the customer's meter, or
- unregistered direct connections to the utility's distribution network.

Rationale. Very large amounts of electricity are used by very large numbers of customers through unmetered and unregistered connections to the distribution companies' networks. This deprives the distribution companies of revenue necessary to pay their wholesale power bills, employees' salaries, and other operating expenses; and deprives them of funds needed for rehabilitation of the networks.

Such use of "free" electricity is so endemic that it presently carries no social stigma. In order to curtail these practices, they should be declared illegal, and programs should be undertaken to remove illegal connections and restrain customers from the further pursuit of such illegal practices.

1.2 Different parties subject to penalties

Provision. A distinction shall be made between three different categories of potential perpetrators of energy theft in order to set different levels of punishment for each. These would include:

- beneficial users of the electricity, whether registered customers or otherwise, who perform the illegal actions on their own initiative;
- electricians or other entrepreneurs who provide or sell their technical knowledge or skills to the beneficial users; and
- utility employees who, in collaboration with the beneficial users, provide or sell their knowledge or skills.

The level of punishment for a tradesman selling illicit services shall be one degree higher than that applicable to the beneficial user, plus the loss of any professional license or permit which he may possess; and the level of punishment for a utility employee collaborating with consumers to defraud the utility should be two degrees higher than that applicable to the beneficial user, plus the loss of his job with the utility, and disbarment from further employment with any utility company.

Rationale. It is generally accepted that a high percentage of unmetered connections, tampered meters, and falsified meter readings are the result of collusion between utility employees and customers. This provision is designed to increase the risk and reduce the inclination of knowledgeable technicians from profiting at the expense of the utility companies.

1.3 Types of punishment

Provision. Punishment upon conviction of power theft shall include a fine and/or imprisonment consistent with the punishment set forth in existing criminal codes for crimes of similar nature, including the value of the loss incurred and the number of prior convictions.

Imprisonment may be suspended for first offenders if monetary restitution is made to the utility. The restitution shall be three times the calculated loss, plus fixed charges to cover investigation and prosecution costs incurred by the utility company.

Rationale. It is important to establish in the minds of the public that electricity is a "property" and has value just as any other personal or tangible property, and its theft or misappropriation constitutes a serious crime. The reason for allowing the suspension of jail sentences, especially for first offenders, is to provide an incentive for the perpetrator to make restitution. The purpose for the restitution being set at 3 (or more) times the amount stolen is to sharply increase the financial risk to the person contemplating the theft of electricity.

1.4 Types of evidence required

Provision. Evidence required in order to file criminal charges against a consumer shall include a date-stamped series of photographs (or video tape) showing wide-angle views of the premises, in order to clearly establish the location; and then successively closer photographs which clearly indicate the nature of the violation, both before, during, and after the process of removing and correcting the violation. Confiscated meters, wires, connectors and other apparatus associated with the theft shall be removed, labeled, and safeguarded until the case is settled.

There should also be two witness, in addition to the utility employee detecting and correcting the illegal apparatus, one of which should preferably be a law officer, and both of whom shall provide signed affidavits of their observations.

The existence of theft apparatus on a consumers premises shall constitute prima facie evidence that the beneficial user is responsible for the condition found.

Where it is clear that unmetered electricity has been used, but evidence is not sufficient to result in criminal conviction, the utility shall not be excluded from independent civil action to recover payment for the electricity lost.

Rationale. The above provisions are intended to be indicative, not necessarily specific. The actual wording should be crafted by those skilled in such matters. While the utility should not be unduly burdened with the requirements for evidence, there should also be adequate protection of consumers from utility employees who may be tempted to extort payment from unwitting customers through false reports and accusations.

2. **Tariff factors**

2.1 Monthly Billing authorized

Provision. The (government) explicitly authorizes and empowers electric distribution companies to deliver monthly electric billing statements to retail customers and require that payment be made on a regular monthly basis as a condition of continued electric service. These bills shall be based on actual or

estimated meter readings, and be calculated in accordance with tariffs approved by the Regulatory Commission.

Rationale. It is reported that in at least one CIS nation, monthly bills were expressly prohibited. In order to advise the customers of the new billing procedures and other conditions of service, the distribution company should prepare a concise listing of Rules and Regulations related to the rights and responsibilities of customers, and present them in the form of an agreement which is to be signed by all new customers. In the case of existing customers, it will not be necessary to obtain a signed copy, but the information should be delivered in written form to every customer location before the implementation of the new procedures.

