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KYRGYZSTAN. REPORT ON METERING, BILLING AND COLLECTION (Deliverable 2 5, Volume 1) NIS Institutional Based Services Under the Energy Efficiency and Market Reform Project Contract No CCN-Q-00-93-00152-00

Kyrgyzstan Energy Sector Regulatory Reform and Restructuring Delivery Order No 6

Final Report

Prepared for

U S Agency for International Development
Bureau for Europe and NIS
Office of Environment, Energy and Urban Development
Energy and Infrastructure Division

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September 25, 1998

EXECUTIVE SUMMARY

Deliverable 2 5

Volume 1 Metering, Billing, and Collection

The fundamental reason for Kyrgyzenergo's deteriorating technical and financial performance is no cash The fundamental reason there is no cash is that Kyrgyzenergo doesn't meter all that is consumed, doesn't bill all that is metered, and doesn't collect much of what's billed And, about 70% what's collected is in barter goods

Analysis by USAID/Hagler Bailly showed that it costs Kyrgyzenergo about $74 million every year it delays the adoption of commercial management practices (primarily systematice metering, billing, and collection)

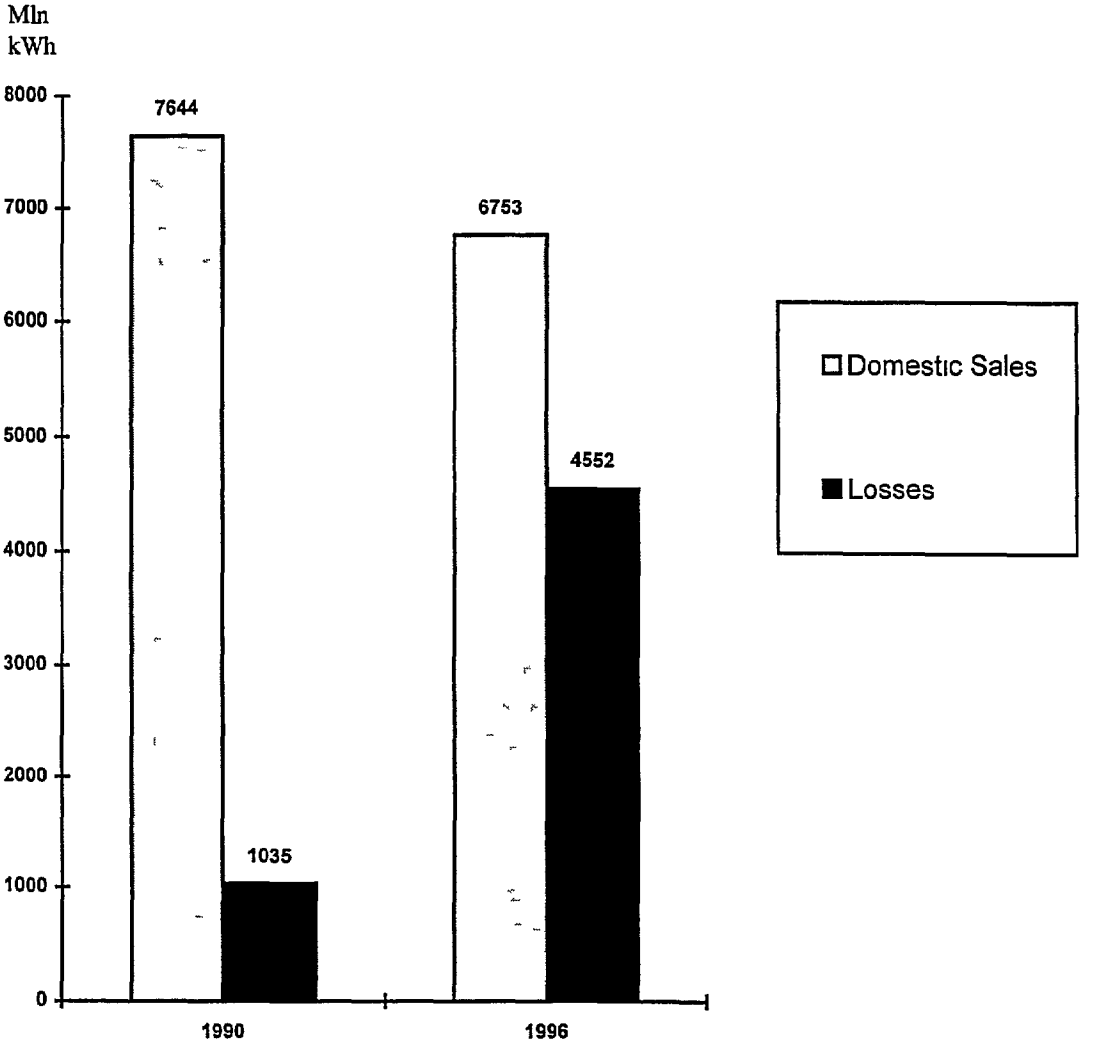
Total system losses were 40% of domestic production in 1996, increasing to 45% in 1997 despite a series of Government Decrees ordering Kyrgyzenergo to reduce its losses About 50% of small consumer usage was stolen in 1996, growing to 60% in 1997 despite a series of Kyrgyzenergo's internal initiatives, including experimental programs with village based "volunteer" meter readers A year-long TACIS-sponsored technical assistance program in 1996-1997 to help Kyrgyzenergo improve metering, billing and collection resulted in a very good report that assessed the problem and a recommendation for a $10-16 million dollar expenditure for a completely new customer information and billing system that would take 2-3 years to implement The recommendation could not be implemented because of its cost

USAID/Hagler Bailly then sent in a metering and billing system expert whose task was to design a cheap, fast, effective way to start closing the gaps In December 1997, he recommended a program that would cost about $1 million to implement, could be in place within by the end of 1998, and would pay back about $17 million in the first year and over $75 million in the first three years

Instead, Kyrgyzenergo launched a bizarre program in January 1998 to purchase and install 170,000 load limiters on houses in suburbs and rural areas by September, just before the winter heating season begins These crude fuses, called "nuts" for their resemblance to walnuts, will blow out a customer's house if he plugs in an "unauthorized" heater Kyrgyzenergo justifies this program with their argument that it is the only cost-effective way to stop theft, reduce losses, and limit the overload on the distribution system Its most likely result will be an increase in graft rather than a decrease theft

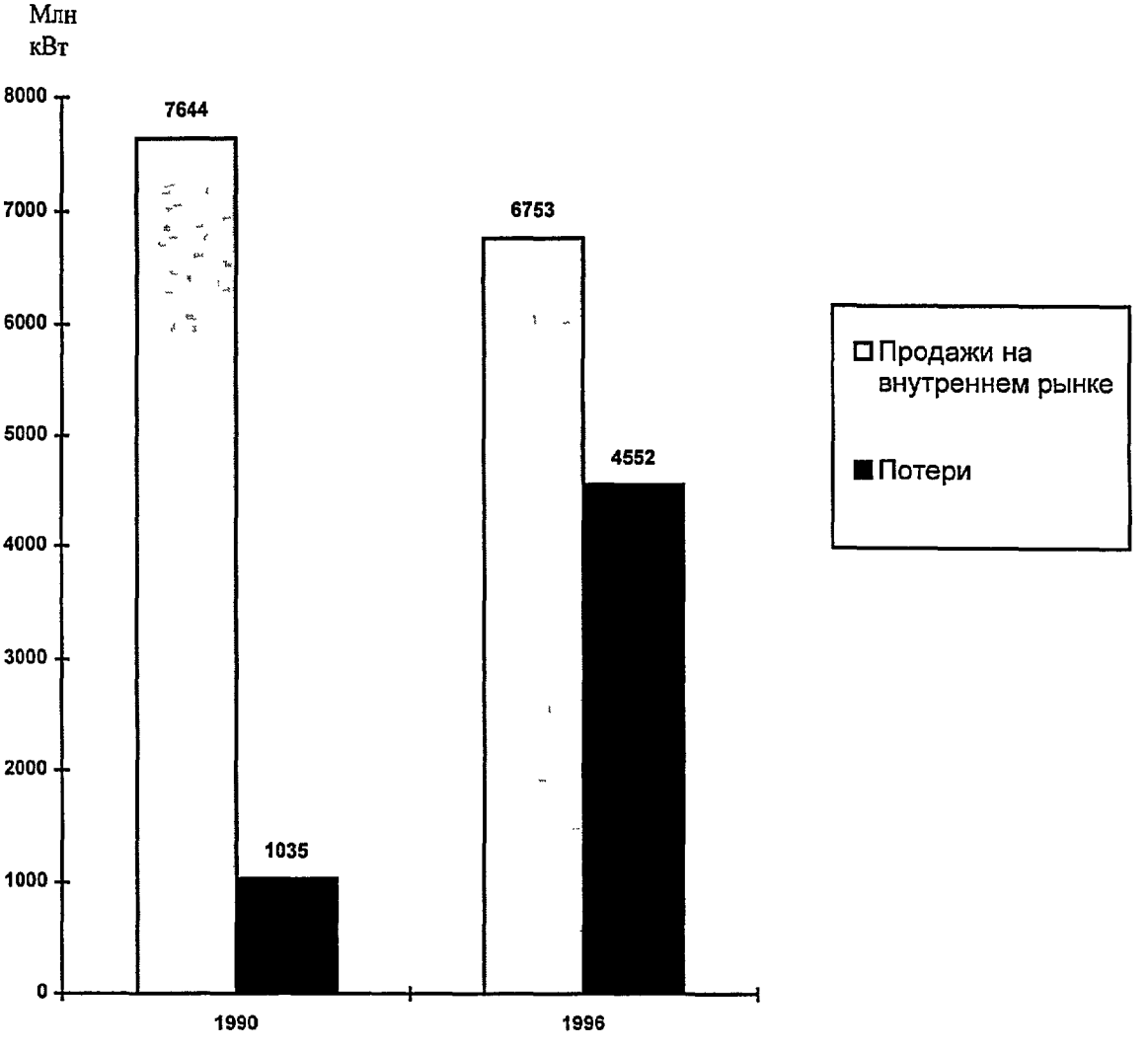
USAID/Hagler Bailly also drafted a more complete program to "Improve Reliability and Restore Full Service" (i e reduce losses) for the State Energy to present to the Government as part of its decree on "Improving the Financial Condition of Kyrgyzenergo "

Of every five kWh produced for Domestic Market in 1996, KNEHC sold 3 and lost 2



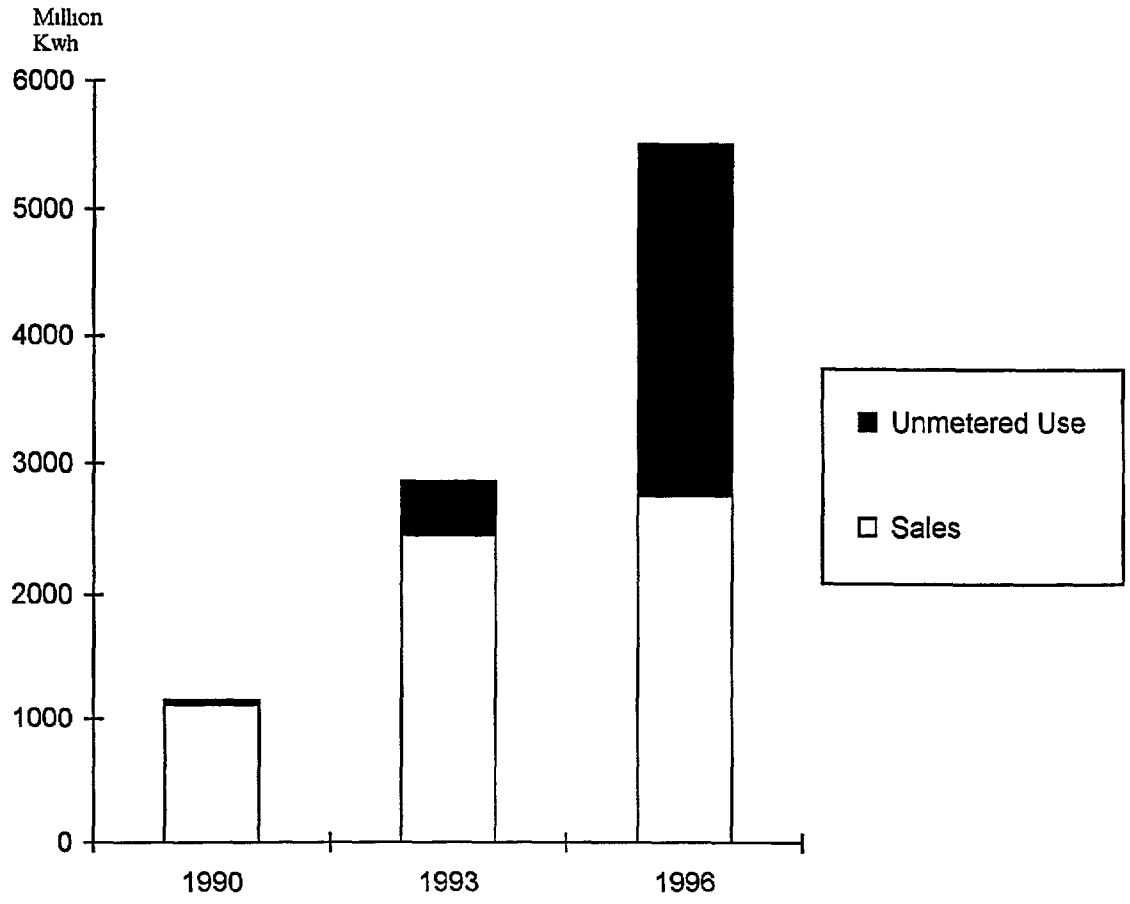
Source KNEHC (February 19, 1997)

Из каждых 5 кВт/час на внутреннем рынке, КНЭХК продает 3, а 2 теряет



Источник КНЭХК (19 февраля 1997 год)

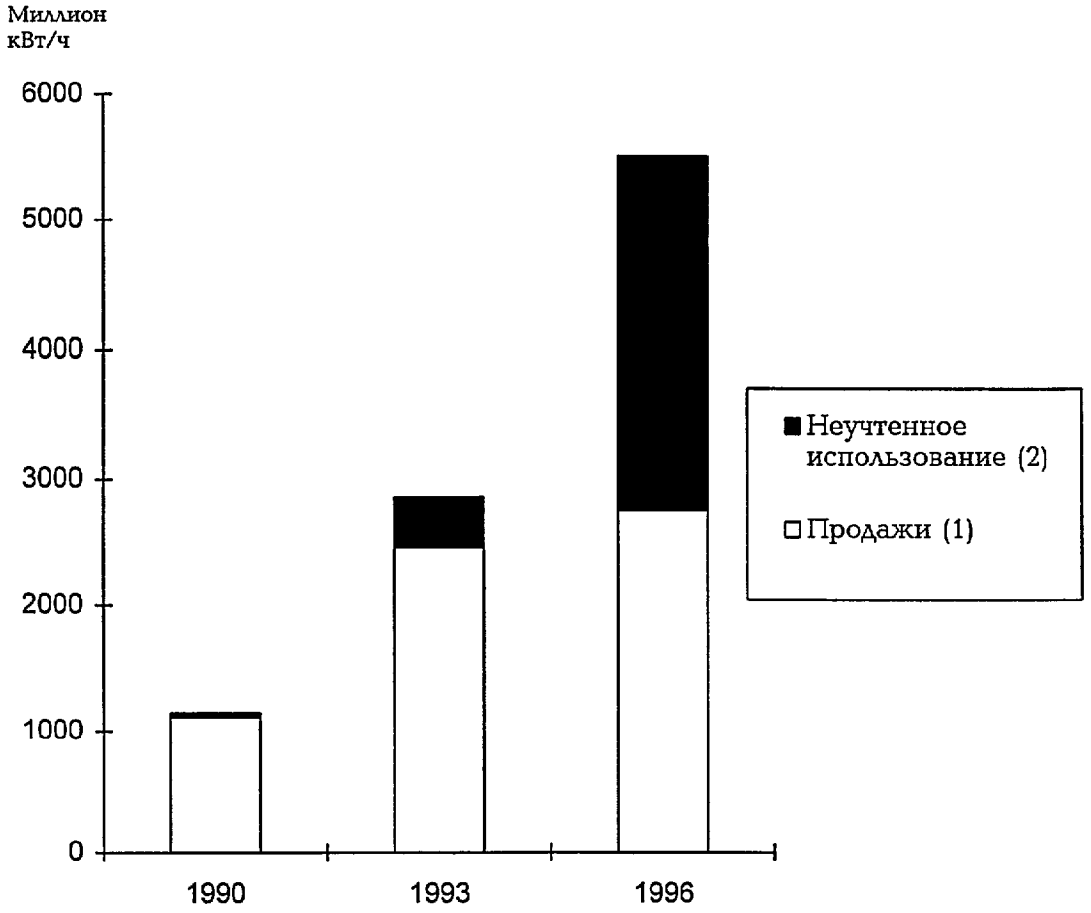
Unmetered Use of Electricity is now about Equal to Metered Sales



Small Customers	1990	1993	1996
Sales (1)	1 111	2 454	2 746
Unmetered Use (2)	37	404	2 730
Sales+Unmetered Use	1 148	2 858	5 476
Unmetered Use as % of Total	3 %	14 %	50 %

Sources (1) KNEHC, (Feb 19, 1997)
(2) Hagler Bailly Calculation (May 8, 1997) based on KNEHC Data

Неучтенное использование электроэнергии сейчас равняется учтенным продажам



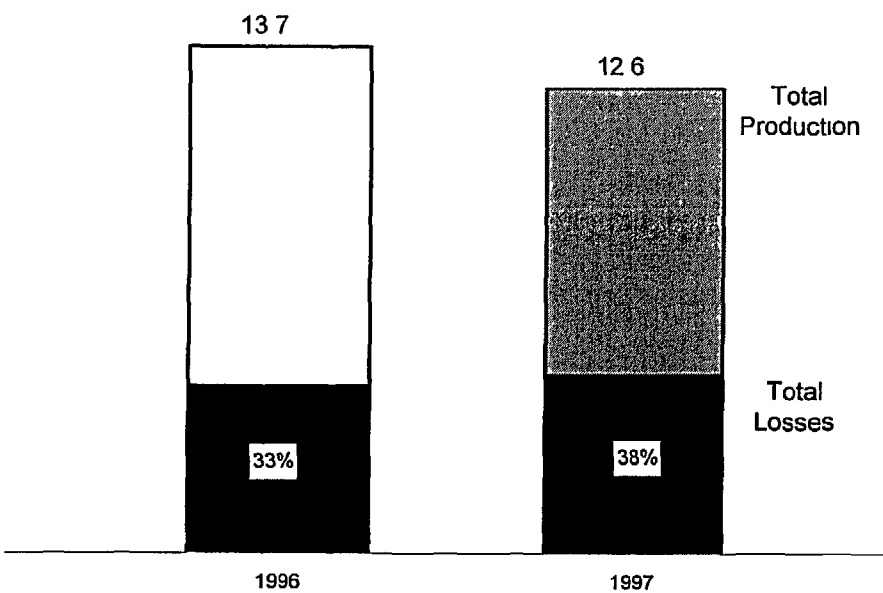
Мелкие частные потребители	1990	1993	1996
Продажи (1)	1 111	2 454	2 746
Неучтенное использование (2)	37	404	2 730
Продажи + неучтенное использование	1 148	2 858	5 476
Процент неучтенного использования от общего уровня	3 %	14 %	50 %

Источники (1) КНЭХК, (19 февраля, 1997)
(2) Расчет, подготовленный Хаглер Байи (8 мая 1997) на основе данных КНЭХК

Kyrgyzenergo's 1997 System Losses Increased Compared to 1996*

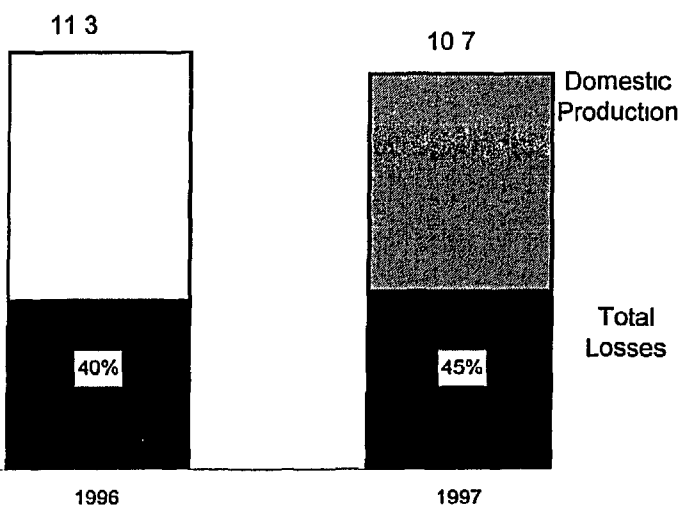
Losses as a % of Total Production reached 38% in 1997, which is 115% of the 1996 level

(billion kWh)



Losses as a % of Domestic Production reached 45% in 1997, which is 112 5% of the 1996 level

(billion kWh)



* Based on Kyrgyzenergo Data as of March 10, 1998

July 6 1998
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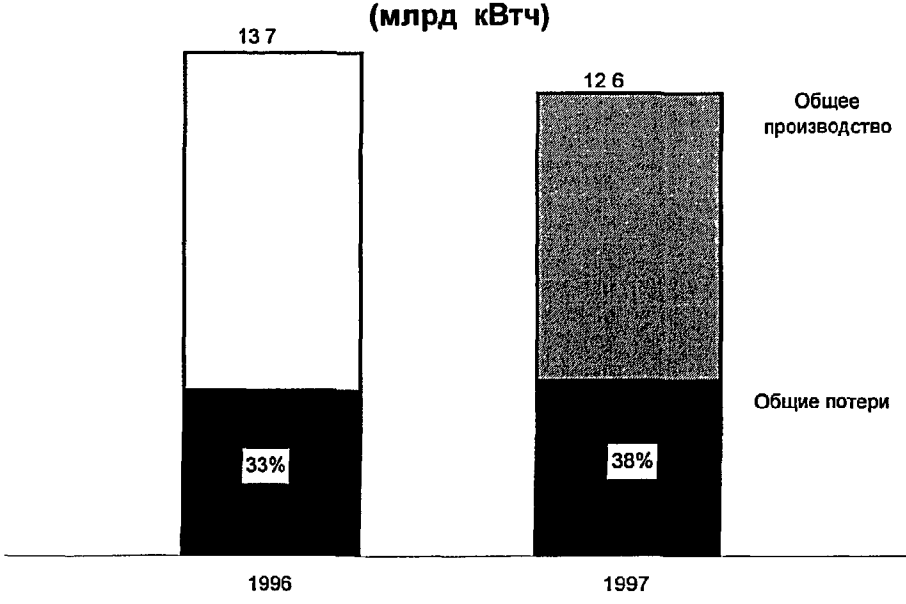
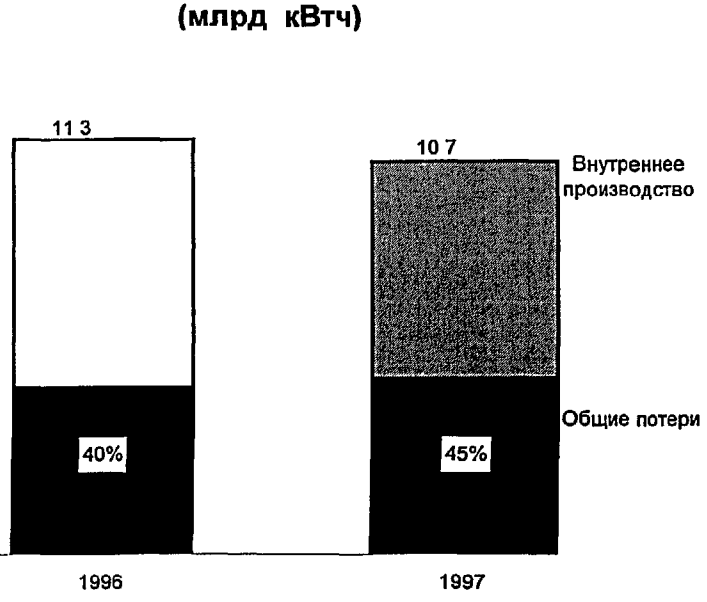
Системные потери АО "Кыргызэнерго" за 1997 год увеличились по сравнению с 1996*

Потери как % от общего производства достигли 38% в 1997, что составило 115% от уровня 1996



Потери как % от внутреннего производства достигли 45% в 1997, что составило 112 5% от уровня 1996



* На основании данных АО "Кыргызэнерго" от 10 марта 1998

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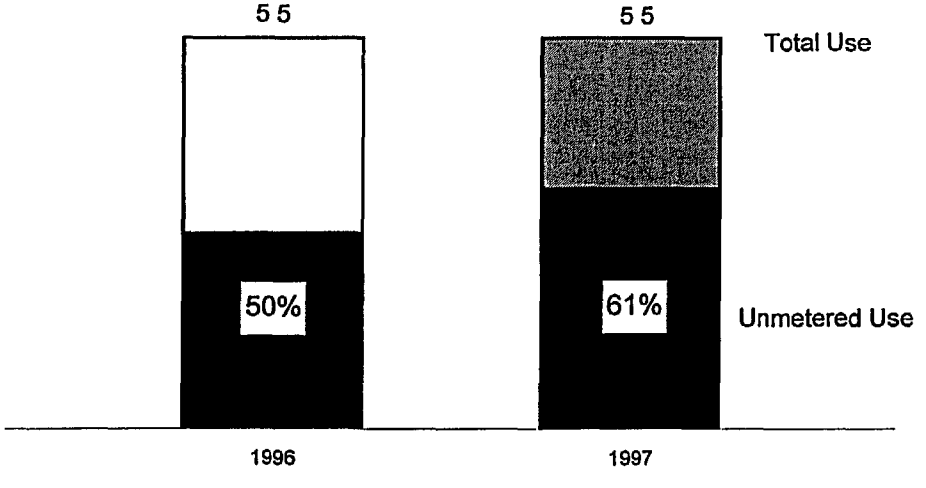
The Causes of Kyrgyzenergo's Financial Problems Got Worse in 1997 *

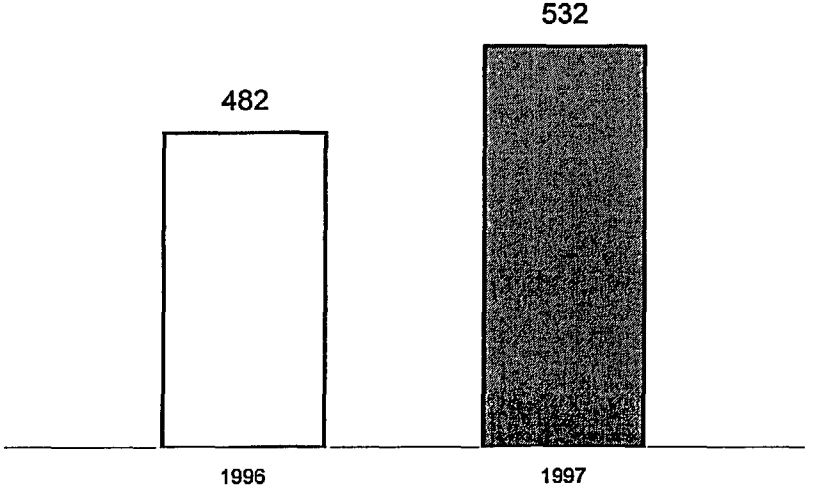
Theft by small customers in 1997 was 122% of the 1996 level

(billion kWh)



Accounts Receivable in 1997 were 110% of 1996 level

(million Som)



* Based on Kyrgyzenergo Data as of March 10, 1998

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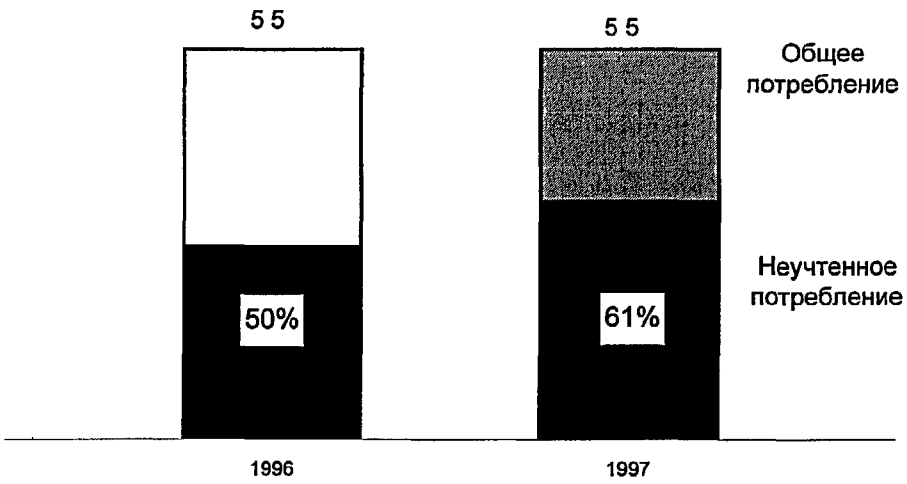
Причины финансовых проблем АО "Кыргызэнерго" в 1997 усугубились *

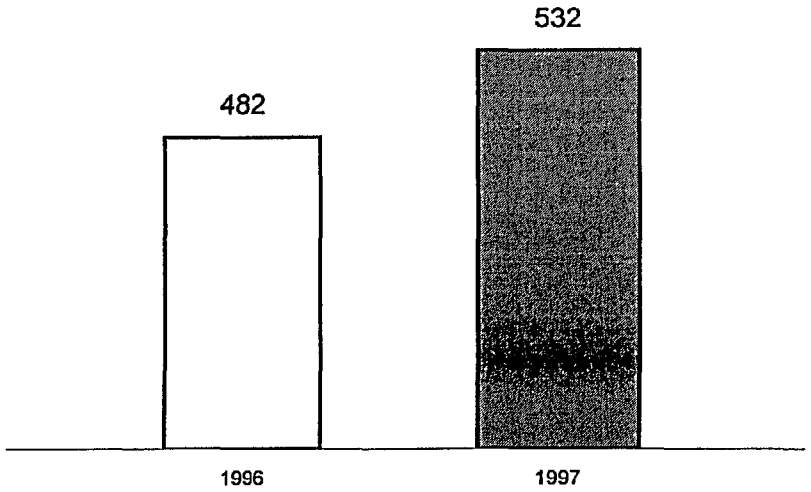
Хищения населением в 1997 составили 122% от уровня 1996

(млрд кВтч)



Дебиторская задолженность в 1997 составила 110% от уровня 1996

(млн сом)



* На основании данных АО "Кыргызэнерго" от 10 марта 1998

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March 18, 1997

DATE:

To: David Keith, Mike Biddison Bob Archer, Barry Primm Salem Ouahes, Orunbek Shamkanov	**From:** Jaclyn Murphy **# of Pages (including this page):** 3
Subject: KNEHC "Lost Revenue" Analysis	

Following is an analysis Jim Tasillo and I did for Almas Chukin, Deputy Chairman of the State Property Fund and the key person here spearheading KNEHC's restructuring and privatization

At Mr Chukin's request, I spent three hours Sunday morning with him and two members of his staff preparing him for a meeting today with the Prime Minister (et al) to discuss the issues before the Meeting of Government on March 27 to consider/approve the Concept for Denationalization and Privatization of KNEHC Mr Chukin asked me during the Sunday session to work up something that would show why it's important to adopt modern commercial business practices Jim and I pulled together numbers from various sources, including World Bank, KNEHC, and TACIS 1994 and 1997 work

The analysis shows that **if KNEHC adopted commercial business practices, eliminated the myriad discounts, and had a "life-line" rate for only the first 100 kwh, the company would receive about three times as much revenue as it does now.** ($109 million vs $35 million)

Additional revenues of such magnitude would certainly generate enough additional tax receipts to fully fund the social safety net program, and then some

Please note that our analysis addresses the domestic market only And, although it's likely some additional investment would be needed to obtain such revenue enhancement, we believe it is minimal relative to the opportunity However, we are waiting to see the cost estimates of new recommendations on metering, billing and collection in a report by TACIS consultants due out next week

Mr Chukin called today to say that he was very pleased with the analysis

I was pleased that even though Monday was quite busy due to Mr Primm's visit, we were able to finish the analysis at 1 30 a m and deliver it to Mr Chukin in time for his 10 a m meeting this morning in Russian, on overheads

Mr Chukin is the man who will make restructuring and privatization happen here, <u>if anyone can</u> (Remember, we need approval of both houses of Parliament!) We are working hard to be as responsive to him as humanly possible, even if it means a little less sleep now and then It is a delight to work with him He's thoughtful and very smart, understands the goal and the reasons, thinks ahead, and is clever, creative, and committed to getting the Concept a) right and b) through Government and Parliament

March 18,1997

KNEHC UNDER FULL COMMERCIAL BUSINESS PRACTICES
(DOMESTIC MARKET ONLY)

- TECHNICAL LOSSES REDUCED TO 10%
- TARIFFS AT 25 TYINS/KWH
- FIRST RESIDENTIAL 100 KWH AT 12 TYINS/KWH
- COLLECTIONS AT 95%

9,346,000,000	NET DOMESTIC KWH AVAILABLE FOR SALE
- 934,600,000	10% TECHNICAL LOSSES
8,412,400,000	KWH
X 25	TYINS/KWH
2,102,925,825	SOM
-148,065,840	"LIFE LINE" FOR FIRST 100 KWH @ 12 TYINS
2,090,587,005	
- 97,742,999	5% UNCOLLECTIBLE
1,857,116,986	TOTAL POTENTIAL REVENUE

KNEHC UNDER CURRENT PRACTICES

-TECHNICAL LOSSES AT 20%
-TARIFFS AT 25 TYINS/KWH
-FIRST RESIDENTIAL 300 KWH AT 12 TYINS/KWH
-COLLECTIONS AT 60%
-15 CATEGORIES OF DISCOUNTS

9,346,000,000	NET DOMESTIC KWH AVAILABLE FOR SALE
-1,869,000,000	20% TECHNICAL LOSSES
7,477,000,000	KWH
x 25	TYIN AT FULL TARIFF
1,869,267,400	SOM
-342,920,485	"LIFE-LINE" FOR FIRST 300 KWH @ 12 TYINS
1,526,346,915	
-179,645,389	VARIOUS DISCOUNTS VETERANS, ETC, ETC,
1,346,701,526	
-350,142,397	COMMERCIAL LOSSES (THEFT, NOT BILLED) @ 26%
996,559,129	
-398,623,652	UNCOLLECTED @ 40%
597,935,478	ACTUAL REVENUE

Potential revenue	1,857,116,986 som	($109 million)
Actual revenue	597,935,478 som	($ 35 million)
Revenue lost	1,259,181,508 som	($ 74 million)

If technical losses were reduced to 10%, the additional revenue on the domestic market would be 233,658,425 som ($14 million) at 25 tyin/kwh It would be worth an additional $46 million at 5 cents/kwh on the export market

18 марта 1997

КНЭХК после окончательного введения коммерческих принципов ведения деятельности (только внутренний рынок)

- технические потери сокращены до 10%
- тарифы – 25 тыйын/кВч
- для населения первые 100 кВч по 12 тыйын/кВч
- сборы – 95%

9,346,000,000	нетто кВч для населения, имеющихся в наличии для продажи
– 934,600,000	10% технические потери
8,412,400,000	кВч
x 25	тыйын/кВч
2,102,925,825	сом
– 148,065,840	"прожиточный минимум" за первые 100 кВ/ч по 12 тыйын
2,090,587,005	
–97,742,999	5% неизбежные потери из–за неуплаты
1,857,116,986	Итого Потенциальная выручка

При существующих методах хозяйствования КНЭХК

- технические потери – 20%
- тарифы – 25 тыйын/кВч
- для населения первые 300 кВч по 12 тыйын/кВч
- сборы – 60%
- льготы для 15 категорий потребителей

9,346,000,000	нетто кВч для населения, имеющихся в наличии для продажи
– 1,869,000,000	20% технические потери
7,477,000,000	кВч
x 25	тыйын по полному тарифу
1 869,267,400	сом
– 342,920,485	"прожиточный минимум" за первые 300кВ/ч по 12 тыйын
1,526,346,915	
–179,645,389	различные льготы ветераны, и т д
1,346,701,526	
–350,142,397	коммерческие потери (хищение, неучтенные в счетах) – 26%
996,559,129	
–398,623,652	40% – неизбежные потери из–за неуплаты
597,935,478	Фактическая выручка

Потенциальная выручка	1,857,116,986 сом	($109 миллионов)
Фактическая выручка	597,935,478 сом	($ 35 миллионов)
Потерянные доходы	1,259,181,508 сом	($ 74 миллионов)

Если технические потери были бы сокращены до 10%, дополнительная выручка по внутреннему рынку составила бы 233,658,425 сом ($ 14 миллионов) по 25 тыйын/кВч Это стоило бы дополнительных $ 46 миллионов по 5 центов/кВч на рынке экспорта

03/97/O/chukin/march17 doc/LM

ANNEX 1

final

Metering and Billing Status in Electric Utility Sector in Kyrgyzstan

Analysis and Recommendations

Prepared for
Joellyn Murphy

Prepared by
Matt Chwalowski

December 1997

16

Table of Content

Table of Content

Executive Summary

The purpose of this report was to investigate the situation associated with metering and billing in the electric transmission and distribution system Currently losses in the system reach 50% of energy delivered to residential and small commercial users (both unpaid and stolen) This report presented findings regarding such high commercial system losses and recommendations to both reduce those losses and to improve commercial operations

Several factors contributed to problems in this area

- Prior to 1990 electricity was inexpensive and population did not perceive it as a commercial good Additionally residential electricity consumption constituted relatively small percentage of the total electricity consumption thus rendering collections to a low priority status
- Population read its own meters since electricity was inexpensive existing losses were of little significance Additionally electricity was used mostly for lighting refrigeration and other minor household uses Consequently the amount of energy consumed by population was small
- Since becoming a sovereign state Kyrgyzstan favored independence in the area of energy consumption and encouraged switching to electricity from other fuels In the meantime, electricity from hydro generation fell
- As a result of these policies, coal consumption by population was nearly eliminated in favor of electricity with growth rates of 20% to 30% each year
- The electric transmission and distribution system was not prepared to handle such large increases in electricity throughput causing increased number of system component failures
- Increased electricity costs and lax collection practices resulted in accumulation of significant commercial losses

This difficult situation precipitated the Kyrgyzenergo decree No 420 dated 20 10 97 that is to encourage collections by paying meter readers based on how many meters they read in a month and how much money they collect However, there are significant problems with that decree in that

Executive Summary (continued)

- Meter reading is not 100% mandatory rather a monetary encouragement is offered for recording consumption of more than 70% of meters and collecting 80% of money due which amounts to only 56% collection rate
- It is practically impossible to meet the base amount since there are no meters on final feeders (it is impossible to determine what is the total amount of electricity flowing into a feeder to determine what 70% is)
- It forces meter readers to continue doing three functions read meters collect money and inspect meters (meaning open meters) -- this creates a potential for abuse
- This decree is being introduced in the whole Kyrgyzstan rather than being implemented on a pilot basis in a region to determine its effects

The attention that is being accorded the problem of metering and billing will certainly result in some improvement in collections However due to flaws outlined above this improvement will be smaller and inadequate compared to the one that could be achieved if the following high and medium priority recommended actions are undertaken

High priority

- To improve collections and reduce theft provide workable and real incentives to management in Kyrgyzenergo and distribution companies and enforce discipline among employees (cost of training)
- Require monthly meter reading, monthly billing and monthly payment for electricity (net benefit)
- Limit meter reader tasks to reading meters only (net benefit)
- Install numbered meter seals to reduce meter tampering (net benefit)
- Implement significant changes in the proposed metering decree so that it reflects system realities (net benefit)
- Streamline the billing process, and reverse its operations so that meter reading is an input (employee time)
- Adopt single-step payment and data processing centers, implement "feeder" version of the software, purchase more computers ($72,000 plus employee time)

Executive Summary (continued)

- Working through regional structures and cooperative arrangements seek agreement from all Central Asian Republics to transfer meter ownership to respective electric utilities away from population (net benefit)
- Cut off customers who do not pay and use court system to prosecute those who steal

Medium priority

- Prevent population access to override system equipment protections that result in damages
- Transfer electricity discount administration away from distribution companies to government welfare agencies
- Purchase meter testing equipment to test meters ($60,000 for two stands)
- Replace meters class 1 and class 2 (1% and 2% accuracy respectively) at substations 500 kV 220 kV, 110 kV and 35 kV with meters class 0 2 and 0 5 (0 2% to 0 5% accuracy respectively)
- Establish communications between the energy control center and meters at substations (to be established later, but $200,000 at minimum)

The rest of the report is organized as follows

- There are findings in several areas such as electricity balance, meter reading process, metering hardware, new metering decree (No 420) and billing system
- There are recommendations in each of the above areas
- Recommendations are prioritized by high and medium priority
- Conclusions are summarized

Purpose and Scope

This work has been performed at Kyrgyzenergo's request within the scope of USAID Delivery Order #6. The Order's general purpose has been to improve commercial operations of Kyrgyzenergo in the area of metering and billing. This report focuses on metering and billing in the context of technology, people and business processes.

The report was precipitated by the following:

- Approximately 50% of energy delivered to residential and small commercial sector is not paid for.
- Electricity consumption has been growing at the rate of 25 % to 30% per year. It became necessary to address these issues and determine root causes of existing situation.

All aspects of metering and billing were analyzed to determine types of changes that should be made. To achieve this goal, these issues were discussed with all levels of employees at Kyrgyzenergo and associated distribution companies as well as with Kyrgyzenergo customers. Meetings and our analysis resulted in recommendations appropriate to the current general situation in the Kyrgyzstan electricity sector. It is important to point out that technology is a small part in the overall improvement process, both business processes and employee behavior have larger effects and have to bring about real change.

This comprehensive analysis covered the following aspects of metering and billing:

- Electricity balance
- Meter reading process
- Metering hardware
- New metering decree
- Billing system

Findings in each of these aspects of metering and billing resulted in a prioritized list of activities that are proposed to improve collection rates. This list balances the cost of implementing each step with potential benefits.

Methodology

This investigation relied primarily on the following three approaches

- Interviews with individuals from different entities that are materially involved (directly and indirectly) with electricity distribution
- Review of the reports that were prepared earlier for different aspects of the overall project
- Interviews with another consultant working on a related project sponsored by Tacis

For the purpose of this study most interviews were with employees of the energy sector and specifically individuals from the following areas

- Electricity planning
- Electricity sales
- Technical system losses
- Metering personnel in headquarters and at substations
- Meter readers

Different issues were investigated from the following three perspectives

- Technology
- People
- Business Processes

The focus of the report was on improvement of metering and billing functions Their integrity and proper operation is necessary to ensure continued operations and fiscal health Once these are achieved and money is properly collected from end-users, it will be possible to gradually pay for needed improvements in the system

Findings -- Electricity Balance

Integrity of an electricity system can be determined by the degree of accuracy of accounting for electricity Electricity should be accounted for in high voltage and low voltage lines

- Electricity balance agrees well in the following areas
  - High voltage lines and substations
  - Medium and large commercial users
- Full electricity balance on each of the seven districts (oblasts) is not conducted -- technical and commercial losses are only estimated
- Electricity balance is also not performed on each of 10 kV/0 4 kV substation that leads directly to between 50 and 600 end users since there are no meters at those substations
- Due to electricity shortages, two types of restrictions on energy use are taking place
  - Each region is assigned the maximum amount of electricity that it is allowed to use during a period
  - Electricity is cut off on a regular and revolving basis several times during a 24-hour period
- Electricity is traded each month with neighboring countries, Kyrgyzstan sells electricity in summer time and sometimes receives it in winter time

Findings -- Meter Reading Process

- The most substantive problem with meter reading exists among residential and some small commercial users
- Meter reading function is in a complete disarray and is a fundamental reason for a shortage of payments
- Meter reader performs three functions which leads to potential conflict of interest and abuse read meters collect money and inspect meters (ie open meters)
- Meters are read rarely by meter readers themselves, many have not been read in years the system relies on self-reading
- Typically a meter reader today reads about 500 meters per month while if working properly, should read at least 1 500 a month in an urban area
- It is widely suspected that users either collude with meter readers or pay less than what is due
- Meter readers do not carry documents that explain that they are allowed to disconnect customers (some customers claim that they cannot be disconnected)
- It is said by meter readers that there are organized illegal businesses that turn back electric meters for a fee
- Theft and non-payment prosecution is lacking in one of the districts with 141,000 residential customers, only 7 cases have been prosecuted in a year

Findings -- Metering Hardware

The overwhelming majority of meters in the system are Russian-made and are of relatively poor quality and low accuracy It must be noted that their low accuracy is not a substantial issue compared with electricity theft

System meters

- Except for a handful of meters most of them are single tariff energy-only meters
- System meters on lines 500 kV 220 kV 110 kV 35 kV are class 1 or 2 which while adequate today will not be adequate in the future when electricity system is deregulated
- There are no meters at transformer 10 kV/ 0 4 kV substations it is therefore impossible to determine how much electricity is entering a feeder that directly leads to groups of end users
- A very limited number of meters at substations have communication with a center at Kyrgyzenergo for orderly and reliable operations

End user meters

- Customer meters are class 2 that in general are of poor workmanship quality and accuracy
- There are approximately 970,303 meters (of which less than 10% are three phase)
- There are 30,000 meters with just 3-number indexes that "clock-over" between readings resulting in consumption underestimation
- Approximately 25,229 users still do not have meters, their electricity usage is estimated
- Meter seals to prevent tampering are grossly inadequate and are a significant reason for energy theft
- Meter testing process suffers from the following deficiencies
  - Meter accuracy is determined with a stop watch, which is no longer practiced in developed countries
  - Meters that arrive from the field are not tested "As found" to determine how well they have been performing
  - Residential meters are currently tested every 20 years rather than every 16 or 8 (depending on meter type), due to a low throughput of the testing laboratory

25

Findings -- New Metering Decree (No. 420)

New metering decree suffers from several flaws that will prevent it from significantly improving collections

- Meter reading is not 100% mandatory rather a monetary encouragement is offered for recording consumption at more than 70% and collecting 80% of money due which amounts to only 56% collection rate
- Additionally feeders especially in cities, are connected together (no way of knowing where electricity went) which further complicates practical implementation of the metering decree
- It is practically impossible to meet the base amount since there are no meters on final feeders (it is therefore impossible to determine what is the total amount of electricity flowing into a feeder so one can determine 70% of that amount)
- It forces meter readers to continue doing three functions read meters collect money and inspect meters (meaning open meters) -- this creates a potential for abuse
- This decree is being introduced in the whole Kyrgyzstan rather than being implemented on a pilot basis in a region to determine its effects
- Due to a system of special privileges for certain population groups meter readers are put in an impossible situation of collecting money (ie , they cannot collect from customers who are paid from the budget)

Findings -- Billing System

General

- Billing process is conducted in each of 57 regions separately
- 42 out of 57 regions have a limited number of computers
- In 42 regions the number of computers is too limited to conduct efficient operations
- In regions without computers limited records are kept such as payment slips only

Description

- The program contains a screen that provides customer information (name address) meter data (number, type), payment history that will eventually extend to three years
- Customers fill out coupons with meter indexes and turn in their payments
- Payments are made through payment centers that collect payment slips and sent to locations with computers For this reason the amount of money paid determines how much electricity was used and not the other way around as should be As a matter of fact actual and calculated meter reads are often unrelated

Issues

- Amounts due are often in error since customers themselves make calculations
- Bill calculations are difficult because of various discount rates and irregular payments
- When new meters are installed, employees often forget to input new meter indexes into the billing system which leads to additional sources of errors
- Readings by meter readers are not inputted into billing systems
- There are frequent errors in the accounting due to poorly designed program and due to a large number of tariffs and discounts that are often quite complicated

Findings -- Billing System (continued)

Issues

- According to a small scale study approximately 50% of all self-readings by residential customers are underestimated
- Some customers pay several times in a month to avoid paying surcharges that apply to more than 300 kWh per month (payment process and data entry are physically and temporally separated and coupons are not dated
- Customers are not required to pay each month There is also no late-payment fee
- If customers make errors it can take years to correct them since regional offices do not provide notifications it only happens when customers come to receive new payment booklets

Improved version

- The programming department worked out a software structure for the new version of the billing program to provide electricity consumption information by each feeder This new structure was delivered to all regions and needs to be "filled out" by each of the 57 regions with their own feeder structure
- Conversion to a new system is proceeding very slowly, a region that first started doing that a year ago is only 50% done It is estimated that it would take at least a year to complete this task in all other regions (and more until all other get computers)

Recommendations -- Electricity Balance

The overall energy balance will be improved if recommendations pertaining to meter reading process metering hardware billing system and new metering decree are implemented (see subsequent pages) All these activities and areas are currently in a great disarray that prevent rational and efficient operations

These low cost recommendations will allow distribution companies for timely collection of money for delivered electricity to reduce cutoffs and to increase export sales

Better energy balance is critical to improving cash flows across the electricity system and sending appropriate price signals to customers in future

Recommendations -- Meter Reading Process

Recommendation	*Reason*	*Cost*
Require reading of 100% of meters each month, input reads to the billing program	Knowing the amount of electricity consumed is the most basic information needed for commercial operation It drives all other business processes	On a temporary basis, employee turnover may increase
Make meter readers responsible for meter reading only	There is a significant potential for a conflict of interest if they read meters, can open them and collect payments	On the balance, no cost to the enterprise
Install meters on each 10 kV / 0 4 kV substation	To account for electricity consumption on each feeder and to balance usage and detect theft	At least $600,000 (20,000 meters @ $30 each)

Recommendations -- Metering Hardware

Recommendation	*Reason*	*Cost*
Install individually numbered seals on each meter and in the billing program associate them with customers	Current seals are very easy to tamper with	Tamper-proof seals cost between $0 03 and $0 11 each
Eliminate 3 digit meters (in the meantime install them where there is no electric heating)	There is a significant probability that meters turn over more than one time between readings	Already paid for by international organizations
Install meters on customer premises that do not presently have meters	To properly account for electricity consumption	Already paid for by international organizations
Install meters on each 10 kV/0 4 kV transformer stations	To be able to balance electricity usage on each feeder	At least $600,000
Purchase meter testing equipment	To increase metering accuracy	$60,000 (two @ $30,000 each)

Recommendations -- New Metering Decree

Recommendation	*Reason*	*Cost*
Discipline among meter readers should be improved	Management is not exercising its prerogatives to enforce work discipline	Reduction in overall cost, increased benefits
A norm of 1,500 meter readings per month per meter reader should be established in most regions of the country	Meter readers in Kyrgyzstan read three times fewer meters than in Armenia and 15 times fewer than in the US	Net benefit to the company
Electricity should be cut off to users who cease to make payments	To motivate users to pay	Net benefit to the company
Electric companies should send to court all cases of electricity theft	To motivate users to pay	Net benefit to the company

Recommendations -- Billing System

Recommendation	*Reason*	*Cost*
Keep the current billing system, but make improvements	It is a workable system that provides basic useful functionality, but it needs to be modernized (A new, Western-style system is cost-prohibitive and unnecessary)	Employee time
Reverse the billing process to make meter reads an input, make monthly bill payments mandatory	Energy usage should be the primary input value and the system should calculate a payment amount to avoid errors and to eliminate carryover amounts	Essentially the cost of computers including programming changes
Install a revised version of the billing program in distribution companies to include grouping by feeder	Grouping of customers by feeder will allow the tracing of electricity losses and pinpoint theft	Employees' time to input each regions' electric system configurations

Recommendations -- Billing System

Recommendation	*Reason*	*Cost*
Purchase more computers for all regions	To ensure that there are computers in 15 regions, the remaining ones add at least a second computer in each region to facilitate work flow	30 computers for 15 regions and 42 computers for 42 regions @$1,000 Total $72,000
Eliminate the disconnect between payments and data entry	To ensure that meter reads are a basis of electricity consumption and to eliminate frequent, under 300 kWh payments, and to reduce mistakes associated with the current system	The cost of computers above plus programming changes
Provide dated payment booklets by month and year	To reduce underpayment and system manipulation	No cost, improved cash flow

Prioritization of Recommendations

High Priority

Listing	*Prioritization of Recommendations*	*Cost*
1	To improve collections and reduce theft, provide workable and real incentives to management in Kyrgyzenergo and distribution companies and enforce discipline among employees	Net benefit to the company
2	Require monthly meter reading, monthly billing and monthly payment for electricity	No cost, meter readers will have to work full days
3	Limit meter reader tasks to reading meters only	Net benefit
4	Install numbered seals on meters to reduce tempering with meters	$0 03 to $0 11 per seal
5	Implement significant changes in the proposed metering decree so that it reflects system realities	No cost, net benefits

High Priority

Listing	*Prioritization of Recommendations*	*Cost*
5	Streamline the billing process, and reverse its operations so that meter reading is an input	Net benefit to the company, fewer mistakes, better cash flow
6	Adopt single-step payment and data processing centers, implement "feeder" version of the software, purchase more computers	$72,000 for computers plus employee time
7	Working through regional structures and cooperative arrangements seek agreement from all Central Asian Republics to transfer meter ownership to respective electric utilities away from population	No cost, work must be better organized
8	Cut off non-paying customers and use court system to prosecute those who steal	Net benefit

Medium Priority

Listing	*Prioritization of Recommendations*	*Cost*
1	Secure electric equipment in the system to prevent population access	Cost of equipment installation in boxes
2	Move electricity discount administration away from electric companies to the budget sphere	Net benefit to the company
3	Purchase two test stands to test meters	$60,000
4	Replace meters class 1 and class 2 at substations 500 kV, 220 kV, 110 kV and 35 kV with meters class 0 2 and 0 5	At least $300,000
5	Establish communications between the energy control center and meters at substations	Cannot be determined at present

Cost / Benefit Summary

Highest Gain for Least Cost

Make meter readers read 100 % of meters each month	net benefit
Restrict meter reader jobs to reading meters	net benefit
Make meter reads an input to the billing program	employee time
Print dates (month and year) on each payment slip	small cost
Change meter ownership to distribution companies	new benefit

Highest Priority Investment

Install new meter seals (1 000 000 meters @ $0 1)	$100 000
Purchase computers (72)	$72 000
Sub-total	$172 000

Medium Priority Investment

Purchase test stands	$60 000
Purchase new system meters -- high voltage lines ***35-500 kV***	$300 000
Purchase new system meters -- distribution lines 10-0 4	$600,000
Total Investment	$1,132 000

Estimated Benefits

			benefits	
		1st year	**2nd year**	**3rd year**
Commercial losses associated with residential users amount to $35 5 mln (2 5 bln kWh @ 0 25 som)				
Cust losses by 50% in the 1st year	$17 9 mln	17 9	17 9	17 9
Cut the remaining losses by 50% in the 2nd year	$8 9 mln		8 9	8 9
Cut the remaining losses by 50% in the 3rd year	$4 5 mln			4 5
Total losses reduction by the end of the 3rd year	$31 3 mln			
	Total	**17 9**	**26 8**	**31 3**
Total for 3 years			**$75 mln**	

Conclusions

- The situation of electric utility companies in Kyrgyzstan is very dramatic in that half of energy delivered to residential customers is either never paid or is paid with significant time delay This situation has been created by sudden increase in electricity consumption low income of the population poor controls on electricity consumption and management that on all levels has abandoned basic fiduciary responsibility
- In all important areas associated with metering consumption and receiving payment for delivered electricity such as meter reading process, metering hardware and billing system there are significant deficiencies that prevent balancing of electricity usage and collection of money Kyrgyzenergo s new metering decree while will help with collections has significant flaws that will prevent substantial improvement
- This report presents relatively low-cost steps (listed under high priority) that can be taken to substantially and relatively quickly improve the situation, provided that they are properly implemented These recommendations recognize that lack of proper technology is only part of the problem More significant issues are related to business processes that must be addressed as well
- Most of all, distribution companies must be run like businesses where local management is made responsible for collecting money and is punished and rewarded in accordance with their performance In turn, employees' job security should depend on their meeting imposed requirements

Состояние измерений и выписки счетов в секторе потребления электроэнергии Кыргызстана

Анализ и рекомендации

Подготовлено для
Джоэллин Мёрфи

Подготовлено
Маттом Шваловски

Декабрь 1997

Оглавление

Краткое изложение

Целью данного доклада было исследование ситуации, связанной с измерением и выписыванием счетов с системе передачи и распределения электроэнергии Текущие потери в этой системе достигают 50% от энергии, поставляемой коммунально-бытовым потребителям и потребителям в сфере малого бизнеса (как с силу хищений, так и в силу неуплат) Данный доклад представляет выводы относительно таких высоких системных коммерческих потерь и рекомендации по снижению этих потерь и усовершенствованию коммерческой деятельности

В этой сфере имеют значение следующие факторы

Вплоть до 1990 электроэнергия была дешевой и население не оценивало его как товар Кроме того, электроэнергия для коммунально-бытового потребителя составляла относительно незначительную долю от общего потребления электроэнергии, так что денежные сборы переходили в низкоприоритетный статус

Население снимает показания счетчиков электроэнергии самостоятельно но в силу дешевизны электроэнергии потери не были столь значительны Кроме того электроэнергия использовалась в основном для освещения холодильников и других небольших хозяиственных нужд Следовательно количество электроэнергии, потребляемое населением было незначительным

Став суверенным государством Кыргызстан сохраняет независимость в области потребления электроэнергии и стимулирует переход на электричество с других форм топлива А между тем производство электроэнергии на гидростанциях снизилось

В результате такой политики потребление угля населением резко снизилось за счет роста потребления электроэнергии с 20% до 30% ежегодно

Система передачи и распределения электроэнергии была неготова к такому резкому повышению производства электроэнергии что явилось причиной увеличения количества аварий в системе и незаконных подсоединении к линиям, в силу того что население с низким уровнем доходов не имело возможности платить а предприятия недостаточно энергично проводили сбор платежей

Увеличение затрат на электроэнергию и вялая практика сбора платежеи привела к накоплению значительных коммерческих потерь

Эти трудности явились предпосылкои издания нового приказа Кыргызэнерго №420 от 20 10 97 которыи простимулирует сбор платежеи путем начисления зарюотнои платы контролерам в зависимости от количества счетчиков с которых ими сняты показатели и сборп платежеи Тем не менее существуют серьезные проблемы связанные с данным приказом

Краткое изложение (продолжение)

Контроль за показаниями счетчика не является на 100% обязательным, поэтому следует предложить денежное вознаграждение за учет более 70% потребленной энергии и сбора 80% положенных к уплате денег, которые составят лишь 56% от общего уровня сбора денежных платежей (приказ должно требовать 100% снятие показателей счетчиков)

Технически невозможно достичь основной суммы, так как конечные поставщики не имеют счетчиков (также невозможно определить каково общее количество электроэнергии, приходящее к поставщику и определить, что является 70%)

Это вынуждает контролеров продолжать выполнять три функции снимать показания счетчика, собирать деньги и проверять счетчики (имеется в виду пломбирование счетчиков) -- что создает потенциальную угрозу злоупотреблений

Это приказ введен сразу по всему Кыргызстану, хотя предпочтительнее было бы провести сначала пилотное исследование для определения его действия

То внимание которое уделено проблемам измерении и исчислений безусловно приведет к некоторым улучшениям в сборе платежеи Тем не менее, в силу вышеуказанных упущении,это улучшение будет меньше и оно будет неадекватным в сравнении с тем что могло бы быть достигнуто если бы были следующие рекомендованные высоко и среднеприоритетные задачи были бы выполнены

Задачи первостепенной важности

Для улучшения сбора платежеи и сокращения хищений необходимо предоставить действенную и реальную систему вознаграждений управлениям в Кыргызэнерго и распределительных компаниях и укрепить дисциплину среди сотрудников (затраты на обучение)

Требовать ежемесячного снятия показании счетчиков ежемесячного выписывания счетов и ежемесячного внесения платы за электроэнергию (чистая прибыль)

Ограничить задачи контролеров только снятием показании счетчиков (чистая прибыль)

Внедрить нумерацию на пломбах счетчиков с целью снижения хищения электроэнергии путем вскрытия счетчиков (чистая прибыль)

Внести значительные изменения в предложенное приказ об измерениях с тем чтобы оно больше учитывало реалии существующей системы (чистая прибыль)

Упростить процесс выписывания счетов изменить порядок операции таким образом чтобы снятие показателей счетчика контролером было вводным, а не завершающим действием в этом порядке как это практикуется до нынешнего дня (чистая прибыль)

Внедрить одноразовую оплату и центры по обработке данных разработать версию программного обеспечения для "фидера", приобрести больше компьютеров ($72 000 плюс рабочее время)

Краткое изложение (продолжение)

Просмотреть по региональным структурам и совместным договорам имеется ли договор по всем республикам Центральной Азии о передаче права владения счетчиками от населения соответствующим энерго предприятиям (чистая прибыль)

Отключать электроэнергию у потребителей, которые не вносят платежи и использовать судебную систему для наказания тех, кто расхищает энергию

Задачи средней степени важности

Предотвратить возможность доступа населения к системе защиты оборудования, приводящего к его порче

Перенести органы управления, ведающие системои льгот по потреблению электроэнергии из энергокомпаний в государственные органы по социальному обеспечению

Приобрести оборудование для тестирования счетчиков ($60,000 за два комплекта)

Заменить счетчики класса 1 и класса 2 (1% и 2% точности соответственно) на подстанциях 500 кВ, 220 кВ, 110 кВ и 35 кВ счетчиками класса 0 2 и 0 5 (0 1% и 0 2% точности соответственно)

Установить связь между центрами по контролю за энергией и счетчиками на подстанциях (будет установленно позднее, но минимальная стоимость $200 000)

Остальная часть доклада организована следующим образом

Получены данные по нескольким областях как например баланс электроэнергии, процесс снятия показаний счетчиков, измерительные приборы новый приказ (№420) об измерениях и системе выписывания счетов

Даны рекомендации по каждой из вышеназванных областей

Рекомендации приоритезированы по степени важности

Суммированы заключения

Цель и возможности

Эта работа выполнена по просьбе Кыргызэнерго в рамках общего заказа ЮСАИД №6 Общая цель заказа заключается в улучшении коммерческой деятельности Кыргызэнерго в вопросах измерения расхода электроэнергии и пред явления счетов В данном отчете рассматриваются измерение расхода электроэнергии и пред явление счетов с учетом технологии, людей и производственных процессов

Отчет был обусловлен следующими факторами

около 50% электроэнергии, потребляемой населением и малыми коммерческими предприятиями, не оплачивается

Потребление электроэнергии растет на 25 %-30% в год Возникла необходимость изучить эти вопросы и определить причины этой ситуации