2.2 Late payment charges

Provision. Distribution companies are authorized to levy a "late payment" charge in order to prompt customers to pay their electric bills within a specified period, provided the utility delivers bills on a regular and predictable schedule every month to those customers.

Any late payment charges to which the customer is subject shall be explicitly specified on the monthly billing statement, and the date after which the late payment charge becomes effective shall be clearly stated. This date shall not be earlier than 10 days following the date of delivery of the bill to the customers premises.

The amount of the late payment charge shall be calculated as a percentage of the bill. The full amount of the penalty shall be applied and collected on any payment made after the due date printed on the bill.

Rationale. Good collections depend upon the establishment of a payment discipline among the customers. Bills should be paid every month and not allowed to accumulate. If a customer cannot pay one month's bill, it is highly unlikely that he can pay two or more months' accumulated bills, and the utility is not helping the customer by letting him get behind in payments.

Customers should learn to expect their electric bills to be delivered at the same time every month, subject to slight variations caused by weekends and holidays. The bill due date should always be the same day of the month, except on rare occasions when meter routes may be regrouped or rescheduled for efficiency of operation. When the due date falls on a weekend or holiday and payment stations are closed, the bill is due on the next following work day.

The late payment penalty is designed to help instill payment discipline, and is a common practice among all western utilities (electric, gas, and water). The penalty should be large enough to cause the consumer to want to avoid the penalty, typically 5% or 10%, by paying the bill on schedule. The amount of the penalty charged should be subject to approval by the Regulatory Commission.

There may be cases where the collection of the penalty may be waived, but this would be decided on a case-by-case basis by utility managers. One example would be where the due date falls a few days before a pensioner receives his monthly allotment. The utility may make it a practice to apply the penalty if the payment is made within a day or two after the allotment is received.

The Commission may desire to have the utility to account for revenue collected as penalty charges separately from regular electric revenue for statistical analysis purposes. This could be done routinely with computerized billing programs.

2.3 Social subsidy

Provision. In order to make a minimum level of electric service affordable to the largest number of very poor customers, the electric tariff shall contain three (or more) steps, providing a specified number of kilowatt hours within each rate block, with the rate charged for each block being successively higher, as follows:

First 20 kWh @	2.0 tetri per kWh
Next 30 kWh @	4.0 tetri per kWh
Over 50 kWh @	6.0 tetri per kWh

Rationale. This is described as an "inverted block rate." The values shown are illustrative in nature, and not intended to represent actual values which may be applicable in Georgia. This type structure is completely contrary to normal "cost of service" considerations in that it results in high-use customers subsidizing low-use customers. It represents a type of "tax" on one group of customers to pay the bills of another group. It is motivated politically for one or both of the following reasons:

- to provide an affordable, subsistence-level of electric service to very poor people, or
- to conserve electric energy by penalizing higher consumption.

The tariff is not necessarily fair to poor people, since many poor may have electricity as the only source of heat, and they very quickly find themselves in the higher rate levels.

In order to provide the distribution companies with adequate revenue, the average rate for all kWh billed must still equal 4.5 tetri (under present rates), and to achieve this average, the rate in the higher use blocks must be set very high. Furthermore, in order to project overall revenue under various block rate scenarios, the utility must have very accurate records of the number of consumers in each strata of monthly kWh consumption, as described in paragraph 6.2, below.

Since normal rate-making data is not available, any block structure adopted would likely be based on an arbitrary but politically acceptable structure, with the government committed to subsidize any shortfall in revenue.

Alternative. An alternative to the inverted block social tariff structure would be the identification of very poor customers whose electric bills would be subsidized by the government. This would require a complex set of rules under which customers would be entitled to subsidies based on household income levels, or their status as pensioners, war veterans and other criteria. Eligible persons would have to be certified by some government agency to the distribution companies; billing records of those customers would have to be compiled by the utility and submitted to Sakenergo for credit on their wholesale power bills, and Sakenergo would then apply to the government for direct payments or credits for those amounts. A substantial bureaucracy would be required to administer the program, and it would open the possibility of false certifications being sold by various government officials.