Были проанализированы все аспекты учета энергии и пред явления счетов, чтобы определить какие изменения следует внести С этой целью, все эти вопросы были обсуждены на всех уровнях Кыргызэнерго с работниками распределительных компаний, а также потребителями Кыргызэнерго Результатом встреч и анализов явились рекомендации, соответствующие нынешней общей ситуации в электроэнергетическом секторе Кыргызстана Важно отметить что технология является лишь частью общего процесса улучшения, как производственный процесс, так и поведение работников имеют большое значение, и они должны привнести настоящие перемены

Этот анализ охватил следующие аспекты учета израсходованной электроэнергии и пред явления счетов

Баланс электроэнергии

Процесс проверки счетчиков

Конструкция счетчика

Новый приказ об учете электроэнергии

Система пред явления счетов

По результатам выводов по каждому из этих аспектов учета электроэнергии и пред явления счетов был составлен список мероприятий в приоритетном порядке которые рекомендуются для улучшения оплаты счетов Данный список уравновешивает затраты на выполнение каждого этапа с возможными выгодами

Методология

Данное исследование основывалось, в основном, на следующих подходах

Беседы с представителями различных предприятий, которые (прямо или косвенно) занимаются распределением электричества

Обзор отчетов, написанных ранее для различных аспектов общего проекта

Беседы с консультантом проекта Тасис по энергетике

Для данного исследования многие беседы проводились с работниками энергетического сектора, а именно, со специалистами в следующих сферах

Планирование

Продажа электроэнергии

Технические потери

Специалисты по учету электроэнергии в головных офисах и на подстанциях

Контролеры

Различные вопросы рассматривались с 3 ракурсов

Технология

Люди

Производственный процесс

Цель данного отчета заключалась в улучшении функций учета израсходованной электроэнергии и пред явления счетов Взаимодействие и надлежащее выполнение этих функции необходимы для продолжения работы системы и его финансового состояния При надлежащем выполнении этих функции и эффективном сборе платежей с конечных потребителей будет достаточно средств чтобы постепенно платить за необходимые улучшения в системе

Выводы - Баланс электроэнергии

Целостность электрической системы может быть определена по степени точности бухгалтерского учета электричества Учет электроэнергии должен вестись на линиях с высоким и низким напряжением

Баланс электроэнергии существует на следующих этапах

- Высоковольтные линии и подстанции
- Средние и крупные коммерческие потребители

Ни на одной из 7 региональных ПЭС не достигается полного баланса электроэнергии - данные по техническим и коммерческим потерям только расчетные

Баланс электроэнергии также не достигается ни на одной из трансформаторных подстанций 10 кВ/0 4 кВ, которые снабжают электроэнергией от 50 до 600 конечных потребителей, так как на этих подстанциях нет счетчиков

Из-за нехватки электроэнергии применяются 2 вида лимитирования потребления электричества

- У каждого района есть лимит электроэнергии на определенный период времени
- Регулярное и веерное отключение электричества несколько раз в течение 24 часов

Кыргызстан торгует электроэнергией каждый месяц с соседними государствами, продает электричество летом и иногда получает его обратно зимой

Выводы - Процесс учета электроэнергии

Наиболее существенная проблема с учетом электроэнергии существует среди населения и некоторых малых коммерческих потребителей

Функция учета электроэнергии находится в абсолютном беспорядке и является основной причиной неплатежей

Контролер счетчиков выполняет три функции, что ведет к возможному конфликту интересов и злоупотреблению служебным положением он снимает показания счетчика, собирает деньги и проводит инспекцию счетчиков (т е счетчиков на виду)

Показания счетчика редко считываются самими контролерами, многие счетчики не считывались контролерами уже много лет, система полагается на самоучет электроэнергии

Обычно контролер официально снимает показания 500 счетчиков в месяц При надлежащей работе он должен считывать хотя бы, 1 500 показаний в месяц в городах

Широко распространено подозрение, что потребители сговариваются с контролерами или же платят меньше, чем положено

Контролеры не носят с собой документов указывающих на то что они имеют право отключать электричество у потребителей (некоторые потребители утверждают, что их не могут отсоединить от линии)

Контролеры говорят, что существуют организованные незаконные группы, которые могут искажать показания счетчика

Случаи хищения и неплатежей редко разбираются в судебном порядке в одном из районов с 141 тыс потребителями в категории населения было возбуждено только 7 уголовных дел

Выводы - Технические средства учета электроэнергии

Подавляющее большинство счетчиков в системе сделано в России, качество которых относительно плохое и нельзя полагаться на их точность

Системные счетчики

За исключением нескольких счетчиков, большинство из них одно-тарифные счетчики только для электроэнергии

Системные счетчики 500 кВ, 220 кВ, 110 кВ, 35 кВ относятся к классам 1 или 2, которые пока пригодны для работы, но не будут соответствовать требованиям в будущем, когда система электроэнергии не будет больше регулироваться государством

На трансформаторных подстанциях 10 кВ/ 0 4 кВ нет счетчиков поэтому невозможно определить об ем электричества, поступающего в фидер 0,4 кВ, откуда электричество распределяется непосредственно по конечным потребителям

Очень ограниченное количество счетчиков на подстанциях имеет связь с центром в Кыргызэнерго, что важно для организованной и надежной работы

Счетчики конечных потребителей

Счетчики потребителей относятся к классу 2 с плохой конструкцией, точностью и качеством

Существует приблизительно 970 303 счетчиков, их которых менее 10% являются 3-х фазными

30 тыс счетчиков имеют 3-х значные показатели, которые успевают сделать несколько кругов между посещениями контролеров или самостоятельными снятиями показаний счетчиков что ведет к недоучету потребленной электроэнергии

Приблизительно 25 229 потребителей все еще не имеют счетчиков потребление ими электроэнергии определяется расчетным путем

Пломбы на счетчиках которые предназначены для предотвращения искажения показаний не отвечают требованиям, что является основной причиной хищения электроэнергии

Процесс поверки счетчиков имеет следующие недостатки

- Точность счетчиков определяется при помощи секундомера что давно уже не практикуется в развитых странах
- Счетчики привезенные с места потребления для ремонта не проходят тестирования на точность до ремонта
- Счетчики которыми пользуется население в настоящее время тестируют 1 раз в 20 лет из-за низкой пропускной способности испытательной лаборатории, а не 1 раз в 16 лет или 8 лет (в зависимости от видов счетчиков)

Выводы - Новый приказ об учете электроэнергии № 420

Новый приказ об учете электроэнергии имеет несколько недостатков, которые помешают значительному улучшению сбора оплаты

Снятие показаний счетчиков не является обязательным на 100%, а предлагается денежное вознаграждение за учет 70% потребленной электроэнергии и сбор 80% денег, подлежащих уплате, что составляет лишь 56% от уровня собираемости платежей

К тому же, фидеры, особенно в больших городах, взаимосвязаны (невозможно узнать куда ушло электричество), что еще больше усложняет практическое выполнение приказа об учете электроэнергии

Практически невозможно выполнить требование об учете 70% потребленной электроэнергии, так как в конечных фидерах счетчиков не существует (невозможно определить общии об ем электроэнергии, поступающего в фидер чтобы определить чему р ɪвняются 70%)

Это вынуждает контролеров продолжать выполнять свои 3 функции снимать показания счетчиков собирать деньги и инспектировать счетчики (имеются в виду открытые счетчики, не скрытые) -- это создает возможность злоупотребления положением

Этот приказ вводится по всему Кыргызстану, а не в качестве эксперимента в каком-либо регионе, что позволило бы определить эффект от приказа

Из-за существования системы особых привилегий для определенных групп населения, контролеры поставлены в ситуацию, где практически невозможно собирать деньги

Выводы -- Система предъявления счетов

Общее

Процесс предъявления счетов осуществляется отдельно во всех 57 районах

42 района из 57 имеет ограниченное количество компьютеров

Очень ограниченное количество компьютеров в 42 районах препятствует ведению эффективной деятельности

В районах без компьютеров ведется ограниченный учет данных, например, только платежных квитанций (уведомлений)
Описание

В программе имеется экран, содержащий информацию о потребителе (Ф И О , адрес), данные о счетчиках (номер, тип), сведения о платежах, которые, в конечном счете, охватывают три года

Конечные потребители заполняют бланки расчетной книжки с указанием показаний счетчика и производят оплату

Оплата производится в кассах, которые собирают платежные расписки и посылают в отдел компьютеров Следовательно, объем потребленной электроэнергии определяется размером оплаты а не наоборот как на самом деле следует это определить В действительности фактические и подсчитанные показания счетчика не всегда соответствуют друг другу

Вопросы

Причитающиеся к оплате суммы не всегда правильны, так как подсчеты производятся самими потребителями

Трудности при расчетах по счетам связаны с различными нормами скидок и нерегулярными платежами

При установке новых счетчиков работники часто забывают ввести новые измерительные показатели в систему предъявления счетов что приводит затем к дополнительным источникам ошибок

Показания снимаемые контролерами не вводятся в системы предъявления счетов

Частые ошибки в системе учета происходят из-за плохо разработанной программы и большого количества тарифов и льгот которые зачастую носят весьма усложненный характер

15

Выводы -- Система предъявления счетов (продолжение)

Вопросы

Изучение небольшого масштаба показало, что приблизительно 50% всех самостоятельных показаний населения считается недооцененными

Некоторые потребители производят оплату несколько раз в месяц во избежание доплаты за электроэнергию, потребленную свыше 300 кВт/ч в месяц (процессы оплаты и ввода данных осуществляются в разных местах и в разное время, и бланки не ***нумеруются по месяцам***)

Нет требования, чтобы потребители производили оплату за электроэнергию ежемесячно Нет также платы, взимаемой за просроченные платежи

На исправление ошибок допущенных потребителями может потребоваться годы так как региональные офисы не сообщают о них, их можно исправить только при выдаче новых расчетных книжек

Улучшенный вариант

Отдел АСУ Кыргызэнерго разработал компьютерную структуру для новой версии программы предъявления счетов с целью обеспечения поступления данных о потреблении электроэнергии от каждого фидера Эта новая структура была доставлена во все районы и требует чтобы все 57 районов "заполняли" ее своими структурами питания

Процесс перехода к новой системе протекает очень медленно район первым приступившим к такому заданию, выполнил его только на 50% Подсчеты показывают что для выполнения данного задания потребуется, по крайней мере, один год во всех остальных районах (и еще больше пока все остальные районы не приобретут компьютеры)

57

Рекомендации -- Баланс электроэнергии

Общий энергетический баланс улучшится, если будут выполнены рекомендации относительно процесса снятия показаний счетчиков, технических средств учета, системы предъявления счетов и приказ о новых процедурах замера (см следующие страницы) В настоящее время все эти факторы и сферы находятся в очень трудном положении, которое препятствует рациональному и эффективному ведению деятельности

Такие менее затратные рекомендации позволят распределительным компаниям своевременно собирать оплату за отпущенную электроэнергию, уменьшить отключения и увеличить экспортные продажи

Улучшение энергетического баланса важно для увеличения потока наличности в системе электричества и в дальнейшем для предоставления потребителям расценок на электроэнергию в зависимости от времени суток

Рекомендации -- Процесс учета электроэнергии

Рекомендации	Обоснование	Стоимость
Потребовать, чтобы показания счетчиков снимались на 100 % ежемесячно, ввести эти показания в программу предъявления счетов	Наиболее важной информацией для коммерческой деятельности считается факт когда известны данные об объеме потребленной электроэнергии Это является побудительным мотивом для остальных видов деятельности	Может произойти временный рост текучести кадров
Обеспечить, чтобы контролеры отвечали только за показания счетчиков	Есть значительная возможность возникновения конфликта интересов, если контролеры снимают показания счетчиков могут открывать их и собирать оплату	В конечном счете, никаких затрат со стороны предприятия
Установить счетчики на всех подстанциях, рассчитанных на 10 и 0 4 кВ	Учитывать потребление электроэнергии на каждом фидере, балансировать потребление и выявлять случаи хищения	По меньшей мере, 600 000 долл (20 000 счетчиков по 30 долл каждый)

Рекомендации -- Технические средства учета электроэнергии

Рекомендации	Обоснование	Стоимость
Установить индивидуально пронумерованные пломбы во всех счетчиках и объединить их с данными потребителей в программе предъявления счетов	Установленные в настоящее время пломбы легко срываются и подделываются	Стоимость новых, не поддающихся подделке пломб составляет около 0 03-0 11 долл за ед
Отменить 3-х значные счетчики (между тем их можно установить в местах, где нет электрического отопления)	Существует большая вероятность того, что диск счетчика перекручивают больше одного раза в промежутках снятия показаний	Средства уже выделены международными организациями
Установить потребителю счетчики во всех его помещениях, в которых в настоящее время нет счетчиков	Обеспечить правильный учет потребления электроэнергии	Средства уже выделены международными организациями
Установить измерительные приборы на всех подстанциях рассчитанных на 10 и 0 4 кВ	Способность сбалансировать потребление электроэнергии на всех фидерах	По меньшей мере 600 000 долл
Закупить оборудование для испытания счетчиков	Повышение степени правильности учета	60 000 долл (два по 30 000 долл каждое)

Рекомендации -- Новый приказ об учете электроэнергии

Рекомендации	Обоснование	Стоимость
Необходимо повысить дисциплину среди контролеров	Управленческий штат не пользуется своим исключительным правом на обеспечение соблюдения рабочей дисциплины	Сокращение обших затрат, увеличение прибылей
Необходимо, чтобы ежемесячное снятие показаний 1 500 счетчиков было установлено как норма одного контролера в большинстве районов республики	Контролеры в Кыргызстане снимают показания счетчиков, количество которых в три раза меньше, чем в Армении и в 15 раз меньше, чем в США	Чистыи доход компании
В случае неуплаты следует прекратить подачу электроэнергии	Чтобы принудить потребителей платить за электроэнергию	Чистыи доход компании
Энергопредприятия должны обращаться в суд по всем случаям хищения электроэнергии	Чтобы принудить потребителеи платить за электроэнергию	Чистыи доход компании

Рекомендации - Система предъявления счетов

Рекомендации	Обоснование	Стоимость
Сохранить текущую систему предъявления счетов, усовершенствуя ее при этом	Эта рабочая система, которая выполняет основные полезные функции, но она требует усовершенствования (нет необходимости в ведении новой западнои системы, требующей чрезмерно высоких затрат)	Время работников
Организовать процесс предъявления счетов в порядке обратном к существующему, начиная со снятия показания счетчиков, и сделать ежемесячную оплату по счетам обязательным	Использование энергии должна играть первостепенную роль и необходимо, чтобы система подсчитывала сумму платежеи во избежание ошибок и в целях ликвидации просроченных платежных сумм	В основном это стоимость компьютеров, включая изменения при программировании
Установить переработанныи вариант программы предъявления счетов в распределительных компаниях с целью группирования по фидерам	Группирование потребителеи по фидерам позволит выявлять место и факт потерь и хищении электроэнергии	Время работников, затраченное на ввод конструкции/форм системы электричества каждого раиона

Рекомендации - Система предъявления счетов

Рекомендация	Обоснование	Стоимость
Приобрести больше компьютеров для всех районов	Обеспечить компьютерами 15 районов, оставшиеся компьютеры добавить по второму компьютеру в каждый район, чтобы облегчить деятельность	30 компьютеров на 15 районов и 42 компьютера на 42 района по 1000 долларов за 1 компьютер Всего 72000 долларов
Устранить разрыв между выплатами и вводом данных	Обеспечить, чтобы показания счетчика стали основой учета потребления электроэнергии и обеспечить постоянную уплату за 300 кВтч, сократить ошибки, связанные с существующеи системои	Стоимость вышеуказанных компьютеров и плюс программные изменения
Предоставить книжки по оплате за электроэнергию с указанием даты (месяц и год)	Сократить неуплаты по счетам и манипуляцию системы	Без затрат, увеличение потока денежных средств

Первоочередность рекомендаций

Первоочередные задачи

№	Рекомендации по степени важности	Стоимость
1	Увеличить сбор денежных средств и сократить хищения, предоставить рабочий и реальный стимул управленческой структуре Кыргызэнерго и распределительным компаниям и повысить дисциплину служащих	Чистая прибыль компании
2	Требовать считывание показаний счетчиков ежемесячно ввод в систему счетов и ежемесячную оплату за электроэнергию ограничить работу контролера снятием показаний со счетчика	Без затрат контролеры должны работать полный рабочий день
3	Установить пронумерованные пломбы на счетчиках чтобы сократить махинации со счетчиками	от 0 03 до 0 11 цента за пломбу
4	Внести значительные изменения в предложенном приказе об учете электроэнергии так чтобы в нем отражались реальности системы	Без затрат чистая прибыль

Первоочередные задачи

№	Рекомендации по степени важности	Стоимость
5	Упорядочить систему счетов, произвести изменения в системе выписывания счетов, производить сначала считывание показаний и выписку счетов а затем оплату	Чистая прибыль компании, меньше ошибок, улучшение потока наличности
6	Принять одноразовую оплату и организовать центры по обработке данных ввести версию 'фидер из программного обеспечения приобрести больше компьютеров	72000 долларов на компьютеры плюс рабочее время служащих
7	Достижение соглашения всех Центрально Азиатских республик на передачу права собственности на счетчики от населения соответствующим энергопредприятиям посредством проведения совместных встреч и работы с региональными структурами	Без затрат, работа должна быть лучше организована
8	Отключить потребителей которые не платят за электроэнергию и привлекать этих потребителей к судебной ответственности	Без затрат

Задачи средней степени важности

№	Рекомендации по степени важности	Стоимость
1	Обеспечить охрану электрооборудования в системе, чтобы препятствовать допуску населения	Стоимость установки оборудования в ящиках
2	Передать полномочия предъявления скидок на электроэнергию из энерго предприятий в сферу бюджета	Чистая прибыль компании
3	Приобрести две установки для испытания счетчиков	60000 долларов
4	Заменить счетчики класса 1 и класса 2 на подстанциях 500кВ, 220 кВ 110 кВ и 35 кВ на счетчики класса 0 2 и 0 5	По крайней мере 300,000 долларов
5	Установить связь между центром энергонадзора и счетчиками на подстанциях	В настоящее время не может быть определен

Суммарное изложение затрат/доходов

Наибольший об ем доходов при наименьших затратах				
Обязать контролеров ежемесячно снимать показания счетчиков			чистый доход	
Обеспечить, чтобы обязанности контролеров ограничивались снятием показаний счетчиков			чистый доход	
Ввести показания счетчиков в программу пред явления счетов			время работника	
Проставить дату (месяц, год) на всех платежных расписках			небольшой об ем затрат	
Передать право собственности на счетчиков распределительным компаниям			новые доходы	
Инвестиции первой степени важности				
Установка новых счетчиков с новыми пломбами (1 000 000 единиц по 0 1 долл каждый)			$100 000	
Приобретение компьютеров (72)			$ 72 000	
		Всего	$172 00	
Инвестиции средней степени важности				
Приобретение испытательных стендов			$ 60 000	
Приобретение счетчиков новой системы - для высоковольтных сетей 35-500 кВ			$300 000	
Приобретение счетчиков новой системы - для распределительных сетеи 10-0 4 кВ			$600 000	
		Всего инвестиций	$1,132 000	
Приблизительные доходы			**доходы**	
		1год	**2год**	**3год**
Об ем коммерческих потерь, связанных с потреблением населения составляет $35 5 млн (2 5 млрд кВт/ч по 0 50 сом)				
Сократить потери на 50% в первом году	$17 9 млн	17 9	17 9	17 9
Сократить остальные потери на 50% во втором году	$8 9 млн		8 9	8 9
Сократить остальные потери на 50% во третьем году	$4 5 млн			4 5
Сокращение всех потерь к концу третьего года	$31 3 млн			
	ВСЕГО	17 9	26 8	31 3
	ИТОГО ЗА 3 ГОДА		**$75 млн**	

Заключение

Ситуация энергопредприятий в Кыргызстане очень драматична тем, что половина энергии, отпускаемой населению или никогда не оплачивается или оплачивается с огромной задержкой Эта ситуация явилась результатом резкого повышения потреблении электроэнергии, низким доходом населения, плохого контроля за потреблением электроэнергии и того, что ответственные лица отрасли на разных уровнях безответственно относятся к своим обязанностям

Во всех важных сферах, связанных с учетом электроэнергии согласно показаниям счетчика и оплатой за отпущенную электроэнергию, в таких как снятие показаний со счетчика, конструкцией счетчиков и системой выписывания счетов, существуют значительные недостатки, которые мешают балансированию потребления электроэнергии и сбору денежных средств Хотя новый приказ Кыргызэнерго об учете электроэнергии улучшит сбор средств он имеет значительные недостатки, которые будут препятствовать значительным улучшениям

Этот отчет представляет задачи с относительно наименьшими затратами (в списке в первоочередных задач), которые можно предпринять, что существенно и относительно быстро улучшит ситуацию, если они внедрены должным образом Эти рекомендации подтверждают, что отсутствие должной технологии это только часть проблемы, существуют значительные проблемы, связанные с процессом деятельности, которые тоже необходимо решить

Больше всего распределительные компании должны вести такую деятельность где местное управление будет ответственным за сбор денежных средств и наказываться и поощряться в соответствии с результатами их работы В свою очередь работа служащих зависит от возложенных на них обязанностеи

ANNEX 2

MEMORANDUM

TO	Kyrgyzenergo State Energy Agency State Property Fund
FROM	Hagler Bailly
DATE	February 17, 1998
SUBJECT	Status Report on Implementation of Hagler Bailly Recommendations in the Area of Metering and Billing

1 Purpose

This status report, which will be presented once a month, will describe the progress that Kyrgyzenergo is making towards improving metering and billing operations [1] That progress will be measured against recommendations presented in the December 1997 report on metering and billing done by Hagler Bailly

2 Highlights

- There is still no requirement for meter readers to read 100% of meters each month
- Little progress to reverse the billing system (right now it uses the amount that a customer pays as a basis to calculate the consumption of electricity, which is the reverse of what should be happening)
- Slow implementation of the new version of the billing system by feeder, ie , fully implemented at only one distribution company and 50% at another one (out of 57)
- There are no plans to provide dates in payment booklets (currently a customer can make a payment at an arbitrary time like such as every 3 or 6 months rather than each month if there was a date)
- Kyrgyzenergo plans to purchase numbered seals to significantly reduce tampering with meters

3 Progress Gradation

- No Progress – nothing is being done about a recommendation
- Minimal Progress – problem is being thought about
- Some Progress – partial steps were taken towards a solution
- Progress – a solution either implemented or to be implemented

[1] Every effort was made to reflect the current status as accurately as possible, some minor errors might have occurred and will be corrected in the next update

4 Discussion of the Status of Specific Recommendations

Status – No Progress

Report Recommendation	*Status*
A norm of 1,500 meter readings per month per meter reader should be established in most regions of the country (meter reading only on meter reader's sheets)	Kyrgyzenergo staff calls for reading only 750 meters However, in their approach a meter reader reads a meter, calculates a payment, fills out a customer payment book while on site Again, a meter reader should only read meters and write down the index, the billing system should do the rest
Provide dated payment booklets by month and year	No plan to do it
Secure electric equipment in the system to prevent population access	No plan to do it
Move electricity discount administration away from electric companies to the administration by appropriate ministry	No plan to do it
Establish communications between the energy control center and meters at substations	No plan to do it
Make monthly bill payments mandatory	No plan to do it
Keep the current billing system, but make improvements	No structured process under way to conduct program improvements The system does not show the amount of debt for each customer There are errors in customer information Some companies make changes in programs rather than adhere to a standardized version

Status – Minimal Progress

Report Recommendation	*Status*
Reverse the billing process to make meter reads an input	Discussed among the Kyrgyzenergo staff to develop a plan in the first quarter of 1998, at the moment programmers are not implementing the change Lack of 100% monthly meter reading to make it work
Install a revised version of the billing program in distribution companies to include grouping by feeder	The new program has only been implemented at two companies (100% at one company and 50% at another one) Often the first step (ie , equipment inventory, customer designation) has not been completed
Require reading of 100% of meters each month, input reads to the billing program	While in principle there is a goal of 100 % meters read, in reality Kyrgyzenergo wants to stick to its plan to require reading a minimal number of meters and pay a premium for reading an increased number of meters
Companies should send to court all cases of electricity theft	Penal code does not contain specific measures to charge users for electricity theft
Eliminate the delay between payments and data entry	Some efforts to change are under way, but customers can continue to make smaller payments and avoid surcharges Especially significant when payments are made at post offices which causes long delays
Discipline among meter readers should be improved	The incentive system currently competes with bribes from customers

Status – Some Progress

Report Recommendation	*Status*
Install meters on each 10 kV / 0 4 kV substation	Out of about 18,000 such substations, only 3,000 3-phase meters are scheduled to be received in the near future
Make meter readers responsible for meter reading only	This is already happening in larger population centers, still in smaller places, meters readers collect money, lesser problem where there is a contract to account for a delivery of a certain amount of electricity
Install individually numbered seals on each meter and in the billing program associate them with customers	In the near term, the goal is to install 500,000 new seals and remove sealing devices from meter readers
Working through regional structures seek agreement from all Central Asian Republics to transfer meter ownership to respective electric utilities away from population	An order came out that transfers the ownership of meters from population to Kyrgyzenergo, however no details regarding any financial conditions and responsibilities (ie , meter theft) has not been developed In this situation it is even more important to establish agreements between the Central Asian states for uniformity of meter ownership
Replace meters class 1 and class 2 at substations 500 kV, 220 kV, 110 kV and 35 kV with meters class 0 2 and 0 5	In April Kyrgyzenergo will receive 250 meters class 0 2 (perhaps as many as 60% of the need)
Purchase more computers for all regions	Twelve companies still do not have computers to conduct billing operations
Electricity should be cut off to users who cease to make payments	Less than 100 % of non-paying customers have their electricity disconnected

Status – Progress

Report Recommendation	*Status*
Eliminate 3 digit meters (in the meantime install them where there is no electric heating)	Scheduled to receive by April
Install meters on customer premises that do not presently have meters	Scheduled to receive by April
Purchase meter testing equipment	Scheduled to receive by April (2 stationary and 6 mobile)

МЕМОРАНДУМ

КОМУ Кыргызэнерго, Госагентство по энергетике, Фонд госимущества

ОТ Хаглер Байи

ДАТА. Февраль 17, 1998

ТЕМА. ОТЧЕТ О ХОДЕ ВЫПОЛНЕНИЯ РЕКОМЕНДАЦИЙ ХАГЛЕР БАЙИ В ОБЛАСТИ СЧЕТЧИКОВ И ОПЛАТЫ СЧЕТОВ

1 Цель

Данный отчет, который будет представлен каждый месяц, описывает прогресс Кыргызэнерго в улучшении операций со счетчиками и оплатой счетов [1] Этот прогресс будет измеряться относительно рекомендаций, представленных в отчете от декабря 1997 года по счетчикам и оплате счетов, подготовленном Хаглер Байи

2 Основные моменты

- Все еще не предъявляются требования к контролерам снимать показания со 100% счетчиков каждый месяц
- Сделан незначительный прогресс в изменении порядка системы оплаты счетов (в настоящее время в качестве основы для подсчета потребления электроэнергии используется об ем электроэнергии, который абонент оплачивает, а все должно происходить наоборот)
- Медленное выполнение новой версии системы оплаты счетов фидерами, т е , полностью выполнила только одна распределительная компания, а другая - только на 50% (из 57)
- Не планируется проставлять даты в абонентских книжках (в настоящее время абонент может платить в произвольное время, н-р, один раз в 3 или 6 месяцев, а не каждый месяц, если бы на книжке была дата)
- Кыргызэнерго планирует закупить пронумерованные пломбы, чтобы значительно сократить незаконное изменение показаний счетчиков

3 Градация прогресса

- Отсутствие прогресса — никаких действий по выполнению рекомендации не предпринимается
- Минимальный прогресс — о проблеме думают
- Некоторый прогресс — были предприняты некоторые шаги к решению проблемы
- Прогресс — проблема решается или решена

[1] Были сделаны большие усилия, чтобы отразить существующее положение дел как можно точнее, возможны некоторые мелкие ошибки, которые будут исправлены на следующем этапе

4 Обсуждение состояния особых рекомендаций

Состояние – Нет прогресса

Рекомендация по отчету	*Состояние*
В большинстве регионах страны должна быть установлена норма работы контролера - снимать показания с 1500 счетчиков в месяц на 1 контролера (снимать показания со счетчика только в ведомостях по показаниям счетчиков)	Работники Кыргызэнерго принимают норму - 750 счетчиков Тем не менее они считают, контролер снимает показания со счетчика, рассчитывает оплату, заполняет книжку абонента на месте И снова контролер должен только прочитать и выписать показания со счетчиков, остальное будет сделано расчетной системой
Предоставлять абонкнижки по оплате за электроэнергию с указанием даты (месяц, год)	Не планируется
Обеспечить безопасность электрооборудования в системе, чтобы не было доступа населения	Не планируется
Передать администрирование скидок от энергокомпаний к соответствующему министерству	Не планируется
Установить связь между центром энергоконтроля и счетчиками на подстанциях	Не планируется
Сделать оплату по счетам обязательной	Не планируется
Сохранить существующую систему оплаты счетов, но только улучшить ее	Нет структурного процесса, чтобы проводить программу по улучшению Система не показывает сумму задолженности на каждого потребителя Существуют ошибки в информации по потребителям Некоторые компании проводят изменения в программе, чем придерживаться стандартной версии

Статус - Минимальный Прогресс

Рекомендовано в отчете	*Состояние*
Переделать процесс выставления счетов приняв за основу (вводные данные)показания счетчиков	Обсуждалась с сотрудниками Кыргызэнерго разработка плана в первом квартале 1998 г , программисты пока не ввели изменения На 100% отсутствует ежемесячный контроль за показаниями счетчиков
Установить исправленную версию программы счетов в распределительных компаниях и включить группирование по фидерам	Новая программа была осуществлена только в двух компаниях (на 100% в одной и на 50% в другой) Часто первый шаг (напр инвентаризация оборудования, классификация клиентов) не был выполнен
Требуется считывание 100% показателей счетчиков ежемесячно, вводные данные входят в программу счетов	Хотя существует принципиальная цель по 100% контролю за счетчиками, в действительности Кыргызэнерго стремится установить минимальное количество контролируемых счетчиков и выплачивать премию за контроль над повышенным количеством счетчиков
Компании передают в суд все случаи хищения электроэнергии	Гражданским кодексом не предусмотрены специальные меры по взысканию возмещения за хищение электроэнергии
Устранить разрыв между платежами и вводом данных	Предпринимаются некоторые попытки, но клиенты продолжают вносить небольшие суммы, избегая тем самым повышенной оплаты Особенно важно при оплате через почтовые отделения, что приводит к значительным задержкам
Следует наладить дисциплину среди контролеров счетчиков	Система поощрения контролеров (70% и 80%) создает условия для злоупотребления

Состояние – Некоторые достижения

Рекомендации по отчету	*Состояние*
Установить счетчики на подстанциях 10 кВ/0 4 кВ	На ближайшее будущее планируется поступление только 3,000 трехфазных счетчиков по отношению к 18,000 таких подстанций
Обеспечить, чтобы контролеры отвечали только за учет потребления электроэнергии	Это уже происходит в более крупных населенных центрах, в небольших населенных пунктах контролеры все еще занимаются сбором оплаты, по-меньше проблем в районах, где заключены контракты на учет доставки определенного количества электроэнергии
Установить индивидуально пронумерованные пломбы на всех счетчиках и связать номера с данными потребителей в программе предъявления счетов	В ближайшем будущем намечается установить 500,000 новых пломб и забрать пломбиры у контролеров
Достижение согласия всех республик Средней Азии на передачу права владения счетчиками от населения соответствующим энергопредприятиям в процессе совместной работы с региональными структурами	Был издан приказ о передаче права владения счетчиками от населения АО Кыргызэнерго, однако, финансовые условия и ответственности (т е за хищения) подробно не разработаны В таких ситуациях установление соглашений между республиками Средней Азии о едином владении счетчиками становится еще более важным
Заменить счетчики класса 1 и 2 на подстанциях 500 кВ, 220 кВ, 110 кВ and 35 кВ счетчиками класса 0 2 и 0 5	В апреле в АО Кыргызэнерго поступит 250 счетчиков класса 0 2 (возможно, 60% необходимого количества)
Приобрести дополнительное количество компьютеров для всех регионов	Двенадцать компаний все еще не имеют компьютеров для осуществления операций по выписыванию счетов
Следует отключать электроэнергию у злостных неплательщиков	Отключение электроэнергии применяется по отношению к менее, чем 100% неплательщиков

Статус - Прогресс

Рекомендовано в отчете	*Состояние*
Устранить трехзначные счетчики (временно установить их в местах, не пользующихся электрическим отоплением)	По графику поступает в апреле
Установить счетчики в домах тех клиентов, у которых они отсутствуют	По графику поступает в апреле
Приобрести контрольные приборы для счетчиков	По графику поступает в апреле (2 стационарных и 6 передвижных)

ANNEX 3

MEMORANDUM

TO	Kyrgyzenergo State Energy Agency State Property Fund
FROM	Hagler Bailly
DATE	September 23, 1998
SUBJECT	Status Report on Implementation of Hagler Bailly Recommendations in the Area of Metering and Billing

1 Purpose

This status report, which will be regularly presented, will describe the progress that Kyrgyzenergo is making towards improving metering and billing operations [1] That progress will be measured against recommendations presented in the December 1997 report on metering and billing done by Hagler Bailly

2 Highlights

- There are now requirements for meter readers to read 100% of meters each month, but they are still paid based on reading only 80%
- Except for Bishkek Distribution Company, little progress has been made to reverse the billing system (Right now it uses the amount that a customer pays as the basis to calculate how much electricity was consumed, which is the reverse of what should be happening)
- Implementation of the new version of the billing system by feeder has been slow and is fully implemented at only one distribution company, whereas remaining 55 rayon distribution companies implemented 50%
- There are still no plans to add dates to payment booklets (Currently a customer can make a payment at any arbitrary time such as once every 3 or 6 months, rather than regularly each month if there were a date)
- Kyrgyzenergo plans to purchase numbered seals to significantly reduce tampering with meters, however, no progress was achieved

3 Progress Gradation

- No Progress – nothing is being done about a recommendation
- Minimal Progress – problem is being thought about
- Some Progress – partial steps were taken towards a solution
- Progress – a solution either implemented or is being implemented

[1] Every effort was made to reflect the current status as accurately as possible, some minor errors might have occurred and will be corrected in the next update

4 Discussion of the Status of Specific Recommendations

Status – No Progress

Report Recommendation	*Status*
A norm of 1,500 meter readings per month per meter reader should be established in most regions of the country (meter reading only on meter reader's sheets)	Kyrgyzenergo staff calls for reading only 1200 meters in the city and 750 meters in the village The lower number of meter reads is because a meter reader must also calculate a payment and fill out a customer payment book while on site Again, a meter reader should only read meters and write down the index, the billing system should do the rest
Provide dated payment booklets by month and year	No plan to do it Bishkek Distribution Company makes out bills
Move electricity discount administration away from electric companies to the administration by appropriate ministry	A May 15 Government Decree (# 281) on Social Protection is accepted, but has not been implemented
Establish metering communications between the energy control center and meters at substations	Metering communications work at only three out of nine stations of 220 kV and up, and there are no plans to install more in 1998
Keep the current billing system, but make improvements	After adjustments the system shows the amount of debt for each customer in many Distribution Companies There are still errors in customer information Some companies have made changes in the program

Status – Minimal Progress

Report Recommendation	*Status*
Reverse the billing process to make meter reads an input	Discussed among the staff of JSC Kyrgyzenergo Lack of 100% monthly meter reading Meter reading results are entered into the computer
Install a revised version of the billing program in distribution companies to include grouping by feeder	Since January, 1998 Distribution Companies have a software "Residential Consumers" that makes it possible to meter by feeder
Require reading of 100% of meters each month, input reads to the billing program	While in principle there is a goal of 100 % meters read, in reality Kyrgyzenergo still pays meter readers a base salary for reading 80% plus a bonus if they read more
Companies send to court all cases of electricity theft	A new administrative code was accepted which introduced a specific provision against electricity theft, including a penalty of 2 to 5 minimum salaries It becomes effective starting from October 1, 1998
Eliminate the delay between payments and data entry	Some efforts are under way, but customers can continue to make smaller payments and avoid surcharges Especially significant when payments are made at post offices which causes long delays
Discipline among meter readers should be improved	The incentive system for meter readers has not yielded significant results yet
Secure electric equipment in the system to prevent population access	By its September 14,1998 letter, JSC Kyrgyzenergo obliged all Distribution Companies to issue an order relating to installation of metering cabinets that provide no access to people from outside
Make monthly bill payments mandatory	Being planned JSC Kyrgyzenergo is developing provisions on levying penalties for ill-timed payments for electricity Bishkek Distribution Company has been doing this since July 1, 1998
Install individually numbered seals on each meter and associate them with customer names in the billing program	In the near term, the goal is to install 500,000 new seals and remove old sealing devices from meter readers No progress for the time being

Status – Some Progress

Report Recommendation	*Status*
Install meters on each of 18,000 10 kV / 0 4 kV substation	3,027 meters are installed 18,000 more need to be installed A purchase agreement for 10,000 meters has been signed
Make meter readers responsible for meter reading only	This is already happening in larger population centers, still in smaller places, meter readers collect money, lesser problem where there is a contract to account for a delivery of a certain amount of electricity
Working through regional structures seek agreement from all Central Asian Republics to transfer meter ownership to respective electric utilities away from population	An order came out on June 1, 1998 to transfer the ownership of meters from population to Kyrgyzenergo In July-August 142,000 out of 950,000 meters were transferred from residential consumers In this situation it is even more important to establish agreements between the Central Asian states for uniformity of meter ownership
Replace meters class 1 and class 2 at substations 500 kV, 220 kV, 110 kV and 35 kV with meters class 0 2 and 0 5	Meter readers are received They are being installed on generators, 110-500 kW intersystem lines and lines between Distribution Companies 90 meters are installed 250 meters need to be installed
Purchase more computers for all regions	Seven out of 57 companies still do not have computers to conduct billing operations
Electricity should be cut off to users who cease to make payments	Disconnections are being made, but not consistently

Status – Progress

Report Recommendation	*Status*
Eliminate 3 digit meters (in the meantime install them where there is no electric heating)	14,012 out of 16,848 meters were replaced
Install meters on customer premises that do not presently have meters	Meters are received 17,688 out of 45,000 are installed
Purchase 2 meter testing devices	One device is commissioned Another will start operating in September, 1998

МЕМОРАНДУМ

КОМУ Кыргызэнерго, Госагентство по энергетике, Фонд госимущества

ОТ Хаглер Байи

ДАТА сентябрь 23, 1998

ТЕМА ОТЧЕТ О ХОДЕ ВЫПОЛНЕНИЯ РЕКОМЕНДАЦИЙ ХАГЛЕР БАЙИ В ОБЛАСТИ СЧЕТЧИКОВ И ОПЛАТЫ СЧЕТОВ

1 Цель

Данный отчет, который будет представляться регулярно, описывает прогресс Кыргызэнерго в улучшении операций со счетчиками и оплатой счетов [1] Этот прогресс будет измеряться относительно рекомендаций, представленных в отчете от декабря 1997 года по счетчикам и оплате счетов, подготовленном Хаглер Байи

2 Основные моменты

- Уже предъявляются требования к контролерам снимать показания со 100% счетчиков каждый месяц, тем не менее, оплата им все еще производится исходя из снятия показаний с только 80% счетчиков
- За исключением Бишкекского ПЭС, сделан незначительный прогресс в изменении порядка системы оплаты счетов (В настоящее время в качестве основы для подсчета потребления электроэнергии используется объем электроэнергии, который абонент оплачивает, а все должно происходить наоборот)
- Новая версия системы оплаты счетов фидерами выполняется медленно и полностью выполнила только одна распределительная компания, а остальные 55 районных распределительных компаний - на 50%
- До сих пор отсутствуют планы по проставлению дат в абонентских книжках (В настоящее время абонент может платить в произвольное время, н-р, один раз в 3 или 6 месяцев, а не каждый месяц регулярно, если бы на книжке была дата)
- Кыргызэнерго планирует закупить пронумерованные пломбы, чтобы значительно сократить незаконное изменение показаний счетчиков, однако прогресса не достигнуто

3 Градация прогресса

• Отсутствие прогресса	никаких действий по выполнению рекомендации не предпринимается
• Минимальный прогресс	о проблеме думают
• Некоторый прогресс	были предприняты некоторые шаги к решению проблемы
• Прогресс	проблема решается или решена

[1] Были сделаны большие усилия, чтобы отразить существующее положение дел как можно точнее, возможны некоторые мелкие ошибки, которые будут исправлены на следующем этапе

4 Обсуждение состояния особых рекомендаций

Состояние – Нет прогресса	
Рекомендация по отчету	***Состояние***
В большинстве регионах страны должна быть установлена норма работы контролера - снимать показания с 1500 счетчиков в месяц на 1 контролера (снимать показания со счетчика только в ведомостях по показаниям счетчиков)	Работники Кыргызэнерго принимают норму – только 1200 счетчиков в городе и 750 - в селе Тем не менее, недостаточное количество снятых показаний вызвано тем, что контролеры должны рассчитать оплату, заполнять книжку абонента на месте И снова, контролер должен только снять показания со счетчиков, остальное будет сделано расчетной системой
Предоставлять абонкнижки по оплате за электроэнергию с указанием даты (месяц, год)	Не планируется Бишкекское ПЭС (БПЭС) выставляет счета
Передать администрирование скидок от энергокомпаний к соответствующему министерству	Принято постановление правительства от 15 мая №281 о социальной защите населения, но еще не выполнено
Установить связь по учету между центром энергоконтроля и счетчиками на подстанциях	Связь по учету установлена только на 3-х из 9 подстанций 220кВ и выше, на остальных установка связи в 1998 году не планируется
Сохранить существующую систему оплаты счетов, но только улучшить ее	Система после корректировки уже на многих ПЭС показывает сумму задолженности на каждого потребителя До сих пор не устранены ошибки в информации по потребителям Некоторые компании внесли изменения в программе

Статус – Минимальный Прогресс	
Рекомендовано в отчете	***Состояние***
Переделать процесс выставления счетов приняв за основу (вводные данные) показания счетчиков	Обсуждалось с сотрудниками Отсутствие ежемесячного снятия показаний со 100% счетчиков В компьютер вносятся результаты обходов выписки счетов
Установить исправленную версию программы счетов в распределительных компаниях и включить группирование по фидерам	Программное обеспечение "Бытовые абоненты" с возможностью пофидерного учета передана в ПЭС в январе 1998 года
Требуется считывание 100% показателей счетчиков ежемесячно, вводные данные входят в программу счетов	Хотя существует принципиальная цель по 100% контролю за счетчиками, в действительности Кыргызэнерго выплачивает контролерам зарплату за снятие показаний 80% счетчиков и плюс премиальные, если они снимут больше
Компании передают в суд все случаи хищения электроэнергии	Принятый новый административный кодекс предусматривает меры против хищений энергии, в том числе штраф в размере от двух до пятимесячной минимальной заработной платы
Устранить разрыв между платежами и вводом данных	Предпринимаются некоторые попытки, но клиенты продолжают вносить небольшие суммы, избегая тем самым повышенной оплаты Особенно важно при оплате через почтовые отделения, что приводит к значительным задержкам
Следует наладить дисциплину среди контролеров счетчиков	Система поощрения контролеров пока ощутимых результатов не дала
Обеспечить безопасность электрооборудования в системе, чтобы не было доступа населения	Кыргызэнерго письмом от 14 09 98 обязало все ПЭС выдать предписание об установлении шкафов учета исключающее доступ посторонних лиц
Сделать оплату по счетам обязательной	Планируется Кыргызэнерго разрабатывает положение о начислении пени за несвоевременную оплату за электроэнергию В БПЭС это ведено с 1 06 98г
Установить индивидуально пронумерованные пломбы на всех счетчиках и связать номера с данными потребителей в программе предъявления счетов	В ближайшем будущем намечается установить 500,000 новых пломб и забрать пломбиры у контролеров Прогресса пока нет

Состояние – Некоторые достижения	
Рекомендации по отчету	***Состояние***
Установить счетчики на вводах 0,4 кВ подстанциях 10 кВ/0 4 кВ	Установлено 3027 счетчиков Необходимо установить 18000 Заключен договор на поставку 10000 счетчиков
Обеспечить, чтобы контролеры отвечали только за учет потребления электроэнергии	Это уже происходит в более крупных населенных центрах, в небольших населенных пунктах контролеры все еще занимаются сбором оплаты, поменьше проблем в районах, где заключены контракты на учет доставки определенного количества электроэнергии
Достижение согласия всех республик Средней Азии на передачу права владения счетчиками от населения соответствующим энергопредприятиям в процессе совместной работы с региональными структурами	Был издан приказ 1 июня 98 г о передаче права владения счетчиками от населения АО Принято от населения в июне-августе 142 тыс штук из 950 тыс счетчиков В таких ситуациях установление соглашений между республиками Средней Азии о едином владении счетчиками становится еще более важным
Заменить счетчики класса 1 и 2 на подстанциях 500 кВ, 220 кВ, 110 кВ и счетчиками класса 0 2 и 0 5	Счетчики поступили Устанавливаются на генераторах, межсистемных и межПЭС учетах 110-500 кВ 90 штук установлено Необходимо установить 250 штук
Приобрести дополнительное количество компьютеров для всех регионов	Семь компаний из 57-ми все еще не имеют компьютеров для осуществления операций по выписыванию счетов
Следует отключать электроэнергию у злостных неплательщиков	Отключение электроэнергии применяется, но 100% не достигнуто

Статус – Прогресс	
Рекомендовано в отчете	***Состояние***
Устранить трехзначные счетчики (временно установить их в местах, не пользующихся электрическим отоплением)	Заменено 14012 счетчиков из 16848
Установить счетчики в домах тех клиентов, у которых они отсутствуют	Счетчики поступили Установлено 17688 счетчиков из 45000
Приобрести контрольные приборы для счетчиков (2 установки)	Одна установка введена в работу, вторая будет введена в сентябре 98 г

ANNEX 4

DRAFT

March 12, 1998

PROGRAM TO IMPROVE RELIABILITY AND RESTORE FULL SUPPLY OF ELECTRIC ENERGY IN THE KYRGYZ REPUBLIC

In order to fulfill measures specified in the Government's Decree # 327 of 2 June 1997, Decree # 492 of 29 August 1997, Decree # 676 of 21 November 1997, Decree # 762 of 29 December 1997, and Decree # 59 of 3 February 1998, and in Resolution # 6 of the Security Council of the Kyrgyz Republic of 25 December 1997, and in the Resolution # 747/1 of the Jogorku Kenesh of 1 December 1997, and in order to fulfill its responsibilities under the Energy Law of the Kyrgyz Republic, the State Energy Agency under the Government of the Kyrgyz Republic has determined that

1 Extraordinarily high technical and commercial losses and unacceptably low rates of cash collection have impaired the ability of JSC "Kyrgyzenergo" to provide reliable service and uninterrupted supply of electricity to the people and enterprises of the Kyrgyz Republic,

2 This situation is causing financial loss to businesses and industry in the Republic, discouraging new investment, and imposing economic loss and social hardship on the population of the Republic

3 Without both an increase in tariffs and significant improvement in cash revenues, JSC "Kyrgyzenergo" is unable to maintain and repair essential facilities or to procure sufficient fuel to increase production at the Bishkek thermal plant to compensate for reduced hyrdoplant production made necessary by international water agreements and the low level of water in the Toktogul Reservoir

4 The following specific actions are necessary in order to improve the reliability of the Republic's electric system, to restore full supply of electric energy, and to eliminate the need for load shedding and the economic and social hardships it is causing the people and enterprises of the Kyrgyz Republic

1) JSC "Kyrgyzenergo" will immediately adopt the new Accounting Standards of the Kyrgyz Republic, and before April 14 will calculate and report both profit and income for 1997 in accord with the new Accounting Standards

2) JSC "Kyrgyzenergo" will immediately calculate and begin reporting monthly to the State Energy Agency an actual average collected tariff in addition to its standard calculation of average tariff

3) JSC Kyrgysenergo will develop a schedule for financing and installing meters on all customers and on each 10/0 4kV substation and submit it by April 30, 1998 for approval by the State Energy Agency

87

4) JSC "Kyrgyzenergo" will procure and begin using tamper proof meter seals by June 30, 1998

5) JSC "Kyrgyzenergo" will immediately reorganize its metering operations to separate the functions of meter reading, meter sealing, and money collection and to assure that by June 30, 1998, meter readers are reading 100% of meters each month

6) JSC "Kyrgyzenergo" will by March 31, 1998 submit to the State Energy Agency a plan to make certain adjustments to the existing billing system that will enable each Distribution Enterprise by July 31, 1998 to begin calculating monthly bills for all customers and to provide sufficient, verifiable data to the State Energy Agency about average monthly consumption and payments and actual aging of accounts receivable by customer class by rayon and by customer for the largest customers in each rayon

7) JSC "Kyrgyzenergo" will by March 31, 1998 submit to the State Energy Agency for approval its proposed policies and procedures related to the orderly disconnection of customers for habitual non-payment, including the definition of customers who cannot be disconnected for reasons of life-saving, health or safety, in accord with Article 11 of the Electricity Law of the Kyrgyz Republic

8) JSC "Kyrgyzenergo" will by June 30, 1998 develop and submit to the State Energy Agency a plan on how it will eliminate barter in collections by June 30, 1999

9) JSC "Kyrgyzenergo" will immediately begin to report monthly to the State Energy Agency on each rayon's initiatives and progress in reducing theft and barter and increasing collections, including verifiable statistics on results

10) JSC "Kyrgyzenergo" will appoint an Executive Director whose sole responsibility will be to focus on the reduction of commercial losses, the increase of collections, and the continuous improvement of customer service, including the development of both formal and informal customer complaint resolution mechanisms at the rayon level, as well as a customer information and energy savings education program

11) JSC "Kyrgyzenergo" will by June 30, 1998 negotiate and execute the Performance Agreement approved by the Government of the Kyrgyz Republic JSC "Kyrgyzenergo" will at the same time submit to the State Energy Agency a revised system for determining and paying employee bonuses for 1998 on meeting performance standards set forth in the Agreement

12) Distribution of the 1% of shares of JSC "Kyrgyzenergo" currently reserved for the employees of "Kyrgyzenergo" will not be distributed unless the Government's target for reduction of commercial losses, improved collections, and the requirements of Article 9 of the Performance Agreement have been met, as verified by an independent

88

auditor, including the provision that monthly average collected tariff shall be no less than 95% of the posted tariff for each customer class

The State Energy Agency also makes the following recommendations to the Government of the Kyrgyz Republic

1 That the Ministry of Justice prepare amendments to the Administrative Code to clarify penalties and fines related to the theft of electricity and thermal energy and provide administrative and legal support to JSC Kyrgyzenergo's efforts to fight against theft

2 That after Kyrgyzenergo is unbundled the State Property Fund sell up to 5% of the State's packet of shares in the Naryn Hydro Company and the National Grid Company in a competitive tender in order to raise sufficient revenue to create a permanent investment trust fund, the proceeds of which will be used in perpetuity to fund the "social safety net" so that low income customers can afford a basic minimum amount of electricity and thermal energy

Март 13, 1998

ПРОЕКТ

ПРОГРАММА ПО УЛУЧШЕНИЮ НАДЕЖНОСТИ И НОРМАЛИЗАЦИИ ЭЛЕКТРО И ТОПЛИВОСНАБЖЕНИЯ В КЫРГЫЗСКОЙ РЕСПУБЛИКЕ

В целях осуществления мер, предусмотренных постановлениями Правительства Кыргызской Республики № 327 от 2 июля 1997 года, № 492 от 29 августа 1997 года, № 676 от 21 ноября 1997 года, № 762 от29 декабря 1997 года, № 59 от 3 февраля 1998 года, а также постановлением № 6 Совета безопасности Кыргызской Республики от 25 декабря 1997 года и постановлением Жогорку Кенеша № 747/1 от 1 декабря 1997 года, а также во исполнение своих обязанностей, возложенных Законом Кыргызской Республики "Об энергетике", Госагентство по энергетике при Правительстве Кыргызской Республики пришло к следующим заключениям

1 Необычайно высокие показатели технических и коммерческие потерь и неприемлемо низкий уровень сборов платежей снизили способность АО "Кыргызэнерго" осуществлять надежное электроснабжение населения и предприятий Кыргызской Республики,

2 Такое положение дел наносит финансовый ущерб предприятиям и промышленности Республики, отпугивает новые инвестиции и накладывает экономическое и социальное бремя на население Республики,

3 Без повышения тарифов и значительного улучшения сбора платежей АО "Кыргызэнерго" не в состоянии осуществить техническое обслуживание и ремонт основных объектов и закупать достаточное количество топлива для увеличения объемов производства электроэнергии на Бишкекской ТЭЦ в целях компенсации снижения уровня производства на ГЭС, которое стало необходимо в силу международных соглашений о водных ресурсах и низкого уровня воды в Токтогульском водохранилище,

4 Для повышения надежности энергетической системы Республики, нормализации электро- и топливоснабжения и для устранения необходимости применения лимитов потребления и вызываемых ими экономических и социальных трудностей для населения и предприятий Кыргызской Республики необходимо принять следующие меры

   1) АО "Кыргызэнерго" незамедлительно ввести новые стандарты бухгалтерского учета Кыргызской Республики и до 14 апреля сделать расчеты и сообщить данные о прибыли и доходах за 1997 г согласно новым стандартам бухучета

   2) АО "Кыргызэнерго" незамедлительно ежемесячно сообщать Госагентству по энергетике данные по фактически собираемому среднему тарифу в дополнение к обычному среднему тарифу

90

3) АО "Кыргызэнерго" составить график финансирования и установки счетчиков у всех абонентов и на каждой подстанции 10/0 4 кВ и представить на одобрение Госагентства по энергетике до 30 апреля 1998 года

4) АО "Кыргызэнерго" обеспечить доставку и начать использовать надежные пломбы на счетчики к 30 июня 1998 года

5) АО "Кыргызэнерго" немедленно пересмотреть свои операции по проверке показаний счетчиков с тем, чтобы отделить функции снятия показаний счетчиков, их пломбирования и сбора оплаты, а также добиться того, чтобы к 30 июня 1998 года контролеры считывали показания со всех подконтрольных им счетчиков каждый месяц

6) АО "Кыргызэнерго" к 31 марта 1998 года предоставить в Госагентство по энергетике план мероприятий, который позволит каждому ПЭС к 31 июля 1998 года начать ежемесячную выписку счетов, для всех абонентов, а также предоставлять Госагентству по энергетике достаточную и проверенную информацию о среднем месячном потреблении и платежах по каждому классу потребителей в районе и по каждому крупному потребителю в каждом районе с указанием фактического срока дебиторской задолженности

7) АО "Кыргызэнерго" к 31 марта 1998 года предоставить на утверждение Госагентству по энергетике порядок отключения потребителей за систематические неплатежи с четким определением тех абонентов, которые согласно статье 17 Закона Кыргызской Республики "Об электроэнергетике" не могут быть отключены, если прерывание услуг угрожает их жизни, здоровью или безопасности

8) АО "Кыргызэнерго" к 30 июня 1998 года разработать и представить в Госагентство по энергетике план устранения бартерных расчетов при сборе платежей за потребление электроэнергии к 30 июня 1999 года

9) АО "Кыргызэнерго" незамедлительно начать предоставлять в Госагентство по энергетике ежемесячные отчеты о работе каждого района по снижению уровня хищений и бартера, улучшения сбора оплаты за потребленную электроэнергию, содержащие проверенные данные

10) АО "Кыргызэнерго" назначить исполнительного директора, обязанностью которого будет работа по сокращению коммерческих потерь, улучшению сбора платежей, неуклонному улучшению качества предоставляемых услуг, а также разработка официальные и неофициальных механизмов разбора жалоб абонентов на уровне районов и подготовка программ информирования потребителей и обучающих программ по энергосбережению

91

11) АО "Кыргызэнерго" к 30 июня 1998 года провести переговоры и начать исполнять Соглашение о деятельности, утвержденное Правительством Кыргызской Республики Одновременно АО "Кыргызэнерго" предоставить в Госагентство по энергетике пересмотренную систему расчета и выплаты премий своим работникам за 1998 год, основанную на выполнении требований, предусмотренных Соглашением о деятельности

12) Распределение 1% акций АО "Кыргызэнерго", зарезервированных в настоящее время для работников АО "Кыргызэнерго", не проводить до тех пор, пока не будут достигнуты намеченные Правительством уровни сокращения коммерческих потерь, улучшение сбора оплаты, а также выполнены требования статьи 9 Соглашения о деятельности Выполнение этих требований должно быть проверено независимым аудитором Должно быть также соблюдено условие, что среднемесячный собираемый тариф должен составлять не менее 95% от установленного тарифа по каждому классу потребителей

Гоагентство по энергетике также вносит следующие рекомендации Правительству Кыргызской Республики

1 Министерству юстиции Кыргызской Республики разработать дополнение к кодексу Кыргызской Республики об административных правонарушениях, определяющие санкции и штрафы за правонарушения в области электроэнергетике, а также обеспечить административную и юридическую поддержку АО "Кыргызэнерго" по борьбе с хищениями

2 После реструктуризации АО "Кыргызэнерго" Фонду Госимущества Кыргызской Республики продать до 5% акций из государственного пакета акций компании "Нарын Гидро" и компании "Национальные сети" на торгах с неограниченным количеством участников для получения достаточного количества средств на создание постоянного инвестиционного трастового фонда, доход от которого будет на постоянной основе использоваться для финансирований "Сети социальной защиты", что позволит малообеспеченным получать базовый минимум электро - и теплоэнергии

92

ANNEX 5

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FAX COVER SHEET

Date May 4, 1998 **# of pages.** 2 + 3/

Subject Cash Collection

From Joellyn Murphy

To Barry Primm/Russ Backus
CJ Rushin-Bell/John Bayer
Bob Archer
David Keith
Mike Biddison/Doug Miller

This fax is in response to the request from Russ Backus for an evaluation of the cash collection experiments and demonstration programs in the Kyrgyz Republic

As I explained to Russ, it is simply not possible to do any kind of real evaluation because there is simply no reliable data available on which to base an evaluation However, I can offer the following general assessment

Our analysis of Kyrgyzenergo s data shows that whereas total domestic production in 1997 was down 5% relative to 1996, commercial losses (i e theft) was 22% above the 1996 level, and accounts receivable in 1997 were 110% of the 1996 level Nevertheless, Kyrgyzenergo reports that cash receipts from domestic electric operations went from 171 million in 1996 to 307 million Som in 1997

This worsening performance is in spite of a year of Government decrees ordering Kyrgyzenergo to reduce losses and improve collections It is also in spite of a year long TACIS project that put long-term advisors on the ground at Kyrgyzenergo and attempted to set up a pilot project on metering, billing and collection There were no discernable results There just has not been the will within Kyrgyzenergo to address the problem

Back in August, 1997, when we first learned about the extent of the water level problem at the Toktogul reservoir and the ensuing intention to shed load rather than to buy coal to step up the thermal plant, we suggested to the State Energy Agency that this could be key to launching a demonstration program at some of the rayon-level distribution companies The essence of the idea was to go to the local akim and "do a deal " You let us bill and collect and stop the theft, and we will exempt your area from the load limits and guarantee you 24-hour power

Vecherny Bishkek
March 26, 1998

ON THE ISLAND OF KOTOVSKOYE

Transition to the market economy has complicated life in Kotovskoye village Interrupted supply of power and water was caused by lack of management of the water-pumping house and transformer substation over a long period

From the start of 1998, Kant Rayon Distribution Company began to pay for the costs of its transformer substation, and started to work with consumers in a new way The company finished major repairs of the substation installed a feeder meter, replaced a number of power transmission line supports and held a meeting with village people **They offered a deal to village people you make timely payments for electricity and stop stealing, and we'll ensure uninterrupted power supply People agreed** Robert Frik, the voluntary meter reader, elected by people, now visits every consumer once every ten days, takes readings of individual meters and compares them with the data on the feeder meter The difference is the amount of losses which is then allocated to all consumers A fifty per cent discount (on his electric bill) is given to the voluntary meter reader as his reward

True enough, Frik did not reveal any person who steals electric energy He does not know whether there are such people but he knows quite well who doesn't pay These are mainly the poor or people who drink much vodka However, people in Kotovskoye village are very disciplined Sometimes old persons bring their last five or ten soms to Frik not to become a debtor

The situation with electricity has improved though pensioners still complain that there are frequent outages at night The voltage level is higher Previously, voltage was so low that it was insufficient for washing or even shaving in the outskirts of the village

They say that the so-called commercial losses of electric energy in the Republic comprise 20%, and 38% including technical losses In some regions commercial and technical losses reach 45% In a small village of Kotovskoye, losses were reduced well below standard level to 8% Not bad for the start

V Murzov

The second (collective) agreement was made with consumers supplied from that transformer substation A model collective agreement was developed by Kyrgyzenergo It specifies rights and obligations of the VMR The agreement has three signatures the VMR signs on behalf of the residents, the second signature is of the DC representative and the third is of the Village Committee representative The second and third signatures must be accompanied by stamps, and the signature of the VMR must be provided with his passport data Under the agreement, the VMR must visit all the households and read meters, monitor timely payment of bills, check safety of the substation and reveal cases of theft

At the end of the month, a meter reader of Kant DC and the VMR read meters of the main feeder meter at the transformer substation and calculate the balance between released and billed electric energy after technical losses in 0 4 kV lines based on the simultaneous metering factor If the balance is not reconciled, the cost of stolen electricity is distributed among all the residents of the village And it is natural that residents would want to find 'the thief" And if they succeed, then the balance of the bill plus penalties will be sent to the thief This method of collective self-control and strict metering brought good results in only a month

First of all, electricity consumption per residential customer decreased from 520 kwh to 370 kwh Secondly, voltage at the end of the 0 4 kV feeder has gone up from 170 V to 210-220 V and total losses at the feeder were 8% The VMR gets 50% discount when paying electricity bills for his performance To make a VMR interested in good performance, other forms of incentives may be used too Also if the balance at the transformer substation is achieved then its customers will not experience load shedding in accord with the agreement To date, at Kant DC, another 13 agreements with Village Committees of other rayons and the same number of VMR have been made, in addition to village Kotovskoye

J Have there been cases when all the residents had to pay for the theft?

A I Not at Kotovskoye I'm afraid residents of Kirovskoye will have to pay for the theft after the balance is calculated Several residents informed us about suspected thieves We go and check the house immediately, and if we are lucky enough to catch them red-handed, then we document it and take appropriate actions

J Have there been cases when residents did not want to enter into a collective agreement or Village Committees did not support you?