Conclusion. Some type of government subsidy on behalf of the very poor will be necessary if they are to receive electric service, and the distribution company is to operate at the same time as a viable commercial enterprise. The most expedient approach should be undertaken initially, with the more fair and efficient solutions being adopted as better data becomes available and management techniques become more sophisticated.

2.4 Minimum Monthly Bill

Provision. The Distribution Company may include as a component of its retail electric tariff a minimum monthly charge of 40 tetri¹ per month. This charge shall appear on the billing statement as a separate line item and labeled as a "Monthly Fixed Charge."

Rationale. When retail electric tariff structures are under consideration, decisions are generally based on a cost-of-service analysis. Components of this analysis include energy costs, demand costs, customer costs, and "other." The customer-related costs are the on-going costs incurred by the utility, independently of the number of kWh used. The most precise application of this customer-related cost in the tariff structure is as a "fixed" charge, itemized separately on the billing statement and added to the kWh charge. Sometimes utilities include a few kilowatt hours within the minimum bill, but usually at a higher per-kWh rate, as illustrated below.

First 5 kWh @	8 tetri per kWh (40 tetri Minimum Bill)
All other kWh @	4.5 tetri

However, this approach is not consistent with the social tariff (inverted block rate structure) described above. If a minimum bill is to be applied within the context of a social tariff, it should be listed as a separate fixed charge. Such fixed charges are calculated during a cost-of-service analysis, but sufficient data does not exist to conduct a proper analysis in Georgia at the present. Typically, fixed charges are in the range of 4% to 10% of the average monthly residential bill.

One value of the minimum bill is that it provides a basis for collecting revenue monthly from vacant property which remains energized. Under traditional accounting procedures, there is a cost to the utility for maintaining service to a vacant property, and large numbers of idle services can affect the utility's profitability. These costs include line losses, exposure to theft, lightning damage, line maintenance, right-of-way maintenance, property taxes, and depreciation. While these may not be significant issues at present, they will become so in the future.

¹Or other such values as may be determined by the Regulatory Commission

The concept of a minimum bill probably should not be introduced at the present time. However, Regulators and planners should be aware of its potential when establishing new conditions of service, accounting procedures and reporting requirements for the distribution companies.

2.5 Charges to recover common building supply costs

Provision. The distribution company may add a fixed monthly charge to the bills of customers located in apartment buildings which provide to the tenants common services such as stairwell and outdoor lighting, and elevators. This fixed charge shall be the same for all tenants of the building, and shall be based upon the total common-service usage per year, divided by 12 months, and further divided by the number of customers in the building. The common-service usage may be either billed or estimated, and may be reviewed and adjusted annually or as circumstances warrant.

Rationale. The common building services presently represent a loss in kWh and revenue to the distribution companies. The building occupants are the beneficial users of this electricity and should pay for it. The charge should be a separate line item on the tenants monthly electric bill, and show the tenant's prorated share of both the kWh and amount charged to the tenant.

There are some complicating factors in this procedure. The amount of electricity actually used will depend upon the wattage of the light bulbs used, how promptly burned-out bulbs are replaced, and whether or not the lights are turned off during the day time. If the common services are metered, the actual use can be reviewed and adjusted annually. If not metered, the use can only be estimated.

Another factor is the number of apartments in the building which are permanently vacant. This would be one purpose of an annual review, wherein the charge would be adjusted based on the number of apartments occupied.

2.6 Estimated bills

Provision. Where the utility is unable to obtain an actual meter reading, an estimated reading shall be used in the calculation of the monthly bill. Any convenient and rational method may be used to establish the estimated reading. It should generally be based upon the average monthly consumption, however, such mathematical calculations may be arbitrarily increased or decreased, especially where seasonal variations resulting from the use of electric heat or other factors are indicated.

Where access to the meter has not been possible and estimated readings used for a period of 6 months, written notice may be provided to the customer that an appointment must be made for the utility to obtain a meter reading and conduct a meter inspection, or service will be disconnected.

Rationale. A bill must be prepared and delivered to every active customer location every month. The bill must be based upon an actual or estimated kWh usage. A computerized billing system generates such a bill when an estimated reading is entered into the computer. The billing software should provide a means to mark estimated readings as "Estimated," and print the word "Estimated" on the face of the bill and also in the billing ledgers. The reason for this is so that in case there is a dispute about the size of the bill, both the customer and staff know that it is based on an estimated reading.