A I Regrettably, there were such cases For example, at Berdyk village we had three meetings and failed to have a VMR elected Some are indignant, others are scared of work Some said that it is not acceptable among Muslims to betray others Obviously, most people know who the thieves are but do not want to break relations with the neighbors In such a situation, it is important to reach an understanding with the Village Committee, then people will follow them We finally persuaded the Head of the Village Committee at Berdyk, and I think we'll soon have a VMR there

J You said "They are scared of work " What are they scared of?

A I Unfortunately, there are cases of aggressive attitude to a meter reader Lately, we had such a case at Pokrovka village A woman-meter reader visited a house at Shevchenko Str and found an illegal socket When she was documenting the theft, she was attacked, they took away her ID, and she had to run away She called from the next house and told us about the incident We went to the place immediately, documented the case and took it

the numbers, they know what technical and commercial losses are They understand that the profit of the DC and consequently their salaries depend on their performance

J Anatoly Ivanovich, do you have any problems of a technical character that constrain rapid introduction of the method?

A I There are many problems At the moment, we are installing meters, but many substations do not have room for meters I think we are not the only ones who face such a problem A metal box with a lock needs to be designed and produced at 'Kyrgyzenergoremont " We lack transformers and vehicles We have one car between me and the Chief Engineer And I'm not even mentioning the lack of vehicles for repairmen and meter readers

J You said that the rayon administration supports you How do they support you?

A I The rayon administration supports me in everything First, they receive all the complaints and explain the reasons for energy problems and outages by themselves Secondly they persuade Village Committees to shift to coal Recently, there was a meeting of the rayon administration where they passed a Resolution on rehabilitation of coal-fired boilers and ensuring coal supply to the population Now I've received another Resolution of the Kant rayon administration "On energy status in Kant rayon" We regularly supply them with the newspaper 'Energetik," and they are aware of all the energy issues

J What would you like to say in conclusion?

A I I would like to call everybody to action so that we mobilize our efforts and face the next heating season fully ready

97

Participants attended an exhibition of Kyrgyzenergoremont's commodities that are used in the energy sector Ak-Maral corporation exhibited models of new electric meters and special communication devices that were manufactured for Kyrgyzenergo

Summarizing the seminar A Jumagulov stated the necessity of well-organized performance of the Republic's fuel and energy sector and called on everyone to work to reduce commercial losses to zero, technical losses - to 7%, to account for each kWh, and not to let the situation deteriorate A Jumagulov noted that it is essential to ensure stable power supply to industry and residents, excluding outages connected with limitation of power consumption A Jumagulov underlined that it is possible for energy utilities to solve these issues themselves Local village committees, heads of oblast, city and rayon government offices must play a leading role in solving these issues It is necessary to take specific measures against boundless consumption of electric energy, making efforts to find other energy sources and fuels Today we need to strictly observe fixed rates of power consumption We are sure to avoid an energy crisis if we immediately start to deal with these issues Next meeting is planned in April in Jalal-Abad oblast, and A Jumagulov hopes to see specific results of the work aimed at reducing electricity losses

Kant

98

ANNEX 6

MEMORANDUM

TO Joellyn Murphy

FROM Matt Chwalowski

DATE February 16, 1998

SUBJECT The Problem of Electricity Theft and Proposed Steps to Reduce It

1 Purpose

This memo discusses theft of electricity from the electrical distribution network and lists that should be undertaken (and that are typically undertaken in other countries) to reduce it At present anywhere from 30% to 50% of electricity delivered to customers in Kyrgyzstan is not paid for

2 Methods of Theft

The majority of electricity theft occurs in the low voltage distribution lines and is perpetrated by residential and small commercial user The following methods of electricity theft are common in Kyrgyzstan

- Outright theft of electricity by making illegal connections outside of meters at common areas of buildings or directly at low voltage power lines
- Setting meters backward by specialized companies
- Underestimating the amount of electricity consumed
- Meter readers underestimate electricity consumption by colluding with customers who offer bribes

3 Reasons for Theft

- Installation of large electric heaters in place of coal-burning ovens and a desire to reduce electricity bills
- Lack of monthly meter reading of 100% of meters
- Lack of appropriate metering in the low voltage distribution network to determine amounts of electricity delivered to different points in the network
- Existing billing system works in reverse and does not allow to trace the theft
- Poor organization of collections
- Inability to pay for electricity due to poverty
- Lack of legal measures that can be undertaken against those who steal
- Meter readers have three functions reading meters, collecting money and ability to open meters that promotes abuse

4 Measures to Reduce Theft – Organization of Work

There are several measures that can be undertaken to significantly reduce theft These measures were divided into organizational and technological both in the area of metering and billing They were also presented to Kyrgyzenergo in January 1998 While these recommendations reflect standard utility practices, their implementation in Kyrgyzstan is very slow Tables below reflect reasons for making each recommendation together with their current status Many of these measures require relatively small expenditures

4 1 Measures associated with metering

Report Recommendation	*Reason*	*Status*
Require reading of 100% of meters each month, input reads to the billing program	To obtain a better control over consumption of electricity	While in principle there is a goal of 100% meters read, in reality Kyrgyzenergo wants to stick to its plan to require reading a minimal number of meters and pay a premium for reading an increased number of meters
Make meter readers responsible for meter reading only	To reduce corruption of meter readers and losses	This is already happening in larger population centers, still in small places, meter readers collect money, lesser problem where there is a contract to account for a delivery of a certain amount of electricity
RESes should send to court all cases of electricity theft	To penalize theft and to send a message to other users	There is currently work being done in this area and such a law is to be submitted to the parliament

4 2 Measures associated with billing

Report Recommendation	Reason	Status
Provide dated payment booklets by month and year	To improve and increase control over payments for electricity	No plan to do it
Make monthly bill payments mandatory	To improve cash flow	No plan to do it
Reverse the billing process to make meter reads an input	Essential to proper operation of the system	Being discussed among the Kyrgyzenergo staff to develop a plan in the first quarter of 1998
Install a revised version of the billing program in distribution companies to include grouping by feeder	To gain an understanding of how electricity is distributed among end-users	The new program has only been implemented in two RESes (100% in one RES and 50% in another one) Often inventory has not been completed An apparent lack of strong leadership in this area

5 Measures to Reduce Theft – Improved Technology

5 1 Measures associated with metering

Report Recommendation	Reason	Status
Install individually numbered seals on each meter and in the billing program associate them with customers	To prevent tampering with meters	In the near term, the goal is to install 500,000 new seals and remove sealing devices from meter readers
Install meters on each 10 kV/0 4 kV substation	To understand where electricity flows	Out of about 18,000 such substations, only 3,000 3-phase meters are scheduled to be received in the near future
Secure electric equipment in the system to prevent population access	To reduce capital equipment expenditures	No plan to do it

5 2 Measures associated with billing

Report Recommendation	Reason	Status
Make improvements to the current billing system	To gain control over payments for electricity consumption	No structured process under way to conduct program improvements The system does not show the amount of debt for each customer There are errors in customer information Some RESes make changes in programs rather than adhere to a standardized version
Purchase more computers for all regions	To better handle customer records	Twelve companies do not have computers to run billing operations

6 Measures to Reduce Theft – Other

Report Recommendation	Reason	Status
Working through regional structures seek agreement from all Central Asian Republics to transfer meter ownership to respective electric utilities away from population	To gain better control over the meter inventory in the country	An order came out that transfers the ownership of meters from population to Kyrgyzenergo but details have not been worked out In this situation it is even more important to establish agreements between the Central Asian states for uniformity of ownership

7 Summary

The above measures are merely a reflection of both organization of work and technology that exists in many countries in this area and is successful in keeping collections at a high level They should be implemented in Kyrgyzstan as soon as possible to reduce theft of electricity

ANNEX 7

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FAX COVER SHEET

Date **20 June 1998** **# of pages** _____

Subject **"Nuts"**

From **Joellyn Murphy**

To **David Keith**

The Kyrgyz have invented (and patented) a load limiting "nut" (fuse) to reduce consumption Their purpose is to cut off customers who exceed the 1 5-2 kV design capacity of the customers' service drop The purpose of this, Kyrgyzenergo says, is to save the overloaded distribution system from burning out I say, the purpose is to avoid raising rates, collecting money, and – most of all – privatizing in order to raise capital to fix the system

The most likely result is that the "nuts" become yet another source of bribes for KE employees installing them

There are two versions 1) the one described in the attachments and invented by folks at the Technical University and 2) a crude gizmo that looks like a walnut (hence the name "nut"), made of a clay/ceramic like substance, with two sets of heavy wire wrapped around it These look like a 3rd grade science project, and they cost 20 ¢ each

Kyrgyzenergo plans to install 170,000 of the 20¢ specials by the end of September 1998, starting in the rural areas and outskirts of Bishkek

Technical Description and Instruction
on
Assembling and Operation of the UON-02/0,38Y2,
a Device for Restrictive Outages and
Automatic Reclosing of the Consumer
(for the load of budget-funded entities)

1 Description and Function of the Equipment

UON-02/0,38Y2 is designed to limit the maximum load of the consumer who uses 0 38/0 22 kV line by restrictive outage and automatic reclosing

When exceeding the designed amount (allowed maximum load), UON disconnects the consumer and then recloses after a time lag of 10 minutes UON-02/0,38Y2 again disconnects the consumer from the line if, after reclosing, the consumer does not reduce consumption The device will continue disconnecting unless the consumer keeps to allowed load limit

To prevent the customer from interfering in UON's operation (damage, desensitization of settings), the UON that is installed on the leading-in distribution panel should be owned by a distribution company

UON-02,38Y2 helps to

1 prevent the consumer from exceeding the allowed amount, which is determined in relation to the size of the annual budget funding,
2 prevent overloading of 10/0 4 kV transformers that feed the consumer,
3 avoid asymmetric loading of phases of 0 38 kV lines and the feeding transformer,
4 reduce capacity and energy losses on a 10/0 4 kV transformer and a 0 38 kV line that feeds the consumer,
5 improve voltage level on a 0 38/0 22 kV line as a result of reducing total current load,
6 significantly reduce maximum load schedule of 35-110/10 kV substations through overall installation of UON-02,38Y2 to all the consumers

Volume of the allowed maximum load may be chosen in order not to limit the usual daily energy consumption By limiting maximum consumption, UON-01,38Y1 forces the customer to consume electricity evenly over 24 hours This ensures reduction of maximum load on the substations

UON-02,38Y2 is not designed for carrying out routine switching and disconnection of short circuit current These functions should be carried out by the protection device in the consumers' equipment

Table 1 shows the amounts of rated currents for cut-off and time lag between outage and automatic reclosing of UON-02,38Y2

106

Table 1

			Time lag at 1,3 ih-CP sec	
Maximum current of an extended mode, A	Scale of the rated cut-off current, ih-CP, A	Capacity related to ih-CP at 220/380 B, kWh	for outage that is not more than	for reclosing that is not less than
63 100 160 250 320 400 630 1000	Ih -CP = (0,4-1,0)Im	16,6 42,0 26,4 66,0 42,3 106,0 66,0 165,0 84,5 211,0 105,5 264,0 166,3 416,0 264,0 660,0	60	150

The cut-off setting of each UON is supplied by the manufacturer in accordance with the client's order, and this is not subject to change during operation to avoid its maladjustment To prevent this, UON body is sealed with a rivet

UON-02,38Y2 has a commutation device, transformers, a facility to control the volume of the current (capacity) consumed, and an element to give a signal for an outage and reclosing of a commutation device Cut-off current in the device is controlled within the limits shown in Table 1 It ensures a time lag for an outage when the consumer exceeds the limit and an automatic reclosing

UON-02,38Y2 is equipped with three signal lamps that light at a specific level During UON's operation, one or two of them turn off This shows the phase where there is an excess of maximum load which caused UON's limited outage In this case, it is necessary to redistribute the load by phases to ensure even phase loading

UON-02,38Y2 is covered by a patent of the Kyrgyz Republic UON's "disconnect and reclosing" resource has 10,000 cycles

When ordering UON one should note its nominal cut off current (based on Table 1)

2 Assembling and Operation of the Device

UON-02,38Y2 has three lead-in and three lead-out covered wires (three-core cables) on a relevant section with specifications Local conditions require that UON must be installed before the leading-in automatic switch or the consumer's distribution panel switch and at the beginning of the feeding line of a 0 4 kV transformer substation Care should be taken to ensure that signal lamps are visible The body must be grounded and connected to the grounding mat The cover of the body must be sealed by the distribution company

UON is turned on before the leading-in commutation device on a distribution panel (see Picture 1) and must be installed on the side of the panel (see Picture 2) UON's leading-

out ends are connected to the distribution panel bars with a help of a three-core cable or three one-core insulated cables of the relevant section that provides proper contact

UON must be connected after automatic feeder when it is installed on the side of a 0 4 kV transformer substation that feeds the consumer

UON's operation does not require preventive repairs and testing Preventive visual inspection is carried out during the visits of 0 38 kV OL or 10/0 4 kV transformer substations

It is prohibited to push and shake the UON It should be kept in dry cold dark place UON's "disconnect and reclosing" resource has more than 10,000 cycles Guarantee period of its operation without repair is 5 years

In case of UON's failure before the end of the guarantee period, the manufacturer is responsible for paying for repairs of the equipment if it is not the client's fault

Developed and manufactured by - "Darman" scientific-industrial company

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Instruction
on
Assembling and Operation of the UON-01,38Y1,
Device for Restrictive Outages and
Automatic Reclosing of the Consumer

1 Description and Function of the Device

UON-01,38Y1 is a package equipment designed for limiting the maximum load used by household consumers of 0 38/0 22 kV lines When the consumer exceeds limited load, UON-01,38Y1 automatically disconnects the load and recloses it in 3-5 minutes UON-01,38Y1 again disconnects the consumer from the line if, after reclosing, the consumer does not reduce consumption level The equipment will continue disconnecting unless the consumer keeps to the allowed load limit

Functions of UON-01,38Y1

- reduction of total load which prevents from failure of feeding transformers and commutation devices on 0 4 kWh transformer substation because of long overloading and exceed of total service time of the electric equipment,
- reduction of power losses in 10/0 4 kWh transformers and 0 38 kV lines (as a result of reducing current load on the lines),
- improve voltage level for the consumers,
- large-scale use of UON-01,38Y1 allows to significantly reduce maximum consumption at the load center

It should be noted that volume of the allowed maximum load may be chosen in order not to limit the usual daily energy consumption By limiting maximum consumption, UON-01,38Y1 forces the customer to consume electricity evenly over 24 hours

UON-01,38Y1 has dust-tight and water-proof enclosure and designed to be installed outside There are one-phase (UON-01/0,38Y1) and three-phase (UON-011/0,38Y1) constructions of this equipment Its proper consumption at the standard level is no more than 11 W and it weighs less than 2 2 kg

UON-01,38Y1 is not designed for disconnection of short circuit current These functions should be carried out by the protection device in the consumers' equipment

Table 1 shows the amounts of rated currents for cut-off and time lag between outage and automatic reclosing of UON-01 and UON-011

The cut-off setting of each UON is supplied by the manufacturer and this is not subject to control during operation as it is possible only in the laboratory on a special stand To prevent this, UON body is sealed with a rivet

Table 1

				Time lag at 1,3 ih-CP (sec)	
Equipment type	Maximum current of an extended mode, A	Rated cut-off current, ih-CP, A	Related capacity, ih-CP at 220/380 B, kWh	for outage that is not more than	for reclosing that is not less than
UON-01	20	5, 7, 8, 10, 12,5, 13, 14,3, 15, 16, 17, 18	1,1, 1,54, 1,76, 2,2, 2,75, 2,86, 3,15, 3,3, 3,52, 3,96, 4,5	60	150
UON-011	16	4, 5, 6,3, 8, 10, 12,5, 16	2,65, 3,3, 4,16, 5,28, 6,6, 8,25, 10,6	60	150

UON-01,38Y1 has a commutation device, a facility to control the volume of the current (capacity) that is supplied to the consumer, and an element to give a signal for an outage and reclosing of a commutation device Cut-off current in the device is controlled within the limits shown in Table 1 It ensures a time lag for an outage when the consumer exceeds the limit and an automatic reclosing

UON-01/0, 38Y1 is covered by a patent of the Kyrgyz Republic

When ordering UON one should note its modification and nominal cut-off current

2 Assembling and Operation of the Device

UON can be installed on the support of 0,38kV OL to be then delivered to a house, on the fronton of a house (see Picture 1) or on the pole near the house In all cases UON should be installed in such a way to be seen from the ground

UON is fixed in a vertical position as it is shown in Picture 1 Its working position in a space is on the vertical plane with an arm (with holes) to be fixed downwards

UON-01 is equipped with three insulated wires, one of which with a 2 5 cm section is used to earth the body while the other two with a 4 mm section ensure the connection to the network A wire with bent end is connected to the phase wire of 0,38/0 22 kV OL and the other is used to branch off to the house

UON-011 is equipped with seven wires 1x2 5 mm and 6x4 0 mm 1x2 5 mm is used to earth the body and 3 wires with bent endings are connected to phase wires of 0 38kV OL and the remaining three ensure branching off to the house

UON is considered to be in operation since it is installed, has its wires connected to 0 38/0 22 kV OL and branched off to the house and supplied with the voltage

UON's operation does not require preventive repairs and testing Preventive visual inspection is carried out during the visits of 0 38 kV OL

It is prohibited to push and shake the UON It should be kept in dry cold dark place

UON's "disconnect and reclosing" resource has more than 10,000 cycles Guarantee period of its operation without repair is 5 years

In case of UON's failure before the end of the guarantee period, the manufacturer is responsible for paying for repairs of the equipment if it is not the client's fault and refusal of the latter is not connected with the deliberate damage

Developed and manufactured by - "Darman" scientific-industrial company

720022
Bishkek
Chui 77/38
tel 431100, 289385
fax (8-3312) 445369

Cost	500 Som
Received from the Distribution Company	450 UON
Installed	48 UON
Issyk-Kul DC	200 UON installed

ANNEX 8

Hagler Bailly

Hagler Bailly - Bishkek
185 Toktogul St , #4
Bishkek, Kyrgyzstan
PHONE (+996-3312) 21-28-06
FAX (+996-3312) 62-19-05

FAX COVER SHEET

Date 3 May 1998 # of pages: 5

Subject Kyrgyzenergy Study Tour to WWP

From Jaclyn Murphy

To Albert Skeath, USEA
Nancy Holmes, Washington Water Power

cc Barry Primm/Russ Backus, USAID Almaty
CJ Rushin Bell/John Bayer, USAID Bishkek
Bob Archer/Rajiv Rastogi, USAID, D C.
David Keith/Jim Westfield, Hagler Bailly.
Mike Biddison/Doug Miller, Hagler Bailly

Thank you Ms Holmes and Mr. Skeath for sending your draft agenda for the forthcoming Kyrgyzenergo study tour to Washington Water Power (June 15-17). Looks like a great program and your information and experience are urgently needed.

Here are a few highlights about Kyrgyzenergo's 1997 operational and financial performance that may help in your planning.

-Total losses (technical and commercial) reached 45% of generation for in-country use last year.

-About 60% of small user consumption is stolen.

-Accounts receivable are now 26% of billings.

-At least 70% of collection is barter.

-Only 19% of total production for the domestic market is "billed" at and paid for at full tariff.

(I put billed in quotes because only industrial customers are billed. Small users self-report and pay when they want There ARE no bills and almost no disconnections for non-payment yet)

13

Second, I'll send you a report done by Matt Chwalowski of Hagler Bailly in December, 1997. I asked Matt to review the situation and give us a fast, "dirt cheap" and effective way to fix the problem -- ASSUMING there is now political will to fix it. His report shows that for about a $1 million investment, Kyrgyzenergo could capture $75 million in lost revenues in the first three years. Implementation of this report was recently made the heart of a World Bank condition for a pending $15 million credit supplemental for Kyrgyzenergo.

Third, I'll send you a package of our charts and some recent memos about Kyrgyzenergo's situation.

Fourth, I'll send you a package I've prepared for USAID consisting of

-relevant Government decrees on reducing losses,
-Kyrgyzenergo internal decrees regarding metering and reducing losses,
-news articles on a pilot "experiment" in improving collections and reducing theft in a village in the Kant distribution district,
-the model contracts Kyrygzenergo intends to use in extending this pilot to other villages,
-the Government's approved program for "Financial Recovery" of the sector and a related draft decree we were requested to prepare for the State Energy Agency to issue.

Fifth, I'd like to suggest that someone from the State Energy Agency be invited to attend. USAID has been investing in building their capacity, and I think it would be appropriate to include them so they also see what a real system can do.

Sixth, I'd like to suggest that Matt Chwalowski be invited to attend, at Hagler Bailly's expense He knows what's there and he knows where we are going. Better than anyone else He also speaks Russian. (Incidentally, you may have a hard time getting straight answers from the Kyrgyz, or even acknowledgements of the extent of their problems Kyrgyzstan is the East, and it's considered a loss of face to admit that something is not right, powerful, perfect, etc. etc.

Seventh, I'd like to suggest that you drop the section on IAS from the draft agenda. I know it's probably there because Mr Ukulov from Kyrygzenergo asked for help on IAS conversion. But, this is the wrong group for IAS work Besides, we have a new IAS-like set of Kyrgyz Accounting Standards. This part of the program would not move them forward and would most likely confuse them vis a vis their own new standards. It would be much more

resulted from both the load shedding as well as from system breakdowns due to overloading, helped focus public and political attention on the real key to energy security for this country. somebody has to pay for electricity, or there won't be any We're hopeful that when the lights went off this winter, mental lights went on and we'll see the political will now to fix the metering/billing/collection problem

Let me know if there is anything else you'd like. You can reach me by fax. +996-3312-62-19-05,
by phone. " 62-15-67, or
at home: " 22-12-76.

Bishkek is thirteen hours ahead of the West Coast. (Add one hour to your time and flip night to day or vice versa That is, 10 in the morning your time is 11 at night my time I'm usually up to midnight or 1 a m.)

PS I'll send the promised reports, decrees, etc to Hagler Bailly by DHL & they will send them on to Ms Holmes

ANNEX 9

Chronology of Kyrgyzenergo's Orders related to Reducing Commercial Losses

1 On October 20, 1997 Kyrgyzenergo issued Order # 420 which

- ordered all enterprises to arrange a contract system for meter readers and staff directly involved in retail electric sale, and to establish a feeder account for electricity released,
- established a 70% standard for release of useful electricity and 80% of the released power sales in kind as the basis for the meter readers remuneration, which equals 500 Som/month,
- established standards for monthly meter reads of 1000/reader in cities and 700/reader in rural areas,
- approved a reorganization of the sales Departments within DC's

2 On January 1, 1998 Kyrgyzenergo issued a "Comprehensive Plan For Reducing Technical and Commercial Losses of Electricity "

3 On February 18, 1998 enterprises were ordered to arrange binding monthly meter reading for all customers served by meter readers

4 On January 27, 1998 Kyrgyzenergo sent to the DC enterprises standard-form agreements with the rural local administrations and collectives Their main purpose is to test reliable electric power accounting within distribution networks, increase collections and establish collective responsibility for payments within village communities or residential groups Such system was piloted in the Kant Rayon and at a meeting in March, attended by the Prime Minister it was decided to extend throughout the entire Republic

5 On April 20, 1998 Kyrgyzenergo issued Order # 121 which changed the system of fee collection only for Bishkek DC This order provides for a new approach that

- eliminate requirements for Bishkek to establish feeder accounts,
- abolishes "self-billing" by the customer and use of customer billing books,
- provides for monthly meter readings and computerized data entry

117

MEMORANDUM

TO Joellyn Murphy

FROM Matt Chwalowski

DATE December 24, 1997

SUBJECT: Proposed Re-write of the Metering Decree

Existing Situation

The current Metering Decree, while developed with admirable goals, suffers from numerous problems that will prevent distribution companies from improving significantly their collection levels Major problems with the Metering Decree are as follows

- Meter reading is not 100% mandatory, rather a monetary encouragement is offered for recording consumption of more than 70% of meters and collecting 80% of money due, which amounts to only 56% collection rate
- It is practically impossible to meet the base amount since there are no meters on final feeders (it is impossible to determine what is the total amount of electricity flowing into a feeder to determine what 70% is)
- Additionally, feeders in urban areas are interconnected (there is no way of knowing where electricity went) which further complicates practical implementation of the Metering Decree
- Due to a system of special privileges for certain population groups, meter readers are put in an impossible situation of collecting money (ie , they cannot collect from customers who are paid from the budget) and are practically forced to constantly watch all assigned customers to prevent them from stealing electricity
- It forces meter readers to continue doing three functions read meters, collect money and inspect meters (meaning open meters) -- this creates a potential for abuse
- The Metering Decree fails to call for the adoption of load research, the application of the billing system to help track customer electricity usage and improvements to the billing system software
- This decree is being introduced in the whole Kyrgyzstan rather than being implemented on a pilot basis in a region to determine its effects

Proposed Changes in the Metering Decree

To be workable, the decree has to be amended The main limitation of the Metering Decree is that it is directed almost exclusively towards meter readers and makes them almost completely responsible for collecting money for used electricity Its fundamental mistake is that it does not make meter reading mandatory and it forces a distribution company to compete for meter reader attention against bribes from small commercial and residential customers It imposes a responsibility on meter readers for preventing electricity theft who are to use measures no more powerful than their sense of observation In short, the Metering Decree decentralizes collection function and imposes and inefficient, "manual" mode of operation

Strategy that relies on such measures cannot be fully successful in reducing electricity theft Instead in addition to imposing discipline on meter readers, regional directors should undertake some measures to increase collections Additionally, the power of the billing system should be deployed to increase payments for electricity together with some very simple and tried methods that work elsewhere Following below are suggested revisions to the Metering Decree with explanations why they should be undertaken

Proposed Changes to the Metering Law

Action	*Justification*	*Cost*	*Prior Actions / Issues*	*Entity taking Action*
Eliminate monetary incentive to conduct meter reading	Meter readings are essential to conduct business, company incentive competes with bribes from population	Net benefit to the company	Possibly hire more employees Possibly need to fire meter readers who refuse to work as an example	Kyrgyzenergo management towards meter readers
Make monthly meter readings a condition of employment	A distribution company must exercise control over electricity delivered to customers	Possible need to hire more meter readers	Higher level of discipline will result in temporary protests from meter readers	Kyrgyzenergo management towards meter readers
Limit meter reader duties to meter reading only	Burdening meter readers with other functions creates a potential conflict of interest (and current 50% theft levels)	Probably minimal	Necessitates organizational changes	Kyrgyzenergo management towards meter readers
Replace existing meter seals with more	Meter access is greatly facilitated with existing seals	Approximately $0 1 per seal	Some meter changes may be necessary	Kyrgyzenergo management towards metering

tamper resistant seals				department
Install more meters within the system on low voltage lines	To better meter electricity flows	Approximately $200 per meter	Must prevent meter theft	Kyrgyzenergo management towards metering department
"Reverse" the billing process, ie , make meter reading an input to the program	To properly account for electricity consumption, prepare for future process improvement / technology infusion, eliminate	Employee time	Must establish a policy of 100 % monthly meter reading Either meter readers bring printed payment slips (payment delayed by one month) to customers or payment centers will need computers	Kyrgyzenergo management towards its programming department
Place date (month, year) on payment slips	To eliminate gaming through making irregular payments	Nominal	Nothing	Kyrgyzenergo management towards its programming department
Institute late payment fees	To establish payment discipline	Employee time	Make changes in the computer program	Kyrgyzenergo management towards its programming department and regional directors
Institute load research function at each of 57 regions using the billing program	Centralize theft determination	Employee time, possibly hire new employees	Administrative decision	Kyrgyzenergo management towards regional directors
Coordinate metering and billing development between Kyrgyzenergo and distribution companies	To establish consistency among distribution companies and develop timely updates in metering and billing programs	Employee time	Administrative decision	Kyrgyzenergo management towards regional directors

Summary

It is recognized that in remote areas and in some other instances, 100% meter reading goal cannot be accomplished immediately and th re will always be problems with certain customers However the new policy will send a signal to the population that it needs to make timely payments for electricity Proposed changes are merely standard accepted practices in other countries and there is no valid reason to expect why they should not work in Kyrgyzstan as well

20 10 97 **ORDER** N 420

From the year beginning JSC Kyrgyzenergo issued a number of orders to improve the electric energy sale, to reduce accounts receivable, increase collection, stop losses which exceed quota The meetings with the management of Distribution Companies were organized where our general drawbacks and improvements were discussed, but there were no real changes to the best

To develop a working plan aiming at global change of work pertaining to energy sale on October 8-9 there was a meeting in the JSC KE with the participation of deputy directors of DC on electric energy sale, management and lead specialists (Automated systems, Financial and Economic Center, Electric Energy Sale Department, Metrology Service)

A lot of issues were touched upon at the meeting One of the major issue was change of the form of payment to controllers, as the main funds coming from the companies - collected from the public It means that a controller should be given incentives so that he/she be interested in the reduction of losses which exceed quota as well as in the money collection To do that it is necessary to make controllers be responsible for the customers supplied from one and the same feeder This feeder and energy sale should be controlled

Aiming at global change of our "even" approach, improvement of proceeds, making employees be interested in their labor results,

I order

1 To approve the minutes of the meeting and accept for the execution
2 From November 1 transfer to contract system and new form of labor payment to controllers and employees involved in energy sale
3 To approve "Statute on labor payment to the employees of JSC KE involved in electric energy sale" (Annex 1)
4 To approve typical structure of Sale Departments of districts electrical networks (Distribution Companies) (Annex 2)
5 To approve "Amendments and Addendum to the Recommended structures and norms concerning the number of staff in distribution companies performing the functions of electric energy sale, Ministry of Energy, USSR, N 0349-4/1a dated 01 06 89"

6 Directors of Distribution Companies should

6 1 Within a week develop and approve list of staff members involved in electric energy sale and submit it to Planning and Economic Department of the JSC KE

6 2 Conclude contracts with controllers (Annex 3)

6 3 Implement by-feeder records of electric energy sale and make one controller be responsible for those customers being supplied from one and the same feeder in compliance with the Statute

122

6 4 Define accounts receivable of customers being supplied from that feeder and transfer them to the account of controller with relative drawing up

7 Financial and Economic Center (Ukulov) and Electric Energy Sale Department (Ephimenko) within a week should develop job description for controllers and inform distribution companies about it

8 The control over the Order execution should be entrusted to deputy General Director R Mamyrov

General Director B Sartkaziev

To be distributed to Mamyrov, all distribution companies, Financial and Economic Center , Electric Energy Sale Department, filed

Ephimenko
tel 4190

Ukulov
tel 4355

123

Annex 1 to JSC KE Order dated 20 10 97 N 420

Statute
on Labor Payment to JSC Kyrgyzenergo
Employees Involved in Electric Energy Sale

I General Provisions

The present Statute was developed with the purpose to improve the organization of labor payment, attract staff and prevent rotations, increase the interest of employees involved in electric energy sale Direct piecework pay is introduced, i e labor results of each employee are recorded and paid separately The present labor system envisages

a) direct dependence on labor results
b) contract system of labor payment
c) by-feeder accounting of service zone distribution

II The procedure of labor payment to the employees involved in electric energy sale

1 Controllers

For labor payment of an energy sale controller a direct piecework pay is applied
The size of payment depends on the fulfillment and overfulfillment of two major indicators, i e

a) Quota of billed energy sale (difference between factual energy supply to a feeder of a relative controller for own consumption and quota of losses calculated in accordance with approved regulative document), the basic value of fulfillment is 70 %

The percentage of fulfillment or overfulfillment of this indicator is defined as the ratio of factual billed energy to the quota of billed energy sale

$$\frac{\text{Factual billed energy}}{\text{Quota of billed energy sale}} \times 100\%$$

b) Realization of sold electricity, the basic value of fulfillment is 80 % The percentage of fulfillment of the sold electricity realization is defined as the ratio of factual sold electricity to sold electricity

$$\frac{\text{Factual sold electricity}}{\text{Sold electricity}} \times 100\%$$

In case these two indicators are observed and fulfilled 70% of the quota of billed electricity and 80% of sold electricity realization, controller's salary equals to 500 Som which is considered to be basic and is a value for calculation provided that one controller has a certain number of customers

Bishkek DC	urban area	1000 customers
	suburban area	750
Chui DC	urban area	900
	suburban area	750
Issyk-Kul DC	urban area	900
	suburban area	700
Naryn DC	urban area	900
	suburban area	700
Talas DC	urban area	900
	suburban area	700
Osh DC	urban area	900
	suburban area	700
Jalal-Abad DC	urban area	900
	suburban area	700

When the quota of billed electricity exceeds 70% and the quota of sold electricity exceeds 80%, one point of overfulfillment of each indicator 10% more will increase the base salary of an employee

For instance, if the quota of billed electricity is 75% and sale of electricity is 88%, in this case a base salary will be increased 130%

((5 points * 10%) + (8 points * 10%)) = 130%

But before calculating the increase of a base salary and correspondingly general salary of controllers, first of all it is necessary to calculate the base salary according to the following formula

$$\frac{\text{Actual number of customers/This controller}}{\text{Standardized number of customers (urban and rural)}} * 500 \text{ Som}$$

125

Example

Rural Controller

If the quota of billed electricity is 85%, and sale of electricity is 92% when actual number of customers is 1100

Calculating base salary $= \frac{1100 \text{ customers}}{700 \text{ customers}} * 500 \text{ Som} = 786 \text{ Som}$

Increase of base salary = (15 points * 10%) + (12 points * 10%) = 270%

Amount of salary $= 786 \text{ Som} + \frac{786 \text{ Som} * 270\%}{100\%} = 2908 \text{ Som}$

When the quota of billed energy of 70% and the quota of sold electricity of 80% are underfulfilled, each one point of underfulfillment of both indicators will result in 10% decrease of salary

In this case amount of salary is calculated by the above mentioned formula but it is decrease-oriented and is not less than the minimum amount of salary of 90 Som **

Example

Rural Controller

If the quote of billed energy is 68%, and sale of electricity is 75%, it means that under actual number of customers of 900 and will lead to

Base salary $= \frac{900 \text{ customers}}{700 \text{ customers}} * 500 \text{ Som} = 643 \text{ Som}$

Decrease of base salary = ((2 points * 10%) + (5 points * 10%) = 70%

Amount of salary $= 643 \text{ Som} - \frac{643 \text{ Som} * 70\%}{100\%} = 193 \text{ Som}$

** In case of revision of the minimum salary in the Republic this amount will be subject to change

126

2 Besides the standardized number of controllers, according to the Attachment #1 the personnel list of the District Distribution Enterprise (DDE) contains the following positions

a) when actual number of customers is 15,000

1 DDE Electricity Sales Deputy Head - 1,
2 Engineer-Calculator - 1,
3 Chief Controller - 1,
4 Accountant-Cashier - 1,
5 Electronic and computing machines Operator - 1,

b) when actual number of customers exceeds 15,000, additional position of chief controller shall be required

Their salaries are calculated by the same method as controller's salary is (under condition that their base salary is constant) taking the following data into account

1) total fulfillment of the quote of billed energy at DDE is 70%,
2) total fulfillment of the quote of sold electricity at DDE is 80%,
3) base salary is

- DDE Electricity Sales Deputy Head - 700 Som,
- Engineer-Calculator - 600 Som,
- Chief Controller - 520 Som,
- Accountant-Cashier - 550 Som,
- Electronic and computing machines Operator - 400 Som

3 Head of the DDE is paid according to the previous Labor Payment Provision for employees of the JSC "Kyrgyzenergo" plus bonus according to the Provision on Bonuses

(?) ratio payments and payments from the Remuneration Fund according to the approved rules are left

It is necessary to calculate amounts of salary according to the Attachment #

Attachment # (?) Energy sale subdivisions should be submitted not later than the 7th day of a current month to the Accounting and Planning Depts of the Distribution Company Attachment # 3 should be submitted not later than 15th day of a current month to the Planning Dept of the JSC "Kyrgyzenergo"

Head K M Ukulov

127

Attachment #3
to the Report on Labor (F-2T)
It is submitted monthly not later
than 15th day of a current month to the
Planning and Economic Department of the
JSC "Kyrgyzenergo"

Name of an Enterprise

Report on Labor
Distribution of the Listed Employees
of the Energy Sales Department according
to the Amount of Calculated Salaries per month

Amount of salary, Som	Number of employees of the Energy Sales Dep-t of the District Distribution Enterprise, persons	Including controllers, persons	
90 90-180 181-270 271-360 361-540 541-720 721-900 901-1350 1351-1800 1801-2250 2251-2700 2701-3500 3501-4000 4001-5000 more than 5000			

Deputy Sales Director
Chief Accountant
Head of the Economic and Planning Dep-t

Executor (Name, tel)

128

Approved
General Director of JSC Kyrgyzenergo

B E Sartkaziev
January 1, 1998

I COMPREHENSIVE PLAN OF REDUCING TECHNICAL AND COMMERCIAL LOSSES OF ELECTRICITY ACROSS JSC KYRGYZENERGO

#	Procedures	Implementation term	Contractor
	I Organizational procedures		
1	Hold a meeting of directors of JSC Kyrgyzenergo's utilities concerning reduction of technical and commercial losses	January, 1998	JSC KE
2	Develop a complex of measures to reduce technical and commercial losses across JSC Kyrgyzenergo	January, 1998	JSC KE
3	Hear reports (every month) of directors of distribution companies and some rayon-level distribution companies on reduction of technical and commercial losses	2nd ten-day period of each month	JSC KE
4	Hold monthly selective meetings with directors of energy utilities on implementation of measures to reduce technical and commercial losses	3rd ten-day period of each month	JSC KE
5	Develop a schedule for checking implementation of measures to reduce technical and commercial losses by energy utilities	January, 1998	JSC KE
6	Develop Provisions and organize quarterly competitions for the Best Distribution Company and the Best Rayon-level Distribution Entity on the reduction of technical and commercial losses	Every quarter	JSC KE

#	Procedures	Implementation term	Contractor
7	Arrange visits of JSC Kyrgyzenergo's specialists and DC's employees to neighboring energy systems to exchange experiences	1st quarter, 1998	JSC KE
8	Prepare and hold a Republican seminar for heads of state administration, heads and specialists of energy utilities on reduction of technical and commercial losses based on Chui oblast	February, 1998	Chui oblast administration, JSC KE, Chui DC
9	Rayon-level distribution companies must conclude collective-based agreements with Village Committees that determine liabilities of parties for sale and consumption of electric energy	1st quarter, 1998	JSC KE, Distribution Companies
10	Develop a draft Decree of the Government of the Kyrgyz Republic on organization of joint efforts of the State Administration and JSC KE to reduce technical and commercial losses, reduce accounts receivable and observe **the permitted amount** of power consumption in the oblasts, cities, rayon centers and Village Committees	February, 1998	Government Office of the Kyrgyz Republic, JSC KE
11	Calculate **the permitted amount** of power consumption across Distribution Companies based on standard rate technical losses	February, 1998	JSC KE
12	Distribution Companies must calculate **the permitted amount of power consumption** across rayon-level distribution companies and Village Committees and submit to JSC KE for development of a Government Decree	1st quarter, 1998	Distribution Companies
13	The Ministry of Finance, oblast state administration offices and the Bishkek municipal office must develop a fuel and energy balance that meets the requirements of the Republic for fuel and energy resources (coal, natural gas, condensed gas, mazout) and define sources of their supply Materials prepared for 1998 must be submitted to the Government of the Kyrgyz Republic in the 1st quarter of 1998, and for coming years similar materials must be submitted annually in September	1st quarter, 1998	Ministry of Finance, Kyrgyzgasmunaizat, Ministry of External Trade and Industry

#	Procedures	Implementation term	Contractor
14	Form staff level groups of personnel for calculation and analysis of technical losses of electric energy in all Distribution Companies	1st quarter, 1998	JSC KE, Distribution Companies
15	Heads of state administration offices must develop a complex of measures for reducing accounts receivable and commercial losses for 1998 and submit it to the Government of the Kyrgyz Republic	1st quarter, 1998	Oblast state administration offices, Distribution Companies, JSC KE
16	Complete transfer of meter readers to the system of feeder metering of power sale to consumers who are supplied by the given feeder and assigned to or controlled by this meter reader	February, 1998	JSC KE, Distribution Companies
17	Renew agreements with residential consumers, determining liabilities of the parties	1st quarter, 1998	JSC KE, Distribution Companies
18	Buy out and pay for costs of residential meters New meters are installed through the funds of energy system	1st half of 1998	JSC KE, Distribution Companies

II TECHNICAL PROCEDURES/MEASURES

#	Procedures	Implementation term	Contractor
1	Based on 1997 analysis, make additional calculations and give to Distribution Companies **planned measurements of technical losses** for 1998 divided by months	January, 1998 and every month	JSC KE
2	Analyze technical condition of voltage control facilities and develop additional measures for providing their reliable operation in line with requirements of rules and instructions	February	JSC KE
3	Develop additional measures for promoting modern facilities of teleautomatics, telemetering and computerization of metering and management	1st quarter, 1998	JSC KE
4	Make complete inventory of metering appliances installed at energy utilities and power consumers	1st quarter, 1998	JSC KE, all Distribution Companies
5	Replace 23,000 aged CO-1 three-numbered meters and similar meters according to approved plan-schedule	In 1998	JSC KE, all Distribution Companies
6	Install 25,200 electric meters at consumers who do not have metering facilities	In 1998	JSC KE, all Distribution Companies
7	Install an additional 900 electric meters on 6-10 kV feeders of substations in energy system	In 1998	JSC KE, all Distribution Companies
8	Replace meters on intersystem transmission lines and generators	October 10, 1998	Electric stations

#	Procedures	Implementation term	Contractor
9	Make supply contracts for new testing/checking equipment for the meter repair department and its sections	May 10, 1998	JSC KE
10	Make supply contracts for spare parts from JSC Janar for repairing electric meters	May 10, 1998	JSC KE
11	Ensure purchase of programs and provide for calculation of standard and marginal power regimes according to RACTR program	Starting from 2nd quarter, 1998	
12	Ensure purchase of 51 computers to calculate technical losses and draw the balance of power in Distribution Companies and rayon-level distribution companies	1st quarter, 1998	JSC KE
13	**Organize manufacturing of 220-380 V load-limitation machines at Bishkek engineering plant**	1998	Ministry of External Trade and Industry
14	**Complete installation of "nut-shaped" safety devices (capacity limiters) on the entry of all residential consumers**	Before September 1, 1998	Rayon-level distribution companies, DC
15	Identify the rate of power consumption by residential consumers across regions depending on location of sources of energy carriers (central heating, local boilers, coal mines)	Before August 1, 1998	Rayon-level distribution companies, rayon state administration
16	A Distribution Company identifies a rayon-level DC for demonstration project on reduction of technical losses	Before July 1, 1998	DC
17	Develop measures for reconstructing and subdividing overloaded 10-0,4 kV feeders, identifying funding sources	Before February 15, 1998	DC, rayon-level DC
18	Develop a complex of measures for reducing technical and commercial losses in all rayons of electric lines and submit them to JSC KE	February, 1998	DC, rayon-level DC

III INVESTMENT PROGRAMS

#	Procedures	Implementation term	Contractor
1	Civil engineering and installation work related to commissioning of the second 220/110 kV transformer with a 125 MVA power transformer at Ak-Kiya substation in Naryn oblast	4th quarter, 1998	JSC KE
2	Commissioning of 4 40 MVAP condenser-batteries at 110 kV Pristan, Pokrovka substations and at 35 kV Teploklyuchenka substation in Issyk-Kul oblast	1st quarter, 1998	Issyk-Kul DC, JSC KE
3	Civil engineering and installation work and commissioning of 110 kV Parkovaya substation with a 16 MVA power transformer and commissioning of 110 kV Kyrgyzskaya substation with 16 MVA power transformer in Bishkek	4th quarter, 1998	JSC KE, Bishkek DC
4	Civil engineering and installation work and commissioning of 220-110 kV Ala-Archa overhead line for 28 kilometers and 220 kV, 2 x 125 MVA Ala-Archa substation in Bishkek	4th quarter, 1998	JSC KE, Chui DC
5	Civil engineering and installation work related to commissioning of a 220 kV, 63MVA transformer at 110 kV Chuiskaya substation	4th quarter, 1998	JSC KE, Chui DC
6	Civil engineering and installation work related to replacement of 110 kV transformer of 2 x 25 MVA Novotroitskaya substation with 2 x 40,0 MVA in Chui oblast		JSC KE, Chui DC
7	Civil engineering and installation work related to replacement of power transformers of 110 kV, 2 x 10 MVA Orgo-Alysh substation with 2 x 25 MVA in Chui oblast	4th quarter, 1998	JSC KE, Chui DC

#	Procedures	Implementation term	Contractor
8	Civil engineering and installation work related to commissioning of 110 kV overhead line for 26 kilometers and 110 kV Kurshab substation with a 25 MVA power transformer in Osh oblast		JSC KE, Osh DC
9	Solve the issue concerning replacement of overloaded transformers at 220 kV Oktyabrskaya substation in Jalal-Abad oblast and Uzlovaya in Osh oblast	1998	JSC KE, Jalal-Abad DC, Osh DC
10	Start implementing project on construction of 500 kV Ala-Bel substation, 220 kV Ala-Bel-Semetey overhead line and 220 kV Semetey substation with a 125 MVA power transformer in Talas oblast	1998-1999	JSC KE, Talas DC
11	Reconstruct 100 km of 10-0 4 kV distribution line through the funds of JSC KE	1998	JSC KE, DC
12	Conclude agreements for purchasing three-phase electric meters to install on 0 4 kV feeders of 6/10-0,4 kV package substation	2nd quarter, 1998	JSC KE, DC

IV MEDIA CAMPAIGN PROGRAM

#	Publications	Location of publications and shows	People responsible	Timing
1	Live show round table discussions on winter peak loads in 1997-98 with representatives of the Government, Kyrgyzgasmunaizat, Kyrgyzkomurholding and Kyrgyzenergo	State TV&Radio Co	Sartkaziev B E, Davydov I A, Shaimergenova D Sh	when necessary (monthly)
2	Briefing with journalists	Kabar	Sartkaziev B E, Davydov I A, Shaimergenova D Sh	monthly
3	Regular TV&Radio programs "Energy" Fortnight 10- minute program on performance of the energy system (information on energy supply, metering, accounts receivable, tariff, interstate electric energy transmission, cost of electricity, construction of energy sites, external economic relations, privatization)	State TV&Radio Co	Shaimergenova D Sh, heads of companies	regularly
4	Customer inspection with representatives of local administration, legal authorities and media Inspection results must be reported in the media		Heads of companies	regularly
5	Shooting of two advertisements on energy saving and theft to be shown later on TV		Shaimergenova D Sh	
6	All publications in the local and oblast media must be published in newspaper "Energetik", section "They write about us"	Newspaper "Energetik"	Shaimergenova D Sh	regularly
7	Article "Problems of Toktogul reservoir in 1997 dry season and implementation of water-energy regime of Toktogul HPS"	*Slovo Kyrgyzstana, Kyrgyz Tuusu*	Zyryanov A G	December, January, February
8	Kyrgyz energy system in the Unified Energy System of Central Asia		Pedan B I	March

#	Publications	Location of publications and shows	People responsible	Timing
9	Interstate transmission of electric energy		Pedan B I	February
10	Program on implementation of the electric energy sector priorities		Sartkaziev B E	May
11	External Economic Activities of Kyrgyzenergo Investments in the energy sector, electric energy export		Aitkulov M A	February
12	Cost of electric energy generation incurred by the energy company		Ukulov K M	March
13	Cost of electric and thermal energy		Ukulov K M	April
14	Metering Program of meter replacement and transfer of meter ownership from consumers to the energy company		Kolomiets G A	February
15	Status of electricity supply in terms of load increase a) status of the lines before introduction of market relations (coal mining, availability of natural and condensed gas, prices for fuels, fixed consumption, losses in the lines), b) partial shift to electric heating and cooking norm of electricity consumption - 1,200 kwh, 30-40% wear of lines, electric energy theft, load shedding - dry season) c) **ways out of the crisis (increased coal mining, increased gas consumption, targeted social safety program, reconstruction of lines etc)**		Iminov M Kh	January
16	Problems of electricity supply in the residential areas of individual construction in Bishkek		Arystanov J A	March
17	Use of non-traditional sources of electric energy		Komarov M I	April
18	Privatization of the energy sector		Omorov K A	February, March
19	Operation of heating and industrial-production boilers	*Nasha Gazeta Erkin-Too*	Shapar V P	January

#	Publications	Location of publications and shows	People responsible	Timing
20	Problems of energy saving and efficiency management in the Republic (energy saving and efficiency, problems and solutions)	*Nasha Gazeta*	Shapar V P	January
21	Sales of electric and thermal energy Work with electric and thermal energy consumers Accounts receivable	*Slovo Kyrgyzstana* *Kyrgyz Tuusu*	Mamyrov R S	February
22	Fuel procurement and increased electric energy generation at Bishkek Thermal Plant	*Utro Bishkeka* *Vecherny Bishkek*	Vasiliev L A	January
23	Fuel procurement for Bishkek and Osh Thermal Plants		Ablyazimov O B	January

Davydov I A
1st Deputy General Director

Mamyrov R S
Deputy General Director

COLLECTIVE AGREEMENT
on Electric Energy Supply to Household Customers

#___ "__"_____1998

This agreement is made between residents of _____ (name of the settlement) who are supplied with electricity by Complete Transformer Substation (CTS) #__ of 0 4 kV feeder _____ with (number of people), hereafter the Customer, represented by _____ (name of the person) on the one side, and _____ (Rayon Distribution Company) represented by _____ (name), head of the Distribution Company who acts in accord with the Charter, hereafter called Energy Supply Company, on the other side, on the following issues

1 Subject of the Agreement

1 1 The Energy Supply Company undertakes to supply the Customer with electric energy, and the Customer undertakes to receive and pay for consumed electricity in the amount, within the period and under the terms mentioned in the agreement

1 2 The Energy Supply Company and the Customer undertake to follow this agreement, the Laws on Energy and Electricity and current instructive documents

2 The Energy Supply Company undertakes

2 1 To deliver electric energy and power to the Customer at CTS _____

2 2 To maintain voltage and frequency of electric energy within balance in accord with standards and norms valid in the United Energy System of Central Asia and Kazakhstan

2 3 To administer replacement and test of meters within a term determined by State Standard (GOST) as well as by customers' request

3 The Customer undertakes

3 1 To safeguard cable and overhead lines of electricity transmission, CTS, and meters

3 2 To inform the Energy Supply Company about breakdown of lines and meters and theft within 3 days

3 3 To meet requirements of the Supply Company for reduced electricity consumption in accord with schedules of limitations and outages

3 4 To pay electricity bills on time

3 5 To compensate for damage of equipment, transmission lines, and meters

3 6 To pay all the bills for electricity if the customer is moving out

3 7 In case of misbalance between supplied and received electric energy, the Customer will reveal the theft and determine misbalance in the relevant bill

4 Energy Supply Company is entitled

4 1 To terminate electricity delivery completely or partly after the Customer has been warned in the following cases

4 1 1 If the laws and orders on electricity use have been violated
4 1 2 If commercial losses exceed 20%, if sale targets are 80% implemented
4 1 3 If safety of equipment, transmission lines and meters have not been ensured

5 The Customer is entitled

5 1 To demand reliable electricity supply except for planned outages

5 2 To demand balanced voltage and frequency in accord with standards and norms effective in the United Energy System of Central Asia and Kazakhstan

6 Terms of Electric Energy Delivery

6 1 The amount of electric energy sold and purchased between the Energy Supply Company and the Customer is determined by commercial meters installed at CTS

6 2 Commercial meters belong and are maintained by the Energy Supply Company, but the Customer is responsible for their safety

6 3 Amount of delivered energy is determined by the Energy Supply Company and the Customer on the basis of a bilateral document

7 Payment Procedures and Responsibilities of the Parties

7 1 On the 1st day of the month following the reported one, the Energy Supply Company and the Customer develop the balance of electricity consumed as the basis for the issued bills

7 2 After the first day of a month in case of misbalance between power released and received, the Customer should take action to disclose electric power theft and make proper payment

8 Order for Dispute Resolution

8 1 Disputes regarding the timetable and volume of the released power should be solved within Kyrgyzenergo, while payment disputes should be solved by arbitrage in accord with current legislation

9 Additional Conditions

9 1 This agreement was issued in two copies of equal authority - one copy for each party

9 2 All amendments and addenda to this agreement should be done in writing

14.7

10 Period of Validity

This agreement comes into effect upon its signing and should be considered extended on the annual basis, until one of the parties submits an application to annul it at least one month prior to the end of its termination

Parties addresses and signatures

Energy Supply Company Customer

"AGREED"

_____ Local Administration

167

CONTRACT ON SALE OF ELECTRIC ENERGY
FOR _____

"____"_____ 1998

The given Contract is prepared based on Government Resolution of the Kyrgyz Republic of _____ 1998 Village Committee _____ in the person of its head _____, that follows the Constitution when acts and hereinafter referred to as PURCHASER and in the person of director _____, that follows the Constitution in his actions and hereinafter referred to as SELLER, signed the following below contract

---

1 SELLER is obliged

1 1 To supply electric energy in January and February of 1998 in line with allocated limit of electricity consumption, including residents under the contracts signed Electric energy is supplied to interface of balance facilities (Appendix 1) under the contracts signed with consumers (Appendix 2)

1 2 To maintain voltage and frequency of electric energy at the interface of balance facilities in line with standards and norms that operate in the Integrated Energy System of Central Asia and Kazakhstan

1 3 To replace and control billing metering facilities within the terms fixed under State Standards and as requested by consumers

1 4 To carry out planned repairs of electric equipment and transmission lines and operate them

1 5 To assist in rehabilitation of electric energy supply in case of failures and natural calamities

2 PURCHASER is obliged

2 1 To receive electric energy under contracts signed and ensure payment for electricity used from consumers within the terms fixed by SELLER and provide for decrease of accounts receivable in line with the Schedule outlined in Appendix 3

2 2 To observe legality, law and order when consuming electric energy on the basis of "Electricity Law", "Energy Law" and Rules of Electric Energy Consumption and following the contracts signed between the SELLER and consumers

2 3 To ensure safety of cable, overhead transmission lines, package substations, check meters installed at these substations

2 4 To ensure safe conditions to staff and non-staff meter readers in their work

148

3 The SELLER is entitled

3 1 To change electric energy consumption limit as decided by higher institutions, having previously informed PURCHASER

3 2 To fully or partially cease electric energy supply to PURCHASER in cases when PURCHASER
3 2 1 fails to observe legality, law and order of electric energy consumption
3 2 2 exceeds fixed limit of electricity consumption
3 2 3 allows commercial losses exceed 20% and accounts receivable - over 60 days when electric energy is sold for less than 80%
3 2 4 fails to ensure safety of electric equipment, transmission lines and metering facilities
3 2 5 fails to ensure safe conditions to PURCHASER'S employees in their work

4 The PURCHASER is entitled

4 1 To require proper supply of electric energy except for planned outages within limits and emergencies

4 2 To require that voltage and frequency of electric energy at the interface of balance facilities are maintained in line with standards and norms that operate in the Integrated Energy System of Central Asia and Kazakhstan

5 Conditions of Electric Energy Supply

5 1 Quantity of electric energy sold and purchased between PURCHASER and SELLER is determined by commercial meters that are installed at the interface of balance assets (Appendix 2)

5 2 SELLER owns and maintains commercial metering facilities whereas PURCHASER undertakes responsibility for their safety

5 3 Amount of electric energy supplied is determined by SELLER and PURCHASER based on a bilateral document

6 Payment Procedures and Responsibilities of Parties

6 1 On the 1st date of each month PURCHASER and SELLER prepare balance of electricity consumed based on bills for the previous month

6 2 After the 1st date of a month, if there is no balance of electricity supplied and received, PURCHASER and SELLER take measures to reveal theft and ensure that it is paid for

7 Force Majeure

7 1 Parties are set free from economic sanctions if there is force majeure that prevents from implementation of contract liabilities

7 2 Parties oblige themselves to immediately notify each other about start and termination of force majeure using acceptable communication means with subsequent

written confirmation Force majeure is confirmed by competent institutions of countries of both parties

8 Procedure of Dispute Solution

8 1 Disputes concerning schedules and amount of electricity supply are solved in JSC Kyrgyzenergo, whereas payment issues are solved through arbitration in line with legislation in effect

9 Supplementary Terms

9 1 There are 2 copies of the agreement, one for each party Both are legally valid

9 2 All additions and revisions to this agreement must be submitted in writing

10 Period of Validity

The agreement will take effect from the moment it is signed and will be considered extended if no statements about its cancellation have been received within a month before its end of term

Legal addresses and signatures of the parties

Seller

Purchaser

144

AGREEMENT

No__ Date " " _____199__

This agreement is signed by the _____ *(name of the resident)* resident of the village _____*(name of the village)*, passport No_____ and by the _____ regional Electric Distribution Company manager _____*(name of the manager)* The core of the Agreement is as follows

1 Mr /Ms _____ is OBLIGED

1 1 To take care of the Sub Station_____ equipment safety Never do any work inside SS or on the outgoing feeder lines

1 2 On a monthly basis collect meter's data and issue bills for the power consumed for the residential consumers connected to the feeder No___ of the SS____

1 3 To take direct control for the timely payment of electric power bills by the customers

1 4 To report to the regional DC about any case of thievery disclosed so proper measures can be taken by the DC

2 Chui enterprise of the electric network is OBLIGED

2 1 To establish a 50% discount for the electric power consumption within the established norm for Mr /Ms _____ provided he/she satisfactorily fulfills the above mentioned responsibilities

2 2 To take measures upon information received about electric power consumption violations

2 3 This agreement is effective for the period terminating on " "_____ 199__

2 4 This agreement should be terminated upon determination of the DC in the case of non fulfillment by Mr /Ms _____ of his/her duties

Director,
Chui Distribution Company _____
Mr Tynybekov A K

Village Resident _____
(Name of the Resident)

Joint Stock Company "Kyrgyzenergo" Order # 121

On the Improvement Operation System
of the Bishkek DC Sales Department

April 20, 1998

For the total change of the electric power sales system within Republican power sector the decision about feeder account was made resulting in the change of meter readers remuneration system but this method probation in Bishkek demonstrated several hardships due to the ring structure of the cable lines 6-10 kV making impossible separate account for each outgoing feeder In order to provide better and stable electric power sales within Bishkek, hereby

ORDER

1 To approve the sales department structure for Bishkek DC (see Attachment 1)

2 To approve the provisions for Bishkek DC staff, directly involved into the power sales, remuneration and put them in effect since 01/04/98 (see Attachment 2)

3 For Mr Atabaev T A , Director of Bishkek DC

3 1 Since May 1998 transfer to the new system of retail work with the residents, providing computerized billing monthly subscribers visits and record of the meters data into the visits' sheet with the consequent computer data processing

3 2 To abolish subscribers self-billing forbid the bill-books usage for the electric power payment

3 3 Arrange new DC sales department structure operation

3 4 Together with the KE Statistic Department to provide sales department with the PC according to the feasibility study (see Attachment 3) Deadline - May 1998

3 5 To develop and approve Responsibility Guidelines of the sale departmental staff Deadline - May 1998

4 For the KE Statistic Department (Mr Vnchov B B) To develop and promote billing system in line with the technical task and its software support (see Attachment 4) Deadline - before May 30, 1998

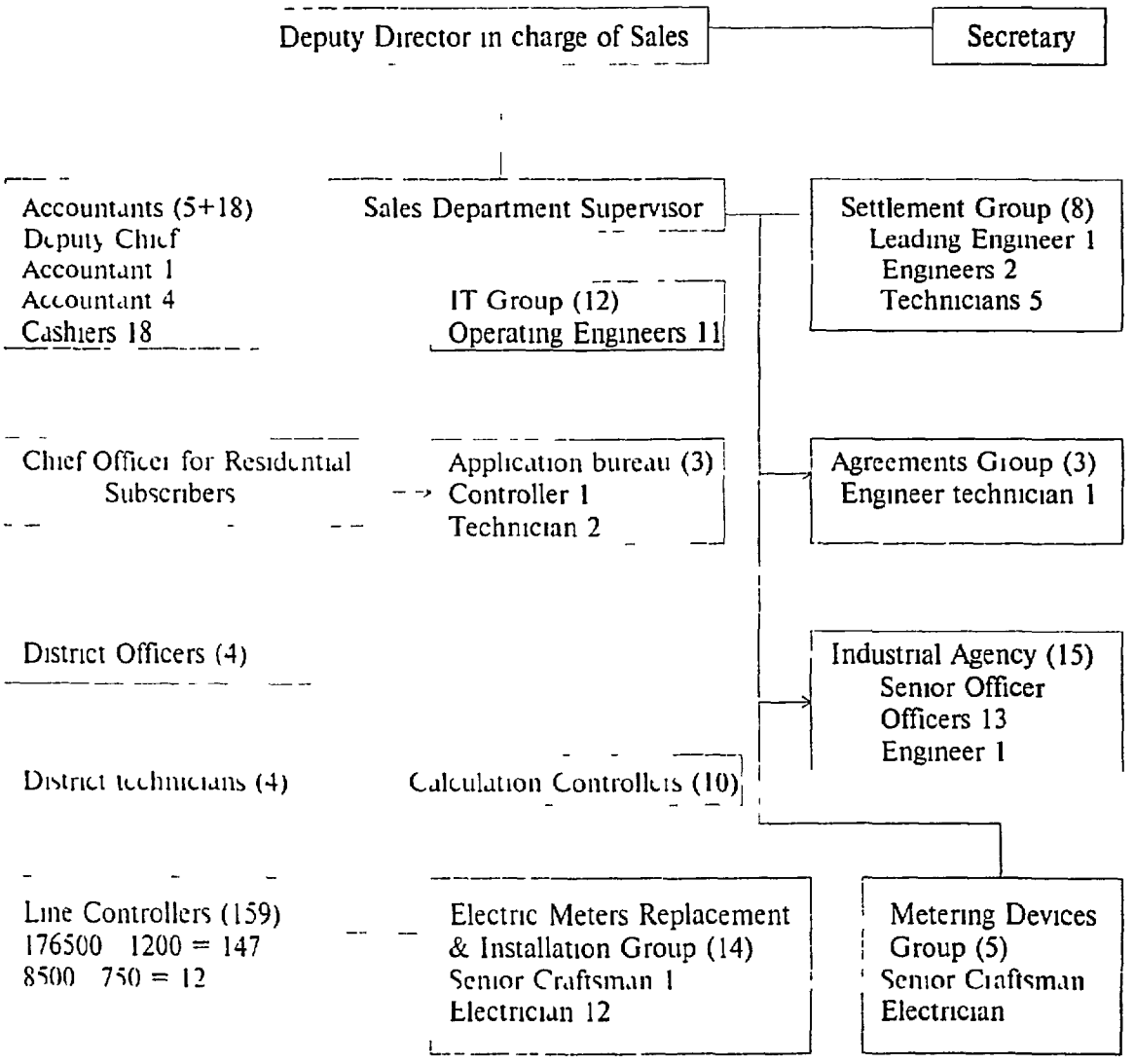
5 To abolish the order No 420 dated 20/10/97 for Bishkek DC