It is important to also know if the previous bill was estimated, since if it were under-estimated, a current-month reading might produce a higher than normal bill, since it would also include some kWh actually used in the prior month.

If there is a complaint about an estimated bill, an adjustment may be made and a different payment accepted. This procedure, however, must be accompanied by the preparation of an "adjustment voucher," and the computer software must be designed such that it properly records that an adjustment was authorized, including the adjustment voucher number. This is to provide an "audit trail" which can be monitored by managers and independent financial auditors to assure that employees do not use "bill adjustments" as a means of embezzling money from the company.

Generally, if only one meter reading is missed, an automatic adjustment occurs when the next meter reading is obtained. The reason for limiting the number of successive meter readings which can be estimated is to assure that the estimates reflect actual usage, and to allow visual inspection of the meter to assure that it has not been tampered. One method to prompt the customer to provide access to the meter is to over-estimate the consumption.

3. Service Conditions

3.1 Customer service agreement

Provision. The distribution company shall provide to the customer a concise listing of the terms and conditions under which the utility will provide and maintain electric service to the customer. This listing

should be in the form of a Service Agreement or Contract, and should be signed by the customer at the time he applies for service as an acknowledgment that he has been advised of his rights and responsibilities and agrees to abide by them. It shall include the current tariff schedules, with the notation that they may be changed from time to time upon approval by the Regulatory Commission.

Rationale. The relationship between the distribution company and the customer should be contractual in nature, specifying the rights and responsibilities of each party. This contractual relationship establishes the basis for any disciplinary action or recourse available to either party when the terms and conditions are violated by the other.

The principal recourse available to the utility is service fees and penalties, and the termination of electric service. The principal recourse available to the customer is a complaint or appeal to the Regulatory Commission when the utility is considered to be conducting its business in a negligent or abusive manner.

The Commission should establish an office for the specific purpose of hearing and investigating consumer complaints. This office would establish liaison with the distribution companies, maintain records and determine when a distribution company may be consistently and deliberately in violation of the provisions of its License Agreement, issue warnings, and undertake disciplinary action when warranted, including proceedings to suspend or revoke the distribution company's license.

3.2 Customer deposit required

Provision. The distribution company may establish a policy to require consumers to provide a cash deposit to guarantee payment of electric bills. This deposit may be equal to three month's estimated electric bills at the location. This deposit may be required at the time a new customer applies for service, or as a condition of reconnection of service after a customer had been disconnected for non-payment or theft of electricity.

Cash received in the form of a deposit shall not be treated as income, but shall be maintained in a separate account and shown on the financial Balance Sheet of the company as a Liability, since it is money that is owed back to the customer. The deposit may be applied to the customer's final bill, with any excess amount being returned to the customer. Some or all of the deposit may be confiscated at the time a customer is disconnected for non-payment, as necessary to cover the unpaid bills.

Rationale. Electricity is sold to customers "on credit," that is, the electricity is used before payment is received, and it cannot be repossessed if payment is not made. If it develops that a customer cannot or will not pay, the number of unpaid days of service accumulated by the time service is disconnected, even under the best administered programs, is 80 to 90 days. This is the reason that a 3-month deposit is prudent.

In some western utilities, the deposit is returned to the customer if he establishes a clean record of bill payments, with no history of late payments or non-payment disconnects over an extended period of time.

3.3 All electricity supplied must be metered

Provision. All electricity used by a customer must pass through a metering device which shall record the number of kWh used with an accuracy of $\pm 2\%$. This meter shall be supplied, installed, and owned by the distribution company. The meter capacity (amperage rating) must match customer service requirements, it shall be located in a publicly accessible place, and sealed with a utility security seal. The utility shall

have access to the meter at all times for purposes of reading and inspection, and the meter may be adjusted or replaced by utility at the discretion of the utility.

Rationale. Accurate metering is required to protect the revenue of the distribution company, and to assure that all customers are billed the proper amount in relation to their usage. The NIS practice of requiring or allowing customers to provide their own meter should be abandoned. To the extent that it is necessary for the customer to contribute to the cost of the meter, this should be covered through a suitable connection fee charged by the utility. The utility should procure all meters in order to control the quality. Meter purchases are usually bid on the basis of an entire year's supply in order to obtain the best pricing. However, deliveries are spaced throughout the year to match the projected requirements of the utility. A further argument against the policy of customer-supplied meters is that it creates a black market in stolen meters, and promulgates the practice of installing meters indoors so they won't be stolen.

3.4 Only one supply connection per building or residence

Provision. There shall be only one service supply connection to a building; and in multiple-occupancy buildings, there shall be only one service supply connection per tenant. The utility shall provide independent utility-owned supports for service wires, and shall not attach wire support structures to one building in order to carry the wires to another building.

Rationale. Service connections should be kept as simple and direct as possible, and all wiring should be installed in such a way as to clearly distinguish between unmetered utility wiring, and customer wiring to outbuildings. The electric service supply should enter a building (or apartment) at only one point for metering and disconnection purposes. Wiring safety and fire codes generally require that a single point be provided to disconnect service in case of fire, or when work is to be done on the interior wiring system.

The practice of providing electric service from two different sources through an alternate feeder should be eliminated. Where such installations have been made as a concession to maintain service when the primary feeder is off, it should be considered a temporary connection, to be removed when 24-hour supply becomes available. Meanwhile, such second feeders should be rerouted and metered so that electric use can be billed.

In the context of private ownership of property, neither the utility company nor a neighbor has the right to attach to the property of another. While utility companies may exercise the right of eminent domain, they may not do so without properly compensating owners on whose property they infringe.

3.5 Vacant property de-energized unless minimum bill paid monthly

Provision. The "customer of record" shall be responsible for electricity used at a location unless and until he advises the utility that he is moving out and has paid all amounts due. When the existing occupant vacates a house or apartment, service should be disconnected unless the owner or a successor tenant requests that service be supplied in his name.

Rationale. The utility should make a distinction between active and inactive accounts. When a customer applies for electric service and signs the service agreement, he becomes obligated to pay for all electricity used on the premises. If the customer moves away, he is not automatically relieved of the responsibility for payment for service at the location. In order to be released from the payment obligation, the departing customer must advise the utility that he will no longer live there or be responsible for the electric bills.

If the house remains unoccupied, but the owner desires that the wiring remain energized, the owner must apply for service in his own name, meter readings will continue, and a bill sent to him each month. As long as the service remains energized, the meter should be read on a regular basis, and a minimum bill delivered even if there is no kWh consumption. Meter readings and billing will cease only if the service is disconnected.

3.6 A final bill to be rendered on de-energized property, based on final meter reading

Provision. When a customer advises the utility he is vacating a property and desires to be relieved of bill payments at the location, the utility shall obtain a current meter reading and provide a "final bill" to the customer. This final bill shall include the amount of any previous unpaid bills, plus an amount based on the kWh used since the previous reading and the final reading date.

Rationale. The customer's obligation to the utility is not completely discharged until payment is made for all electricity used, and his account status changed to inactive. If a customer moves away without proper notice or settlement, the service should normally be disconnected within two months for non-payment.

If there is a change in tenants and no notice is provided to the utility, the new tenant would continue to receive service in the old tenant's name. If he accumulates unpaid bills and moves away without payment, the bad debt would be recorded as attributable to the last customer of record, not the person who actually accumulated the debt. It is for this reason that when a customer moves away, he should settle his account and clear his responsibility for any future bills at that location.

3.7 Service attachment requirements

Provision. The utility shall provide new customers with instructions regarding service attachment requirements. These shall be in writing and in conformance with national wiring standards. Generally, the customer must prepare exterior meter-mounting point at a location accessible by utility at all times. The mounting point shall be located at eye level (1.6 to 2 m above floor or ground level). The customer will be responsible for all wiring on the customer side of meter, and shall provide proper over-current protection (fuse) on all household circuits.

The utility shall provide the wiring on the utility side of the meter. The wire size shall be adequate to serve entire customer load, and none of it shall be concealed within the customer's premises. All splices and connections shall be made with proper devices, which are completely insulated and secured from access by the customer.

Existing installations are not required to be upgraded to the new standards until a change in status occurs, including disconnection for non-payment or for power theft, or if electric appliances are added which exceed present wire and meter capacity.