6 To commit monitoring of this order implementation to Mr Mamyrov R S , Deputy Director general

Sartkaziev B E
Director General

Attachment 1
to the Kyrgyzenergo Order # 121
20/04/98

Bishkek DC Sales Department
Structure



Total staff 264 people

147

Approved

JSC "Kyrgyzenergo"
Director General
_____ B E Sartkaziev
Date " " _____ 1998

PROVISIONS

On remuneration of the KE Bishkek DC staff directly involved into the electric power sales

I General Provisions

These provisions were developed for the purpose of remuneration system improvement, and increase of the directly involved into the electric power sales staff interest in their labor results Direct piecework pay when each worker results are recorded and remunerated separately, should be promoted Under that system the remuneration provides for

a) the direct dependency upon labor results,

b) contract system of remuneration

II Procedure of the Remuneration Calculation for the Staff, Directly Involved into the Electric Power Sales

1 Meter Readers

For the meter readers the direct piecework pay should be used Basic salary equals 500 Som Standard amount of visits is 1200 subscribers The basic salary should be corrected according to the actual amount of the subscribers, prescribed for each meter reader

For example

$$\text{basic salary} = \frac{1000 \text{ (actual subscribers number)}}{1200 \text{ (standard subscribers number)}} \times 500 \text{ Som} = 416 \text{ Som}$$

1 1 Total sales amount depends upon three main ratios implementation, i e

a) production sales according to the meter reader's bills with the basic number of 80% Proportion of this ratio implementation is calculated the following way

$$\frac{\text{actual collection under the bills}}{\text{amount on the bills provided}} \times 100\%$$

148

b) standard of the useful electric power release for the DC in general (difference between actual power inflow for the self consumption within the network and the losses ratio, which is calculated according to the approved standardized characteristic) with the basic amount of 70% Proportion of this figure implementation should be calculated the following way

$$\frac{\text{actual useful electric power release}}{\text{standard of the useful electric power release}} \times 100\%$$

c) visiting customers prescribed to each meter reader with the basic ratio of 80%

1 2 When the production sales quota under the bills provided is exceeded by 81-100% the basic salary should be increased by 10% for each point of over-fulfillment When those ratios are exceeded by 101% and more basic salary should be increased by 15% for each point of the over-fulfillment If 80% of sales and 70% of useful release are not fulfilled within DC in general, each point of under-fulfillment reduces salary by 10% but not exceeding 100 som reduction

For example

When the useful power release by the DC in general is implemented by 75% and production sales according to the bills equals 86%, the total salary amount equals

$$416 \text{ Som} + \frac{416 \text{ Som} \times 50\%}{100\%} + \frac{416 \text{ Som} \times 60\%}{100\%} = 874 \text{ Som}$$

1 3 Total salary as of example in the p 1 2 should be adjusted by the visits of the customers prescribed to the meter reader

When the meter reader visited 80% of the customers prescribed to him, in that case the adjust ratio equals 1

For each point of the customers visits increase the total salary as of example in the p 1 2 should be increased by 2%, alternatively each point of under-fulfillment causes salary decrease by 2%

For example

In the case shown in p 1 customers visits ratio equals 95%, thus the total salary amount equals

$$874 \text{ Som} + \frac{874 \text{ Som} \times 30\%}{100\%} = 1136 \text{ Som}$$

2 Engineers and Technical Staff of Energy Sales

Despite the meter-readers standard quantity the staff schedule of the DC sales department provides for the following engineers and technical employees with the following basic salary (according to the Attachment 1)

	Employees	Basic Salary, Som
Deputy Director in charge of sales	1	1000
Sales department Supervisor	1	900
Secretary	1	440
Settlement Department	1	770
Leading Engineer	1	660
Engineer	1	605
Technician	5	539
Technician	10	500
Controller	**18**	
Total		
Agreements Sector		
Engineer	1	660
Engineer	1	616
Technician	1	583
Total	**3**	
Accounting Department		
Deputy Chief Accountant in charge of sales	1	800
Accountant	4	627
Senior cashier	1	539
Cashier	17	484
Total	**23**	
Senior officer in charge of residential subscribers	1	748
Officer	4	704
Officer	7	660
Officer	3	616
Engineer	1	660
Total	**16**	
District Officer	2	660
District Officer	2	616
Technician	2	605
Technician	2	539
Application Bureau		
Controller	3	500
TOTAL	74	

150

The above staff salaries should be determined on the basis of the following ratios (provided basic salary is constant)

2 1 Implementation of the standard useful power release in % for DC in general, which equals 70%

$$\frac{\text{actual useful power release}}{\text{standard useful power release}} \times 100\%$$

2 2 Sales % of the released power for DC in general, which equals 80%

$$\frac{\text{actual production sales}}{\text{production released}} \times 100\%$$

For example

When the standard of useful release is fulfilled by 75% and the production sales is fulfilled by 105%, then for the basic salary of 660 Som actual salary equals 2805 Som

$$660 \text{ Som} + \frac{660 \text{ Som} \times 50\%}{100\%} + \frac{660 \text{ Som} \times (200\% + 75\%)}{100\%} = 2805 \text{ Som}$$

3 These provisions do not cover the Statistic Department electric power sales staff Their remuneration should be arranged according to the Provisions for Kyrgyzenergo Employees Remuneration dated 02/01/97

4 **Workers' group for installation, replacement and account of power meters**

Remuneration of the workers involved into the electric power meters replacement, installation and account is based upon direct piecework pay and salary amount depends upon quantity of the meters changed

Provided that one 1-phase electric meter replacement costs 10 som and 3-phase - 14 Som

For example

Within one month 105 meters were replaced, including 65 1-phase and 40 3-phase meters

Calculation

65 × 10 Som	= 650 Som
40 × 14 Som	= 560 Som
Total	1210 Som

The order for piecework pay should be confirmed by

15

1) release of the metering devices from the warehouse, and
2) amount of acts arranged, which should be the same as the amount of the meters replaced (attachment No)

5 After these Provisions are put in effect the following arrangements should be abolished for the Energy sales staff

a) current bonuses,
b) bonus for winter season arrangement

Regional ratio fees, service period payment and material awards should stay

All salaries calculations should be done according to the Attachment 2

Attachment 2 at least on 7th day of the current month should be submitted to the accountant and planning departments of the DC Attachment 3 at least on 15th day of the current month should be submitted to the Economic and Planning sector of KE

K M Ukulov
Chief of the Economic
and Planning Department

152

List 1

Attachment 1
to the Provisions for remuneration
of the Bishkek DC staff directly involved
into electric power sales

Should be submitted on monthly basis
at least on the 7th day of the current month
to the Planning Department of DC

MONTHLY SALARY CALCULATION
for one energy sales employee of the KE

Name	Power useful release			Production sales against issued bills			Customers visiting			Additionally added (+) extracted (-) upon fulfillment of		Subtotal accrual (som)	Additionally added (+) extracted (-) upon visiting customers, (Som)	TOTAL accrual (Som)
	Standard '000 kWh	Actual '000 kWh	%	Production released '000 Som	Production sold '000 Som	%	Customers prescribed	Actually visited	%	Power useful release (Som)	Production sales (Som)	11+12		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Total for the DC

Salary calculation dependent upon over-fulfillment of under-fulfillment of power useful release standard and production sales according to the formula from the Provisions for remuneration of the staff, directly involved into electric power sales

Executor Name, telephone No, Signature

Deputy Director of DC for Sales
Accountant

ANNEX 10

USAID Contractor

Hagler Bailly

Hagler Bailly - Bishkek
185 Toktogul St , #4
Bishkek, Kyrgyzstan
PHONE (+996-3312) 21-28-06
FAX (+996-3312) 62-19-05

FAX COVER SHEET

Date 10 May **# of pages** 1+3

Subject Meter Decree

From Joellyn Murphy

To
David Keith - Hagler Bailly, Arlington
Mike Biddison - Hagler Bailly, Almaty
Barry Primm and Patricia Buckles - USAID, Almaty
CJ Rushin Bell and John Bayer - USAID, Bishkek
Fred Huston - USAID, Government House
Bob Archer - USAID, Washington
Istvan Dobozi and V Atur- World Bank, Washington
Michael S V Rathnam - World Bank, Bishkek
Anil Terway - Asian Development Bank, Manila
Kenji Nakazawa and Nandita Parshad- EBRD, London
Nickolay Hadjiyski - EBRD, Bishkek
John Hambly - TACIS, Bishkek
Markus Muller - Swiss Coordination Office, Bishkek
Othmar Wutscher - GTZ, Bishkek

Following is the Government's Decree on transfering residential meters to Kyrgyzenergo's Distribution Companies Apparently Kyrgyzenergo will "purchase" the meters at a price to be approved by the State Energy Agency It will "pay" for them by not charging consumers for the electricity they consume, up to an amount equivalent to the purchase price.

This will clearly have a negative effect on what little cash flow there is The Decree states that KE is to recoup the loss by including the cost of purchasing the meters when tariffs are increased However, we still have quite a long way to go until tariffs are raised to cover even current expenses, much less new ones

Also included are two press articles on this issue, FYI.

"Slovo Kyrgyzstana"
March 27-28, 1998

"KYRGYZENERGO"
THE METERS WERE YOURS - NOW THEY ARE BECOMING OURS

Kyrgyz Republic Government Decree # 144

Transfer of Residential Electric Meters
to the Electric Distribution Companies Balance Sheet

March 23, 1998

According to the Development Credit Agreement between the Kyrgyz Republic and IDA dated July 3, 1996 and the World Bank covenants and in order to improve accounting for the electric power released to the residents, the Government of the Kyrgyz Republic decrees

1 Installation and replacement of electric meters for residents should be performed by electric distribution companies and on their own account

2 JSC Kyrgyzenergo (KE) should redeem by purchasing electric meters installed at residences at the expense of the electric power released to those residences and for prices agreed with the State Energy Agency under the Government of the Kyrgyz Republic (SEA) and should include redeemed meters on those companies' balance sheets

3 When developing and validating electric tariffs SEA should take into account the price of the redeemed and newly installed meters within the KE expenses

4 Establish that

- the amount reimbursed for the electric meters transferred to the distribution company balance sheet should be determined in line with the national Accounting and Bookkeeping Rules, approved by the Finance Ministry of the Kyrgyz Republic,

- the customer is fully responsible for electric meter security, except for unforeseen occasions

5 National Customs Committee should forbid export of electric meters by private persons and organizations who are not related to the electric distribution companies

6 Establish that distribution and sale of electric meters is permitted only by KE on the territory of the Kyrgyz Republic

Prime Minister
A JUMAGULOV

ANNEX 11

"SK" COMMENT

We MUST pay for electric power The majority of law-abiding citizens agree with that and pay properly Still, amount the people owe Kyrgyzenergo is astronomical Is there a way to force those who are not paying to pay their debts?

Experts have proposed several alternatives but resolution of the bad debts problem still lies far in the future And which way could we deal with the old debts?

By the above decree the Government can kill two birds it provides electric meters for the total population and solves the bad debts problem How can they manage that? Their method is very simple

KE will buy old meters at prices approved by the SEA The price list is not disclosed yet In any case, old meters should be cheaper than new ones What if the meter owner will not accept the proposed price because he paid a higher price for his meter than the price proposed by KE Such problems are possible, but we know nothing about the solutions yet

Another problem - new electric tariffs will include costs for redeemed and newly installed meters It is fair punishment for those who didn't pay for electric power or forged old meter data? But for those who did pay properly, it shall become another unproved punishment

And last Even a new meter cannot guarantee 100% of payment Current debtors ignore the current more or less soft tariffs, and they will surely ignore new, higher tariffs Even now KE has a strong lever at their disposal - cut-off of electric supply Why don't they use it?

In the forthcoming issues 'SK" will continue exploring this subject with the KE employee's help

"Vecherny Bishkek"
March 26, 1998

THEY WANT AS MUCH AS POSSIBLE WE'LL SEE THE RESULT

The Government decided to buy out all residential electric meters, and Distribution Companies will pay for their repair and maintenance

The new decree states that Distribution Companies will buy electric meters at prices established by the State Energy Agency and at the cost of payment for electric supply This procedure takes place after the purchase-and-sale document is signed Electric meters are planned to be installed at the entrance to the house to make it possible for meter readers to have an unobstructed control over power consumption

Consumers undertake responsibility for the meter's safety except for contingencies and theft (when meters are stolen) Government officials think that it will facilitate immediate cessation of theft Kyrgyzenergo" is the only entity that is allowed to distribute and sell electric meters In addition, all departments of State Customs Service are instructed to keep a close watch on monopolist metering facilities to prevent export abroad where criminals can easily sell these stolen facilities

V Neshkumay
M Tsvetayeva

Examples of Kyrgyzenergo's Meter Reader "Books"
(Samples from Bishkek PES)

Юг-2 9.6,7,9 5/XI-96г.

Дом	Кв	Показ-е	Дом	Показ-е	Кв	Показ-е	Кв	Пок-е	Кв
3	3	01063	32	0525	7-5	451	9-18	5617	
3	27	5986	31	4668	7-6	9054	9-13	9195	
3	26	357	33	9701	7-4	55779	9-14	18461	
3	25	6666	7-30	26433	7-54	19880	9-15	4144	
3	24	687	7-28	9922	9-30	478	9-10	9213	
3	22	386	7-53	17752	9-28	8794	9-11	28500	
3	19	1971	7-52	15753	9-32	6595	9-12	18977	
3	20	711	7-49	23229	9-33	5465	9-7	7942	
3	21	993	7-51	19517	9-34	3003	9-8	1517	
3	16	0239	7-46	25753	9-35	592	9-9	4302	
3	18	13875	7-47	33844	9-36	2345	9-6	5186	
3	15	7245	7-48	22485	9-39	213	9-		
	14	08527	7-43	18338	9-38	9911	9-		
	13	10805	7-41	0963	9-37	0240			
3	12	1873	7-42	6758	9-41	3940			
3	11	1532	7-37	2787	9-43	6701			
	10	976	7-34	22535	9-45	1354			
3	9	291	7-35	11066	9-46	5095			

Норм

6	8	2212	7-36	23390	9-48	881			
6	5	8000	7-32	19768	9-49	062			
6	6	9.505	7-33	12085	9-51	115			
6	30	05573	7-31	18196	9-50	7810			
6	29	9467	7-2	160	9-52	3009			
6	52	938	7-3	2915	9-53	071			
6	53	5555	7-27	6848	9-54	633			
6	49	726	7-20	5933	9-2	1969			
6	50	741	7-21	957	9-3	1751			
6	51	150	7-16	191	9-25	3579			
6	47	293	7-17	б/сч	9-26	6578			
6	48	033	7-18	120	9-27	2378			
6	45	18653	7-15	15739	9-22	2349			
6	40	36650	7-14	998	9-23	4208			
6	41	21530	7-12	3253	9-24	4950			
6	42	9053	7-11	5163	9-19	1928			
6	38	8693	7-10	5511	9-20	6801			
6	34	6418	7-7	3411	9-21	1933			
6	35	9383	7-8	9477	9-16	9805			
6	36	1235	7-9	2901	9-17	4214			

Examples of Kyrgyzenergo's Meter Reader "Books"
(Samples from Bishkek PES)

Карыбаева

10 дом - Юг-2

кв 1	- закр	кв 28	— 9410
кв 2	- 3201	кв 29	— закр
кв 3	- 7656	кв 30	— закр
кв 4	- 24755	кв 31	— 7987
кв 5	- 5693	кв 32	- 0152
кв 6	3241	кв 33	- закр
кв 7	- 0894	кв 34	- закр
кв 8	- закр	кв 35	— закр
кв 9	- 4616	кв 36	- 1756
кв 10	- 4000	кв 37	- закр
кв 11	- 17847	кв 38	- 674
кв 12	0122	кв 39	- 0982
кв 13	09870	кв 40	закр
кв 14	8779	кв 41	- 9929
кв 15	- закр	кв 42	- 5465
кв 16	- 2016	кв 43	- закр
кв 17	- 9077	кв 44	- 02278
кв 18	- 9255	кв 45	- закр
кв 19	- 6676	кв 46	- 0231
кв 20	- 1115	кв 47	- 7242
кв 21	- 4372	кв 48	- 4979
кв 22	- закр	кв 49	- закр
кв 23	- закр	кв 50	- 5462 - Ким
кв 24	- 1059	кв 51	- 0111 -
кв 25	- 5460	кв 52	- 6899
кв 26	- 2542	кв 53	- 3342
кв 27	- закр	" "	- 9385

15 дом - Юг-2

кв 1	- закр
кв 2	- 06026
кв 3	- закр
кв 4	- б/сч
кв 5	- 27945
кв 6	- 21163
кв 7	- 15978
кв 8	- 75511
кв 9	- 2454
кв 10	- 24574
кв 11	- 28027
кв 12	- закр
кв 13	- закр
кв 14	- 27021
кв 15	- 24385
кв 16	- 39353
кв 17	- 27045
кв 18	- закр
кв 19	- 27343
кв 20	- закр
кв 21	- 36257
кв 22	- 28807
кв 23	78486
кв 24	- 19711
кв 25	- 30676
кв 26	- 29054
кв 27	- 20463
кв 28	- 74493
кв 29	- 24994
кв 30	- 28400

BEST AVAILABLE COPY

ИЛ	32	- Jump
ИЛ	33	73625
ИБ	34	- Jump
ИБ	35	- Jump
ИБ	36	- Jump
ИЛ	37	- 07770
ИЛ	38	Jump
ИЛ	39	- Jump
ИЛ	40	- Jump
ИЛ	41	- Jump
ИБ	42	- Jump
ИЛ	43	- Jump
ИБ	44	- 21669
ИЛ	45	- 11644
ИБ	46	- 25002
ИБ	47	- 26022
ИЛ	48	- 31832
ИБ	49	- 40701
ИБ	50	- 28499
ИЛ	51	23237
ИБ	52	- 22302
ИЛ	53	- 5107
ИБ	54	- 25336
ИЛ	55	- 13706
ИБ	56	- 22803
ИБ	57	- 31816
ИЛ	58	- Jump
ИБ	59	- 14197
ИБ	60	- 23537
ИБ	61	- Jump
ИЛ	62	- Jump
ИБ	63	- Jump
ИЛ	64	- Jump
ИЛ	65	- Jump
ИЛ	[illegible]	- 20312

ИБ	67	- 20031
ИБ	68	- Jump
ИБ	69	- Jump
ИБ	70	- 32784
ИБ	71	- 28335
ИЛ	72	- 18097
ИБ	73	- Jump
ИБ	74	- 28011
ИБ	75	- 19160
ИБ	76	- 25808
ИЛ	77	- 23557
ИБ	78	- Jump
ИБ	79	- 26301
ИБ	80	- 19498
ИБ	81	- 23041
ИБ	82	- 15635
ИБ	83	- Jump
ИБ	84	- 12484
ИБ	85	- 14828
ИБ	86	- 14021
ИБ	87	17914
ИБ	88	- Jump
ИБ	89	- Jump
ИБ	90	- 27077

ANNEX 12

EUROPEAN COMMISSION
DIRECTORATE GENERAL 1A

Future Development of
Electricity Sector in
Kyrghyzstan
(TACIS PROJECT EKY 9501)

Review of the Commercial Management System in KSE-JSE

Interim Report

(SELECTED SECTIONS ONLY)

Submitted by

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Carl Bro
SYDKRAFT
ERM

165

1 EXECUTIVE SUMMARY

This study was carried out by ESBI International Consu
Ireland (ESBI) as part of a TACIS Project (EKY 9501)
development of the Electricity Sector in Kyrghyzstan The total proje
undertaken by ESBI in consortium with Carl Bro International and Sv
International

In Task 3 of the Project the Consultant was to formulate recommendations for the reorganisation of the commercial management system of KSE-JSC with a view to improving its dealings with customers in areas such as customer records customer service metering billing revenue collection contracting and quality of service In addition the Consultant was to implement a pilot customer system for a limited number of customers in the Bishkek Distribution area

This interim report contains the findings of the diagnostic review of the commercial management system and recommendations for improvement The implementation of the pilot customer system is planned for later this year and will be covered in the final report at the end of the project

The financial well-being of any electrical utility is dependent on ensuring that all electricity consumed is actually billed and once billed that all electricity charges are promptly collected The following is a summary of the changes required in KSE-JSC in order to achieve this objective

- **Commitment from top management in KSE-JSC**

  The accurate billing and collection of electricity charges for all electricity consumed must be on a par with security of supply in terms of commitment and backing of senior management in KSE-JSC

- **Policy**

  Clear policies need to be developed to ensure that all electricity consumed is billed and that all electricity charges are collected

- **Strategy**

  Strategies need to be developed to implement Company policy The debt management strategy clearly needs to differentiate between those customers who can pay but will not pay or who delay payment and those customers who have real difficulty in paying

- **Responsibility**

  Responsibility must be clearly defined for the accurate billing and debt collection activity throughout the company The most appropriate organisation structure must be in place to maximise the collection performance Authority to implement all strategies and procedures must be delegated to a named individual in the management team and subsequently held accountable for performance Included in our recommendations are the appointment of a Customer Service and Credit Manager who will report directly to the Commercial Director for the billing and collection of all electricity consumed At Enterprise level the Director will have responsibility for meter reading billing and collection and will appoint a Customer Manager and a Credit Controller to manage the reading/billing and the debt management functions respectively

- **Control**

  Metering

  The accuracy and reliability of the meter recording of every customer s consumption is a key objective for any utility The limited supply of meters the lack of ownership of meters and the level of unmetered supplies, official or unofficial are serious impediments for KSE-JSC in achieving this objective

  KSE-JSC must gain total control of the meters and metering equipment and must ensure that all users of electricity are properly metered and that reliable monitoring of the meters is carried out on an on-going basis The meter is the sole means of measuring the amount of electricity used by customers and is a critical control in ensuring that KSE-JSC are collecting the correct revenues The recent ADB funds of $2M for new meters is a significant contribution towards the problem of limited supply of meters

  Requests for electricity supplies

  It is critical that all new customers are promptly and accurately recorded in the customer database to ensure that customers are billed for electricity used and moneys collected The current system in KSE-JSC does not guarantee that all customers connected are updated in the customer database In our recommendations a safe and secure procedure is recommended to ensure that all customers connected are recorded in the database

Meter Reading/ Billing/Debt Management

The existing self assessment meter reading billing and payments system is an outdated and ineffective system As a test of the customer readings in the database and on the pattern of payments under the self assessment system a pilot meter reading exercise on 5000 customers in Bishkek was carried out The findings of this pilot exercise which are detailed in section 5 of this report indicate a serious deficiency in terms of non-billing for electricity officially consumed under the present self assessment system

It is recommended that a regular meter reading and billing system be introduced in KSE-JSC with domestic customers accounts to be read and billed every three months and that commercial and industrial customers be read and billed every month This will enable the establishment of a proper debtors ledger which will form the basis for a modern debt management approach through a separately organised collection activity

It is not feasible for KSE-JSC to carry out any proper debt management procedures at present without firstly establishing a debtors ledger for its full customer database In addition the true value of the debt must be established which is not possible at present for KSE-JSC because of the absence of a regular meter reading and billing system and the level of unmetered connections to the network

- **Attitudes**

There is a need for a fundamental change in attitudes in both company management/staff and customers Management and staff in KSE-JSC need to adopt a more commercial approach and at the same time adopt a more customer friendly approach to it's customers

The effective management of the metering meter reading and billing functions and the effective management of money and credit will have a major impact on the viability and future success of the company A comprehensive programme of training should be provided for all management supervisors and staff in the Customer Management area covering policies procedures and systems

As a first stage in developing a customer service culture in KSE-JSC a customer service training programme should be introduced for all customer contact staff to familiarise them with the importance of customer service and to make them aware of their role in delivering a good service

With regard to improving customers understanding of the Company s operations a National publicity campaign is required in order to explain how the company is planning to read bill and operate debt management in the future and to encourage customers with payment problems to meet with Company staff for discussions on how to solve their problems etc The campaign should be co-ordinated to allow for the dissemination of this information through the Media and through direct contacts with the customers

- **Computer System Support**

Whilst the support provided by the current PC based system is recognised it is recommended that a new Customer Billing and Information System on a modern computing platform is implemented in the medium to longer term

A modern comprehensive Customer Billing and Information System is critical to the efficient management of KSE-JSC s meter reading billing collection and accounting activities The implementation of ESBI s Customer Accounting and Information System (CAIS) on a pilot basis only later in this Project is a first step towards achieving this objective The final report for this Project will incorporate an evaluation of the pilot implementation of CAIS in KSE-JSC and will outline what would be involved should KSE-JSC decide to procure CAIS for the whole of the utility

A special Task Force should be set up in order to plan, co-ordinate and implement the changes summarised above which will be a major challenge for KSE-JSC. However, implementing these changes will bring major benefits to the Company in terms of Cash Flow and greater acceptability within the International Funding Agencies.

5 DETAILED FINDINGS

The detailed findings are described under the key customer management areas The present procedures and any weaknesses identified are outlined for each area

5 1 Metering

Objective Accurate and reliable meter recording of the customers consumption is a fundamental requirement in the customer management operation of any utility To achieve this objective the utility must firstly be satisfied that every meter is recording accurately before being installed in customers premises Secondly the utility must have control of the metering equipment installed in premises from date of installation to date of removal and thirdly there needs to be ongoing monitoring of the meter during its lifetime to ensure that it continues to record accurately and that any meter interference is detected early

5 1 1 Meter Ownership

The present process
Customers must provide their own meter if they want to have a metered supply Meters can be purchased in markets and shops but there is a regulation that these should be inspected calibrated and sealed by a State meter shop which is independent of the electricity company

Weakness in the process
The utility does not own the meters nor has it any control over the State meter shop or the adequacy of testing procedures before seals are affixed Meters may carry a current seal but have been damaged since the time the seal was affixed and be registering incorrectly as a result

5 1 2 Meter Supply

The present process
There is a very limited supply of new meters in the Enterprises of Electrical Networks (EEN) In 1995 ten thousand single phase meters and five hundred three phase meters were received as part of a mutual settlement with Kazakstan These were spread throughout the country to form an Exchange Fund in each EEN Under the terms of this fund a customer with a broken meter can have it replaced for a small charge If possible the old meter is then repaired in the company workshop and becomes part of the Fund but spare parts for old meters are a problem The company cannot supply meters for new customers

17c

Weakness in the process

Because of lack of funds the company has only a limited supply of meters and consequently the company lacks any control over type or quantity of meters for new connections

5 1 3 Meter Monitoring

The present process

This is left mainly to meter readers who are not qualified or trained to carry out the monitoring of meters The present system does not guarantee that check reading of all meters will be carried out on a regular basis and many meters go unchecked for years

Weakness in the process

All existing meters are not being properly or regularly monitored

5 1 4 Unmetered Supplies

The present process

A significant numbers of premises are still unmetered in Kyrghyzstan There are two distinct categories customers (mainly in new microregions) who were officially connected without meters and people who have illegally made connections to the networks The company are trying to address the problem of the officially unmetered accounts Nationally these probably exceed fifty thousand When unmetered customers in the new housing micro-regions were originally connected estimated seasonal charges were applied to them This is not an accurate billing arrangement as the type and size of house and consequently the electricity consumption, varies enormously

Mr Kolobaev, Deputy Director in Bishkek Network of Electrical Enterprise had negotiations with City Management and a new set of charges for Summer and Winter was agreed and communicated to customers These charges were higher and more realistic than had been charged previously There was a very positive effect after the utility applied these higher charges for unmetered customers who then felt that they were at a disadvantage in comparison to metered customers Many of these customers have now bought meters and had them installed The number of official unmetered supplies has therefore reduced and continues to reduce

With regard to illegal connections to the networks there is no organised detection programme in place Where staff discover illegal connections they report each connection to the company Sometimes this information is provided by other customers Unrecorded consumption is calculated and if paid the person becomes a legal customer Where the unrecorded consumption is not paid all cables etc used for the illegal connection may be confiscated

17

Weakness in the process

It is not possible to establish how much electricity is being used at any given time In addition without a systematic programme of checking every area illegal connections will go undiscovered for a considerable time

5 1 5 Meter Interference

The present process

There is no designated programme to detect meter interference This is now a significant problem Following disconnection for non-payment many customers reconnect themselves illegally Most regions do carry out a follow up exercise but in rural areas the distance involved and the problem of lack of transport means that many go undetected The second problem is one of attitude Many customers do not consider meter interference as theft and consequently see little wrong in reconnecting themselves Legal measures which the company can take to remove this practice are very unclear at present but the new electricity and energy laws are expected to clarify this situation

Weakness in the process

There is no designated programme to detect meter interference throughout the Company

5 1 6 Meter Replacement

The present process

As the company does not presently have a stock of meters it is not possible to operate a meter replacement programme The old recommendations were that single phase meters be replaced every sixteen years and that three phase meters be replaced every eight years When meters are again available it is the intention to restart a programme

Weakness in the process

Many meters are now old and unreliable but are not being replaced In addition, three digit meters of which there are still a considerable number in use are completely unsuitable for present domestic patterns of consumption leading to frequent undetected clock-overs in the recording of consumption There may be as many as thirty thousand three digit meters in operation at present However as existing meters are the property of customers it is difficult to force customers to replace these and this is another reason why utilities must own their meters

5 2 Requests for Electricity Supply

Objective All supplies to new customers must be properly authorised and accurately reflected in the customer database at the correct rates of charge The database is vital as it forms the basis of all future dealings between the company and the customer

The present process

A customer requiring a new supply whether for a domestic or a non-domestic premises first visits the Regional Electrical Network to give details of premises location etc and indicates the type of supply required The customer completes an Application for Supply request and a Supply Agreement Form An instruction is then issued to the Electrical Supervisor who arranges to have the installation checked For a new connection where poles service cable etc are required these details are notified to the customer

The customer secures the necessary material The wiring and the official state meter seal are checked before connection is made If the seal has been applied within the previous two years it is acceptable The supply is then connected and the meter terminal cover sealed with an official company seal If the state seal on a meter is more than two years old the meter must be rechecked before supply is connected This is done in the company meter test laboratory

Following connection details of meter number year of manufacture and start meter reading are returned by the connecting official to the Customers section in the Regional Centre where the new account is set up For domestic customers a payments booklet is prepared which shows name address new account number and start meter reading The customer collects the payments book on the day after connection In Bishkek industrial and large commercial customers are not given payment books but they are informed that they must supply the readings of all meters at the beginning of each month so that bills can be prepared for them

Rates of charge are applied at time of connection This is not a difficult exercise as rates are quite straightforward Customers are charged on the basis of actual usage

113

The company does not operate a capital contribution system The customer provides all of the material

Weaknesses in the process
While this system is not paper intensive and is customer friendly it cannot guarantee that all supplies to new customers are properly authorised and reflected in the customer database It is inevitable that some forms will be lost and that as a result some customers will not be set up on the computer system following connection The control of new connections is therefore weak

5 3 Meter Reading/Billing

The Objective of Meter Reading/Billing All customer meters must be accurately read on a regular basis and all customers should receive regular accurate and up to date bills for electricity used

5 3 1 Pilot Meter Reading Exercise

A customer billing system is critically dependant on accurate meter reading information being regularly provided As a test on the accuracy of the customer readings in the database and on the pattern of payments under the self assessment system KSE management agreed to the consultant s proposal that a pilot meter reading exercise on 5 000 domestic accounts in the Pervomavski region of Bishkek would be carried out This region was chosen by KSE staff as it had the most complete database at that time These 5 000 customers will also form the basis of the CAIS pilot at the conclusion of this project

The initial analysis was of payment patterns and consumption details from meter readings provided by customers Of the 5 000 accounts only 2 600 showed an outstanding balance and in 1 400 cases this was less than 20 Soms This illustrates the main problem in self assessment It is totally controlled by the customer With the self assessment system a payment can clear the account and it will remain cleared on company records until the next payment is made Of the 2,400 accounts which had a clear balance some had made no payment since 1994 In terms of the electricity consumption associated with the most recent payment on each account 3 923 payments were for less than 300 units and 1,077 payments for more than 300 units

The pilot reading project began on 12/11/96 and was suspended on 22/11/96 when meter readers were allocated other duties 2 327 customer premises were visited in the ten days Of this 2 200 readings were usable but the remainder needed rechecking An analysis was then carried out of the 2 200 new readings The objective was to establish the difference between the actual meter reading and the last reading provided by the customer Details were as follows-

Consumption Difference	No of Customers
< 500	1117
500 - 1000	357
1000 - 3000	278
3000 - 5000	100
5000 - 7000	88
7000 - 9000	84
> 9000	49

Assuming the initial examination of the 5 000 customers and the findings of the sample 2 200 to be representative of the total customer database then only about 50% of the domestic customers come regularly with true readings and pay what they owe The other 50% read and pay less frequently and are understating their true liability The findings indicate a serious deficiency in terms of non-billing for electricity officially consumed under the present self assessment system

5 3 2 The Present Process

Domestic Domestic customers receive no regular bill for electricity The system of self assessment is used instead When connected customers are given a personal book of payment slips pre-stamped with the account number and showing the meter number, and start reading Customers are instructed to read their own meter each month enter the reading in the payments book calculate the debt and pay this amount Customers can either pay to the company, at a post office or to the Housing Agency When a payment is made the system automatically calculates the corresponding reading and hence the consumption

Industrial/Commercial In most cases industrial and commercial customers also read their own meters Industrial customers provide a meter reading sheet monthly which shows the reading of each meter This information is inputted to the computer and a bill is produced and given to the customer for payment Commercial customers also bring readings monthly and are advised of the amount due for payment

175

Weaknesses in the Meter Reading Process
There is no regular co-ordinated meter reading schedule in operation in the company

The company has a control check in operation which should in theory have each account checked once a year however in practice all customers meters are not being checked annually

It will be difficult to read every meter once a year unless the meter reading activity is completely reorganised and a proper meter reading schedule is put in place Different regions have established varying approaches to meter reading and to setting targets for daily reading In Bishkek readers mainly decide their own work schedule This is in contrast to Issyk-Kul where readers work in groups in an area decided by local management

An additional problem is that many meters are still located inside premises or are behind protective grills so access is a problem Consequently meters in some premises go unchecked for periods of two years or more

Weaknesses in the Billing Process
Without a regular meter reading schedule it will not be possible to set up a proper billing programme Billing depends totally on regular reading of meters Under the terms of the electricity contract all customers should provide monthly readings but the reading and payment pattern from domestic accounts has become so sporadic that it would not be suitable for any billing system Actual bills are only prepared for industrial accounts

5 4 Income Management

Objective All payments must be properly reflected in customer accounts and all moneys securely, promptly and properly lodged to company bank accounts

The present process

In urban locations customers can make cash payments at company cash offices Post Offices Banks and at temporary locations which some Enterprises set up on designated days in outlying suburban locations Banks and Post Offices charge a small fee for this service Industrial customers are encouraged to pay by bank transfer but in practice sufficient funds are often not available to meet the charges Payment from Industrial customers may not always be in cash as some may comprise barter or part cash and part barter

In rural areas most payments are made directly to the meter reader Meter readers are authorised to accept payments and issue receipts to customers For many customers the cost of travelling to pay an account might cost more than the amount due on the account Customers therefore tend to wait for the meter reader No fees are charged by the company for this collection service

Banking Arrangements.