Rationale. Wiring standards are generally established by a state authority to minimize fire and shock hazards. Some provisions may also be included to minimize the opportunity for power theft. It is a common to require wiring be installed in accordance with the standards, and approved by a state wiring inspector before electric service may be connected.

Usually, when new standards are adopted, existing installations are not required to meet the new standards as long as they remain undisturbed. However, when any change is to be made, the wiring must be upgraded to the new standards.

This concept may be used to encourage prompt payment. If failure to pay results in disconnection of service, and the new standards must be met as a condition of reconnections; and further, if the customer is required to bear much of the cost of modifying the service to provide an outside meter location, then the customer would find it advantageous to pay on time in order to avoid the greater rewiring expense.

4. Service fees

4.1 New connection fee

Provision. The distribution company is authorized to establish and collect reasonable fees from new service applicants as a condition of the extension of service. This fee may cover the direct cost of wiring material, some or all of the cost of the meter, and some of the direct labor cost.

Rationale. Such charges should specifically include the meter cost, assuming that the meter would no longer be supplied by the customer.

4.2 Delinquent collection trip

Provision. ~~The distribution company is authorized to levy and collect a service charge when it is necessary to send a field representative to collect delinquent electric bills. This charge may be added to other amounts to be collected, provided that the utility maintains a payment station within a reasonable walking distance of the customer. The amount charged should be calculated to cover the average transportation and labor cost for trips to customer locations.~~

Rationale. If customers have the option of paying their electric bills at a payment station or to a field collector, they need an incentive to pay at the office. Otherwise, many would simply wait until the field collector calls. This delays receipt of the money, and also adds to the expense of collection. Therefore, it is quite appropriate to charge an additional service fee for field collections. This trip charge would be in addition to the 5% or 10% late payment fee.

In some cases, utilities do not allow field collections. If payment has not been made at the office by the disconnect date, the field trip is for the sole purpose of disconnection.

4.3 Disconnect/reconnect trip fee

Provision. The distribution company is authorized to levy and collect a service charge for field trips related to disconnection and reconnection of delinquent customers. This charge shall be based upon two trips to the customer site, one to disconnect and one to reconnect, and shall be added to other amounts to be collected before service may be restored.

Rationale. Additional costs are incurred in dealing with delinquent customers, and those costs should be fully borne by the delinquent customers, not spread among other customers who pay their bills on time. When calculating such special charges, they should be based on the recovery of actual costs, and not used as an opportunity to make a profit. The calculations should be reviewed by the Regulatory Commission to assure that they fairly represent the expenses incurred.

4.4 Meter Test fee

Provision. If the customer disputes the accuracy of his meter, he may demand that it be tested in a laboratory certified by the (state) and qualified to perform such tests. A copy of the test results shall be supplied to the customer. If the meter is found to be accurate within the $\pm 2\%$ range, the customer shall

pay for the test, and no adjustment of billing will be required. If the meter error is greater than the acceptable range, the billings for the previous six months shall be recalculated, based on the percentage of error, and the customer's account shall be credited or debited through the preparation of an adjustment voucher.

Rationale. Customers will sometimes request a meter test simply as a ploy to defer payment of their bill. Most western utilities rarely have meters which are "running fast," and to avoid "nuisance complaints," require the customer to pay a deposit before the test is made.

However, the situation in Georgia is different. A field analysis of Georgian meters in December, 1996 indicated that 80% of them are out of calibration, with about as many running fast as were running slow. Further, a brief inspection of the Telasi meter laboratory showed it is woefully inadequate and unreliable as a meter test and calibration facility.

An early program to be promulgated by the Regulatory Commission should be the establishment of one or more meter laboratories equipped with modern test and calibration equipment, and with suitably trained technicians following "world standard" procedures to insure meter accuracy.

5. Quality of service

5.1 Normal utility obligation

Provision. The Service Agreement between the utility and the distribution company and the customer shall specify the nominal voltage and frequency at which electric service is to be delivered, including the normal range of variations to be expected. However, the distribution company will state that such specifications cannot be guaranteed since conditions are often beyond the control of the distribution company. For this reason, the customer is obligated to provide his own protection of sensitive electrical equipment against low voltage, voltage spikes, erratic frequencies, and extended power outages.

Rationale. While the service agreement theoretically sets forth the obligations of the distribution company, it cannot guarantee any level of "quality of service," especially under present power supply conditions in Georgia. The purpose of explicitly stating that the quality of service is not guaranteed is to relieve the utility of responsibility for damage to equipment or loss of business income as a result of power supply problems.

6. Monthly Reporting Requirements

The discussion in this section deals with the type of information which should be reported to the Regulatory Commission so that the relative condition of the distribution companies may be monitored, and the data necessary for tariff studies based on cost of service may be accumulated. It will be necessary to standardize and upgrade accounting procedures at the all of the distribution companies to achieve this. Much of what is listed here will not be practical until customer accounting procedures have been computerized.

6.1 Customer sales statistics

The monthly sales statistics report should include the number of customers, kWh, and revenue billed for each month in each customer category, somewhat as shown below. This report must include all active customers, and requires that a bill be produced every month for every active customer.

The kWh and revenue is usually attributed to the month in which the meter reading is taken, even though some of the electricity may have actually been used in the preceding calendar month. The "sale" of electricity is recognized to have occurred on the date that the meter reading is obtained, even though the electricity consumption was actually spread over the previous 30-day period.

While sophisticated computer programs may be used to prorate and allocate revenue into separate months, they are only approximations. Generally, the income may be considered "earned" at the time of the reading, and be recorded on the financial books of the company as sales revenue for the month in which the reading was taken. It would be considered revenue whether or not payment is ever actually collected. Until such time as payment is collected, it is classified as a receivable, and considered as an asset of the company.

In order to account for the uncollectible amount, an "expense" item is entered into the operating statement each month which may be called "allowance for uncollectible accounts," or "bad debt reserve." This expense item is typically a percentage of the revenue billed for that month. The size of this allowance is usually the running average of uncollected accounts over the past year. In the U.S. it is typically three-tenths of one percent (0.3%), but in Georgia would be much, much higher. This accounting technique allows the distribution company to produce monthly financial statements showing profit and loss on a current basis without having to wait to see how much revenue billed this month was actually collected.

Monthly Report of Sales Statistics

	No. of customers billed	kWh billed this month	Revenue billed this month	kWh year-to-date	Revenue year-to-date
Residential					
Sm.Commercial					
Lg.Commercial					
Industrial					
Institutional					
Street Lights					
TOTAL					

The specific classes of customers for which sales reports are to be differentiated should be established by the Regulatory Commission. For example, the Commission may wish to classify urban residential customers separately from farm or rural customers. Large and small industrial customers may also be defined. In the above example, Small Commercial accounts may be defined as those metered by 25 ampere residential-style meters, where Large Commercial would be those large enough to require CT metering.

6.2 Sales reported by levels of consumption

Another important report required is one that lists the number of customers with kWh consumption in each of many narrowly defined levels, or strata, as follows:

Consumption Range	Number of Bills	kWh Used
0 kWh		
1-10 kWh		
11-20 kWh		
21-30 kWh		
...etc		

This type of information is needed to make revenue projections under various proposed stepped-tariff scenarios, and is critical in designing social tariff structures such as described in Section 2.3.

6.3 Aging of Accounts Receivable

Another most useful report for management is the "Aging of Accounts" reports, used to indicate the effectiveness of distribution companies' collection programs, and progress in improving levels of payment. It shows Billed revenue not yet collected as of the close of the calendar month, by Customer Class and by Age of debt.

Aging of Accounts Report

Age:	0-30days	31-60 days	61-90 days	90-12days	over 120
Residential					
Sm.Commercial					
Lg.Commercial					
Industrial					
Institutional					
Street Lights					
TOTAL					

Theoretically, as long as the past-due amount is owed by an active customer, there is the potential to collect it. If a customer has moved away without settling his account with the utility, it is not likely the past-due amount will ever be collected. It should be re-classified as a "bad debt," and "written off," that is, removed from the list of accounts receivable and no longer considered an asset of the utility.

The procedures and a complete record of Accounts Receivable and Bad Debt write-off should be structured and maintained in such a way that it can be reviewed and proven by auditors from the Regulatory Commission, tax authorities, and potential investors.

6.4 Wholesale power purchases.

The wholesale power cost is based on the meter readings taken at delivery points (substations) supplying the distribution company's network. Readings are usually taken at or near the end of the calendar month so that the readings will represent the amount of energy purchased and the wholesale power cost for that month. Under normal conditions, the distribution company would pay the wholesale power bill on the date due, and record the amount as the cost of purchased power for the month in which the reading was taken.

Since Georgian distribution companies are not paying their wholesale power bills in full, the Regulatory Commission should require, as a part of the monthly reporting process,

- the amount paid on current or previous power bills;
- late payment charges levied on power bill(s); and
- the unpaid amount of power bills, by age, as follows:

Age:	0-30days	31-60 days	61-90 days	90-12days	over 120
Unpaid power bills					

6.5 Operation and Maintenance expenses

Regulatory Commissions require distribution companies to include in their monthly reports the operating and maintenance expenses incurred each month. Typically, these would be summarized into not more than 6 or 8 categories and used for comparisons between companies. This information is important in judging the operating efficiencies of the companies, and the expenses claimed must be justified as reasonable if they are to be allowed to be fully recovered through the tariffs. The accounting procedure employed by the utilities should be standardized for all utilities so they can be inspected and verified by outside auditors.

Until power sector operations return to normal, the Georgian Commissioners may request reports regarding some sub-accounts not normally required. For example, because employees are sometimes not paid on schedule, they may wish to monitor the payroll expense in relation to certain other expenses. For example:

	This month	Year-to-date	Past due<30	31-60 days	61-90 days	over 90 days
Operation Expenses						
Wages						
Material and supplies						
Maintenance Expenses						
Wages						
Material and supplies						
Customer Accounting						
Wages						
Material and supplies						
Administrative & General						
Wages						
Material and supplies						
Contracted services						
Taxes						
Other						
..etc						
TOTAL						

6.6 Capital expenditures

If a distinction is made between "capitalized" and "expensed" expenditures (e.g., transformers vs. fuses), then there should also be a similar report on capitalized expenditures. These would generally be rehabilitation or expansion expenditures, and they should be monitored by the Commission.

6.7 Plant in service

Routine reports by distribution companies include a summary of plant in service, and should be required by the Commission. In addition to totals, it may also include the quantities installed and quantities removed for the month. This report typically includes miles of line and numbers of transformers of various types. Other categories may be required by the commission.

Miles of Line	Overhead	Underground
0.4kV		
.6kV		
10kV		
>10kV		
TOTAL		

Transformers
50kV
100kV
400kV
etc
TOTAL

6.8 Plant in service

The utility should maintain accurate inventory records, which includes a purchase order and work order reporting system that tracks material as it comes into inventory and goes out for installation in the field. This information is needed when preparing various financial reports. The inventory system should allow management to see printed reports at any time the amount of material on hand, item by item, which is available for construction and maintenance purposes. Each item has a value, and the total value of all items in inventory are counted as an asset of the company. The value of all of the material in inventory appears as a line on the company's Balance Sheet.

Regulatory Commissions are generally not concerned about the specific quantities of various items of line material. However, the Georgian Commission may wish to accumulate certain data on inventory until operations in the electric sector are normalized, as it might be useful in national planning strategy and the allocation of resources.

6.9 Balance Sheet

The Balance Sheet is a standard monthly and annual financial report which shows the value of all of the assets and liabilities of the company, and its net worth. Complete and Accurate Balance Sheets should be supplied to the Commission on a monthly basis.

6.9 Key Ratios Analysis

Regulatory Commissions and lending agencies frequently develop a series of "key ratio" for measuring and comparing the efficiencies and financial performance of utilities. Since electric utilities are "capital intensive" (large investments in facilities) and carry large amounts of debt, various ratios such as "times interest earned ratio" (TIER) and "debt service coverage" are used to measure financial health. Other ratios, such as the average cost per customer for customer accounting (commercial) operations are used as a measure of efficiency of operations.

In order to calculate these key ratios, certain other operating data is required, such as the number of full-time employees; and part-time employees expressed as full-time equivalents. The Commission may require such additional operational data in order to adequately monitor the performance of the distribution companies.

7. Customer Assistance Programs

- 7.1 Installment payment programs for upgrade of service entrance and metering
- 7.2 Indefinite suspension of prior debt as long as current obligations are met
- 7.3 Grace period to voluntarily remove illegal connection

8. Power Supply Contract