All Enterprises have their own bank account Company regulations stipulate that all revenues are banked daily by Enterprise companies Under a standing arrangement lodgements are transferred each day to the main company account In reality if receipts are small they can often be allowed to accumulate before banking It also appears that on occasion the more remote regions supplement expenditure from revenue These regulations may have to change if the policy of self financing goes ahead for the Distribution companies

Cash Control.

This control remains within each Enterprise It is based on

- receipts for customer payments issued at local offices post offices banks or housing agency offices
- computer totals produced when receipts are inputted
- monthly returns by the bookkeeper in each Enterprise
- bank controls operated by Finance Department in Head Office including Bank Book and monthly reconciliation of bank accounts

Daily Cash Receipting Procedure.

In Bishkek as in other locations the cashier balances the cash daily and batches receipts A covering batch header shows batch number date number of receipts and total sum The cashier also prepares the bank lodgement Details of daily lodgements are passed to the local Book-keeper

Receipts are sent to the computer input section for credit to customer accounts When all have been entered the total input is agreed with the receipts total on the batch header If there is a difference receipts and inputs are rechecked and resubmitted or adjusted at that stage Occasionally there are differences which cannot be resolved There is a suspense account open for differences in commercial and industrial accounts but none for domestic accounts Staff feel that as all domestic payment books are pre-stamped with account numbers etc it is relatively easy to clear domestic account differences Another reason may be the fact that the company does not operate any surpluses/shortages system for cashiers If cash is short the cashier must make up the shortfall Surpluses will not show up in such a system

177

Information Input.

Batched receipts from cash offices Post Offices Banks etc are inputted daily In effect this should include all receipts paid that day In practice if the number of receipts is small it is often some days before batched receipts are sent for inputting Post offices deduct a small charge of 0 7 percent for handling payments Citybank deducts 1 percent Customer accounts are credited with the full amount of payment and the charges are treated as expenses At time of input, invalid account numbers are signalled by the system for correction

As all locations do not lodge money daily or deliver receipts for punching daily, only individual balancing of batches is possible It is not possible to balance any day s lodgements with the same day s input This balance is therefore carried out after the end of the month The November input for example was balanced with the November lodgements on the 5th of December

Book-keeping Department.

Under current arrangements the responsibility of this department begins when money is lodged in the Bank The regulation is that balances on account for Enterprises are transferred daily to KSE main account

Finance Section maintain a Bank book balance to record lodgements by local offices post offices Citybank etc A monthly return is compiled from all bookkeeper reports This reconciles the daily lodgements for the month with the transfer of moneys to KSE main account

Weaknesses in the process

By its nature the income management system is segmented the process of inputting and checking of receipts is time consuming and the process of reconciliation is laborious

The total responsibility for cash control is split with Enterprises responsible up to the time of lodgement and Head Office responsible from there on There is no official audit trail in operation to establish that moneys collected from all sources do reach the company account

5 5 Debt Management

Objective To minimise the level of debtors at the least possible cost while maintaining a caring approach to customers with financial difficulties

The present process

The single largest liquid asset of the company is its receivables for energy supplied There is a statutory and financial obligation on the company to pursue its debtors However the policy approach adopted must accommodate changes in the economic and social environment At present there is no formal company collection policy There are consequently no formal follow-up or disconnection programmes operating Methods vary between locations In Bishkek the emphasis is on commercial and residential accounts Computer lists are prepared of accounts which have not made any payment for some time These are then visited meters read and charges calculated Supply is disconnected if payment is not received The follow-up lists are prepared when requested by meter readers This appears to be on a 3 to 6 monthly basis In Issyk-Kul, decisions on where collection and disconnection will be carried out are made by the Head of the Regional Electrical Network and meter readers work with electricians on disconnection duties

For residential customers the increase in tariffs and the general poor state of the economy has brought about a sharp rise in debt Industrial accounts are followed up closely for payment but even when disconnection for non payment is carried out there are cases where not all meters can be disconnected An example of this are steel works where furnaces cannot be allowed to cool or mines where air pumps cannot be stopped for safety reasons In effect although offices stores etc will be disconnected the business will continue to use electricity Disconnection details are not entered onto the database

Analysis of the debt position in various Enterprises shows a rising trend in the level of debt Efforts to contain the problem have met with varying degrees of success The figures for end of 1996 show Osh as the only Enterprise which has reduced the average debt per customer due mainly to the success of barter deals Bishkek is containing the situation but not reducing it Other Enterprises have been less successful The figures also indicate that the State or State owned enterprises are responsible for at least half of outstanding debt Action which can be taken by the company to recover this is very limited The company also owes money in the form of unpaid taxes Regular meetings are held with Ministry officials at which mutual settlement agreements are made but the debt continues to grow

Barter.

Barter is and will continue to be a fact of life in Kyrghyzstan At the moment as much as sixty percent of accounts are settled by barter The Company would of course prefer payment in cash but the reality is that cash is not available in many cases To handle barter a special department was set up some years ago and since then staff have become very efficient in dealing with barter

In accepting goods in barter the preference will always be for items which the company can use or which can be easily sold or traded on However just as the industries have difficulty selling the items they produce the utility may also have difficulty selling on goods accepted in barter

The value of the barter is negotiated by both parties in advance The company will try to agree as low a value as possible The account is credited with this value irrespective of any change in later dealings This is an area which should be subject to very strict control There is nothing wrong with accepting goods at a low value and trading them for an higher value later as long as all the proceeds of the deal go to the company

Credit Terms.

In theory company credit terms are quite specific i e monthly payment of all accounts While it has been possible to apply the credit terms to a limited degree with commercial and industrial accounts it is not possible with domestic accounts The domestic payment pattern is sporadic as it is left to customers to read their own meters and make the necessary payment

Management Information.

There are eight Enterprises a thermal network enterprise in Bishkek and a thermal electric plant in Osh Throughout the month information on production, electricity sales saleable electricity as a percentage of production receipts receivables etc is provided to Head Office by the Enterprises The breakdown is given also by customer category These figures are forwarded every ten days amalgamated analysed and passed to the company President Each enterprise is responsible for its own performance in debt management

This method of reporting provides no details on either large individual debts or of individual long outstanding accounts This does mean that Head Office are not in a position to give any particular instructions on accounts in debt Directors meetings are called on occasion to discuss the debt situation and EEN directors are asked to account for their own areas of responsibility

Company figures for the average debt per customer in each enterprise over the last three years are as follows-

	July 1994 (Soms)	December 1995 (Soms)	December 1996 (Soms)
Osh	338	493	403
Jalabad	271	267	402
Naryn	442	436	559
Kemin	300	295	415
Talas	145	382	698
Chui	360	500	666
Bishkek	70	57	70
Issyk-Kul	271	534	676

Weaknesses in the process

Two factors are critical to the success of debt management It must be possible to establish the exact amount of debt With the present self assessment system this is impossible When the amount of debt has been established somebody in the company must take ownership for the task of collecting this money Neither at Head Office nor at Regional level is there anybody appointed with responsibility for the credit management function No formal collection or disconnection programmes are in operation The control of debt management is left to local managers, or even meter readers to decide if and when disconnection for non-payment will take place It is not seen as a real threat by many customers and when disconnections are carried out many are quickly reconnected illegally

For residential customers a payment is entered into the database and the system automatically calculates the corresponding reading This can give the appearance of accounts being immediately paid to date The debtors ledger is therefore ineffective

There is no official method of finalising accounts which are disconnected At present the account retains the current account numbers and remains as an outstanding debt Consequently it is not possible to segregate these disconnected accounts from live accounts in order to facilitate a follow up for illegal reconnections

There is no official debt write-off policy in operation No provision is made in yearly accounts to write-off irrecoverable debts which are still carried in the system Some State accounts are still carrying pre 1991 debt

The absence of effective collection and disconnection programmes has contributed significantly to the present poor collection performance and the high level of receivables

Until such time as there is official meter reading of every account, followed by the issue of a bill and the establishment of a debtors ledger, proper debt management will not be possible

5 6 Computer System Support

Present Process

The principal problem which KSE has in building and maintaining an accurate customer database is one of resources There are 57 Regional Electrical Networks (customer centres) in the eight Enterprises Forty five have PC equipment which is used for the customer management system In eleven of these the process of transferring customer records is still not complete At present data on sixty percent of residential and commercial customers and on ninety five percent of industrial customers is held on PC

It is hoped to introduce PCs to the remaining locations in Osh Naryn and Talas whenever equipment is available The plan is then to network PCs in each Regional Electrical Network to the Enterprise of Electrical Network and then to network all the Enterprises to Head Office In Kemin and Chui the modem connections etc are already organised for this Even when all locations have PCs the customer database record will not be in one central location but will be the combination of PC records in all locations

The customer system used is one developed within the company It can be used by Commercial and Distribution staff It was designed on IBM PC/AT an MS DOS, using FoxPro 2 0

Principal Functions.

- to set up and maintain the database on customers meters receipts and information
- to process data on current payments and meter readings
- to input and correct information
- to print work schedules for meter reading checks debt follow up etc
- to programme meter replacement,
- to process any changes in customer or account information
- to compile monthly information on meter reading debt collection activities
- to create and print necessary documentation on request

The programme runs on the Windows principle From the main menu the operator can go directly to screens used to open and close accounts do a customer search using certain criteria or use the directories of meter details tariffs, addresses, and privileges on accounts

The Customer Record Screen shows the account number name address tariff monthly consumption privileges if applicable meter reading and payment details covering the previous eight payments, and full meter particulars including type, size, phase number date of installation replacement date date sealed seal number and nearest transformer ID No The present debt position is given where available

There are four sub-modes which can be used to open an account to close an account to conduct a customer search or to update directories on meters tariffs addresses and privileges

A separate Meter Exchange Screen is used for documentation of this

The Control Round Planning Screen is used to plan and print details of the check to be carried out by readers on debtors payment detail differences meters to be read etc The criterion for debtors or readings is the time elapsed since last reading or payment

The Control Round Results Screen can be used to enter the results of the check programme Entries cover account number date of check customer name new reading, amount outstanding and the meter readers code

The Batch Entry Screen or the Payments Screen are used to update payment details each day Batches are received from cash offices from post offices and from meter reader collections They are batched by payment date The maximum number of payments per batch is one hundred so there may be more than one batch from a location Batch headers list date number of notifications, and total sum receipted Individual receipt input details cover account number, latest payment latest reading Total punchings are agreed with total receipted and in the case of a difference, investigations are carried out Punching errors are corrected immediately Receipting errors are rechecked with the customer if necessary Account number errors are printed out for correction Batches are retained for up to three years to clear customer enquiries

The Meter Replacement Register can be used to schedule programmes of planned meter replacement however as the company has no stocks of meters at present

The Register of Meters by Classification is used to print meter information either on all meters or on meters where the date on the state seal has reached the expiry date Registers are prepared by region

The Payments Register is used to provide monthly information on payments It calculates the total amount plus the tax due for payment

The programme also offers various service facilities- operating with files calculator, calendar and save restore and index facilities for data bases

Conclusions

Considering the present lack of resources in the company the existing PC based customer system provides reasonably good support to the existing commercial management system However there are some drawbacks viz twelve locations still do not have PC facilities and in the locations with facilities not all customer records have been converted

As the system is being operated at present a customer payment is input and the system calculates the corresponding reading and consumption However the reverse does not apply It should be possible to input a reading and have the amount of debt automatically calculated

In many locations only one person has been trained on the system There should be at the very least one more for backup

The Control Round Screen allows the input of readings collected by meter readers but they are kept on file for information purposes only This facility should be expanded so that each time a reading is entered for an account the balance due on that account is immediately calculated and updated on the customer screen

Even when the system has been networked from Head Office to Enterprise Centres and from each Enterprise Centre to its own Regional Offices, essentially it will be a segregated system This does have disadvantages There is no company wide database for customers This can lead to delays in collating information at Head Office level when this must be provided by so many different centres If there are changes in general information e g tariffs these must be physically changed in all locations

SECTION 6

RECOMMENDATIONS

6 RECOMMENDATIONS

6 1 Metering

6 1 1 Meter Ownership

At present customers own their own meters Ideally meters should be supplied and owned by the company The reasons why a utility must have ownership of the meters are as follows

- The meter is the only means of measuring the quantity of electricity used
- The company must be completely satisfied with the accuracy of the meter to ensure that the customer is correctly billed
- The company must be completely satisfied with the integrity of the meter to ensure that there is no theft of electricity
- Proper controls can be implemented to ensure that all new customers are registered on the customer database
- The meter should be accessible to company staff at all times

It is expected that funds to purchase new meters will become available shortly

<u>Recommendation</u> When a sufficient stock of new meters is available the company should assume ownership of all existing meters and also become the sole supplier of meters to all future customers This will entail agreement at Government level

6 1 2 Meter Supply

The company does not have a stock of meters at present Efforts to improve the situation are badly hampered by this lack of meters

<u>Recommendation</u> The consultant strongly recommends that donors be contacted with a view to making donations of approximately 100,000 new meters This will greatly facilitate the process of change

6 1 3 Meter Access

<u>Recommendation</u> Where possible all new meters should be located outside premises to facilitate meter reading

In the case of all new housing developments, it is recommended that it become a condition of supply with the developer that all apartments are wired back to one meter location on each floor Meters should be housed in a lockable cabinet with glass viewing panels for meter reading This would eliminate many of the present problems of non-access or theft This is already happening in some developments but not in all
In a case where customers build private houses, it is recommended that it become a condition of supply that the house is wired back to a meter cabinet on an external wall This would eliminate the requirement to gain entry each time to read the meter

6 1 4 Unmetered Supplies

Recommendation, (Long term) All supplies should be metered

Recommendation, (Short Term) Until such time as it is possible to install meters in every residence the following measures should be taken

In the micro-regions where multi-storey supplies are unmetered, one single meter should be installed at the service point of entry This is one method of establishing exactly how much electricity is being used in the building and the information can be used as the basis for the average charging

In housing micro-regions, where large numbers of houses are unmetered, check meters should be fitted to the final sub-station on each line This will establish the amount of electricity being used by customers on that line, and would help to establish line losses on different parts of the system.

6 1 5 Meter Inspection

Recommendation Meters which have not been inspected during the last year should be identified immediately A programme should then be developed setting realistic targets for each enterprise to clear the backlog Management should review the inspection results monthly to ensure action This review would cover

- *target number of inspections*
- *actual number inspected*
- *collection as a result of inspection*

6 1 6 Theft of Electricity

A number of recommendations are made to counter theft of electricity as follows

- *Additional resources should be employed to establish the extent of this problem.*
- *Special squads, fully trained in detection of meter interference, should be set up*
- *Incentive payments should be made to staff who report these cases*
- *The company should seek to improve technical methods of connection and disconnection which make this practice near impossible*
- *The company should take steps to change the attitudes of the public towards the theft of electricity*

6 2 Requests for Electricity Supply

<u>Recommendation</u> A procedure must be put in place to ensure that every customer connection is recorded on the database Modern versions of the Application for Supply form and the Agreement form should be printed for each individual Enterprise These would incorporate the full conditions for supply and clearly lay out the obligations of both company and customer The Application Form should be printed in pre-numbered pads The numbering of each pad is checked before use The basis of control is a regular continuity check of returned forms The Agreement form should be cross referenced with the same number for filing and retention purposes after the relevant details, including form number, have been entered on the database This is a simple method of ensuring that every connection gets into the computer records

6 3 Meter Reading/Billing

In the power supply business there must be the capacity to measure the delivery of power to each individual customer and to create an accurate billing system in conjunction with a pro-active debt management policy

<u>Recommendation</u> A properly organised meter reading schedule must be established to ensure that every meter is regularly read, and that readings are used to produce an accurate bill for delivery, by hand if necessary, to each customer This will establish a proper debtors ledger which will form the basis for modern debt management through an organised collection /disconnection programme

Having regard to the fact that average customer earnings are low and that the price of electricity will increase substantially in the next few years, the recommendation is that domestic accounts be read and billed every three months and that commercial and industrial accounts be read and billed every month For domestic accounts a properly planned reading, billing, delivery, and collection can be scheduled throughout the three months to spread the workload evenly in all parts of the process

When the company moves to regular meter reading and billing a fixed standing charge should be applied to all accounts This is a standard method of recouping ongoing charges for meter reading, billing and debt collection The additional funds generated should be used to purchase meters

This will inevitably mean radical changes at Head Office and at enterprise level both in the way work is organised and supervised and in the working methods used It will mean that either additional staff are employed or existing staff are retrained and deployed to new duties As an alternative to staff meter readers many utilities now use outside contractors to read meters Under this system one person contracts to read all meters in a particular area The contractor is paid a fixed rate per meter but for actual readings only The terms of the contract will stipulate a time schedule when reading should take place including start and finish dates for reading and return dates for the information

This system works well in other countries The incentive for the contractors is that the sooner they are finished, the sooner they are paid It has been the experience in utilities using this system that contractors work faster and for longer than staff For the company faster reading means faster billing and delivery The same contractor could also be used to deliver the bills in the reading area As contractors are not members of staff, they are not allowed to accept payment or to issue receipts Using this system would free up existing staff for collection and disconnection duties Ultimately the decision will rest with company management but alternative reading methods should be carefully considered

Before embarking on more frequent meter reading and billing it will be necessary to inform all customers This can be done through a campaign of public announcements on radio television and in newspapers These would invite the co-operation of the public explaining that electricity is a product which must be paid for and that the future development of the power systems depend on the Company s ability to collect what is due Publicity sheets could be delivered at intervals by meter readers This would maintain public awareness of company plans Introducing the new system at a company press briefing would mean that it could be reported as a news item This approach will limit the cost of advertising these changes

Recommendation (Short Term) In the period before a proper meter reading and billing system is put in place, all customer readings should be inputted to the computer system The system should be modified to calculate the amount outstanding on the account If no payment is forthcoming, these outstanding accounts must be followed up for payment

6 4 Income Management

6 4 1 Payment Facilities

Many rural customers must travel considerable distances to pay accounts and therefore tend to wait until a meter reader calls before paying The longer the time gap between calls the less the likelihood that the customer will have money to pay This is a very expensive collection method The company must therefore find ways to get the customer to come forward with money

Recommendation The company must improve the level of customer service particularly in regard to the provision of payment facilities On specified days each month, temporary cash receipting facilities should be set up in suburban locations or in rural areas This does not need to be an elaborate operation A small area in a supermarket or in a convenient building where people congregate can be used It only requires a desk, a chair, a receipt book and a staff person to issue the receipts This approach has proved to be cost effective in power utilities in other countries It is being done in some Enterprises and it should become standard practice in all

6 4 2 Cash Control

An internal audit is an integral part of any income management system One important function is an independent check that all moneys collected by any member of staff in an enterprise is lodged and transferred to the company main bank account All exceptions to this should be covered by prior approval At present the enterprise controls the flow of information on lodgements provided to Head Office With no audit check in operation there is a possibility of a breach here which should be closed to protect both the company and those involved in cash handling duties

Recommendation An internal audit function be established in the income management area The duties of the audit function to include regular checks on

- *Adherence to accountability controls*
- *Strict balancing procedures*
- *Official receipt for all payments*
- *Serial receipt numbers*
- *A proper audit trail*
- *Supervisory/Auditor cash checks*
- *Strict bank lodgement procedure*
- *Separation of billing from expenditure cash*

Recommendation In each enterprise, one suspense account should be used to hold all unassociated payments whether domestic, commercial or industrial The account should be supported by a list of dates, individual payments and incorrect account numbers, which can be used in clearing customer payment queries The balance on the account should be rigorously controlled by Customer Supervisors to ensure that balances are cleared only to the proper accounts This would be particularly important if the system of reporting shortages/surpluses is reintroduced for cashiers

6 5 Debt Management

Effective debt management is critical to the liquidity position of any company This is undoubtedly the major challenge facing KSE-JSC The successful functioning of any new industry structure will depend on greatly improved payment patterns by the state and by other customers The ability of Distribution companies to make payments to Generators will depend on good cash flow Failure to reduce the present debt problem could set up a chain reaction which could destabilise the industry and make a new structure impossible to operate This would not be in the interest of the state the company or the customers who use electricity

Recommendation *Efforts to control and reduce outstanding debt must be given a high priority in the company*

Clear responsibility for debt collection should be established in the company It is recommended that a Customer Service and Credit Manager be appointed who will report directly to the Commercial Director, and who will take the overall responsibility for the billing and collection of all electricity consumed The responsibilities will include the implementation of policies and standards throughout the whole commercial management activity, the communication of these to management in enterprises, and the monitoring of performance at enterprise and company level

At Enterprise level, the Director should take responsibility for meter reading, billing and collection The Director should appoint a Customer Manager to manage the meter reading billing function and a Credit Controller to manage the debt management functions These people would deal directly with the Regional Networks

In Bishkek, for example, where there are four regions the Customer Manager could have four senior clerical staff and four metering supervisors reporting to him. Each meter reading supervisor in turn would control all of the work of a group of meter readers He would allocate work, give any required reading instructions, establish start and finish times for each block of work, and ensure the return of all readings to the clerical function The responsibility of the designated clerical staff would be to ensure that readings were inputted promptly, bills issued and organised for delivery

The Credit Controller would be responsible for the prompt collection of all moneys due to the enterprise, and the implementation of all credit policies and practices as advised by Head Office His debt management duties would include

- *identification of high risk or marginal accounts likely to get into financial difficulty*
- *taking necessary action to safeguard sales to these customers This might include the imposition of deposits or advance payments*
- *implementation of agreed collection and disconnection policy in the Enterprise*

Present and proposed Commercial organisation structures of KSE-JSC are shown in Appendices 3 and 4

Undoubtedly the single most important factor in controlling debt is to have total information on the debt This will never be possible with a self assessment system Knowledge of the total potential income is a crucial starting point from which to manage the activity

Recommendation *As a significant step towards improving collection, the present systems in the customer service chain of activity should be modernised*

The long-term relationship with customers must be carefully managed In this regard much more use should be made of the telephone as a quick and cheap method of contacting customers Most houses in urban areas have telephones now, yet little use is made of this as a means of contact A first call to debtors by telephone is now standard practice in many utilities It saves the cost of a 'warning' call by staff Many customers react better to a telephone request for money than to a personal caller threatening disconnection The first visit from staff can then be to disconnect supply without the need to contact a customer This method can save a considerable amount of staff time and effort on collection or arranging access to read meters To make full use of the telephone it is first necessary to gather telephone number information from customers and this should be done at every opportunity Automated Systems Dept should allocate part of the customer record screen to hold telephone details The telephone company obviously have a name and address database for customers They should be approached to see if they would provide this information on disk for Bishkek and other urban locations

A proposed Collection Process is set out in Appendix 2

Options for Dealing with the Less Well Off

The collection activity is politically sensitive for all types of customers because electricity is an essential service In dealing with the less well off customers a number of approaches are proposed as follows

(a) *Easy Pay With this system customers are encouraged to pay for electricity as they use it rather than wait for a bill every three months The principle is quite simple Computer records are used to establish a customers average monthly charge for electricity This figure is divided by four and customers are encouraged to pay this amount weekly If customers keep to the arrangement, the credit which builds up on the account may be sufficient to meet the new bill when it is due for payment In Kyrghyzstan customers are already accustomed to using payment books but they do not use them frequently Easy Pay is a good system for both customer and company The customer learns to budget for a weekly electricity payment The company has a steady flow of income and has eliminated the need to follow up on what might otherwise be problem accounts*

(b) *Budget Meters When resources are available to purchase meters, another option which could be offered to customers is card operated or token operated Budget Meters Although intended for customers*

with payment difficulties, these are now widely used by customers who prefer to 'pay as they use' The meter is card operated and can be programmed for single or multi-rate tariffs At the time of installation, the installer can individually programme the meter for the circumstances of each customer He enters the number of rates required, the price for each rate, the switching time for each rate and any standing charges This makes it ideally suited to privilege customers It is also possible to programme the amount of debt on the account, and the rate at which this is to be collected through the meter charges

Tokens are purchased from the electricity company by the customer and inserted in the meter The meter display then shows the value of the token accepted and the total amount of debit or credit When the credit on the meter reaches a pre-determined low level, the meter gives an audible signal which lasts for thirty seconds

The customer should then purchase another token, otherwise supply will be disconnected when the remaining credit is used An over-ride facility can however be programmed into the meter to ensure that customers are not cut off between certain time i e 17 00 hours and 09 00 hours, but any electricity used during this time will be automatically deducted when the next token is inserted

In Europe, some electricity companies have converted totally to this system due to its versatility These meters detect any attempts to reverse power, and in the case of tampering will automatically disconnect supply They can also be configured to apply set limits of current usage The tokens used are randomly coded which avoids fraudulent reproduction This also removes the need for expensive accountancy backed procedures The companies manufacturing the meters also manufacture the tokens and can supply the software package to support the complete system.

(c) *Help Clinics For customers with payment difficulties, a programme of clinics can be run in each Region These foster a good public image of the company as an organisation prepared to help customers who have financial difficulties They operate in the following way*

- *an area with a high level of arrears is identified*
- *the use of a local hall or meeting centre is arranged for specified dates*
- *the worst arrears cases are identified and a personalised letter is delivered to each asking them to call to the 'clinic' on one of the days chosen to discuss their account*
- *the purpose of the clinic is not to collect money but to discuss all aspects of the account*

- *the experience of utilities using this approach has been that 40% of those targeted will turn up*
- *the clinics have been favourably received by customers who welcome the opportunity to discuss their account in confidence, at length, and in their own environment*

6 6 Management of the Customer Database/Computer System

6 6 1 Short Term Recommendations

(1) Locations with PC facilities, but which have not finalised the conversion, should do so as soon as possible In the meantime, all new connections, reconnections or meter or payment adjustments should be strictly controlled in all areas, particularly areas which do not have PC records This will ensure the integrity of customer records until such time as either all records are held on a networked PC system or until mainframe facilities are again available and all records can be held on a single masterfile

A limited review of the system shows that in locations which have converted customer records, the database includes all relevant customer information Some work is required however to develop the functionality required to support immediate business needs and to provide timely and meaningful management information The immediate business needs relate to establishing the debt position of all customers and to managing the debt effectively

(2) Additional functionality should be added to the database to allow the company to

- *record all meter readings whether provided by customers or from the details of meter inspections*
- *establish the exact amount of debt outstanding whether or not payment is made at the time*
- *identify non-payers by amount outstanding and age of debt*
- *identify all disconnected accounts*
- *identify and list privilege customers*
- *identify and list customers who stole electricity*
- *list outstanding debtors including phone numbers*
- *analyse the results of inspections*
- *analyse results of electricity theft detection programme*

(3) Information should be made available to management at regular intervals to allow review of the total position for the company and to facilitate the monitoring of performance against targets for enterprise companies

(4) At present, the input of a payment triggers automatic calculation of a reading The programme should be amended so that the reverse also applies For a customer system based on meter reading to work, the input of a reading should trigger automatic calculation of the amount outstanding A proposed billing process is set out in Appendix 1

(5) Where accounts have been disconnected as a result of a customer request or for non-payment, the account should be closed if payment or a reconnection request are not received within a certain period of time e g one month A special set of customer account numbers should be used for this purpose Periodically lists of these should be prepared for rechecking by staff to verify that supply has not been reconnected illegally

(6) When entering the results of the meter reading control checks, a useful facility would be one which allowed the entry of comments in code form. The codes could cover instances of faulty meters, dangerous installations, by-passed meters, illegal connections All unusual cases reported in this way by meter readers could be highlighted monthly on reports to Commercial Department

(7) If the existing PC system is not capable of printing a simple bill and copy, then these will have to be prepared by hand In areas without PC facilities, all billing will be hand prepared The top copy will be delivered to the customer The second copy will be the control document used for follow up

The above recommendations are geared to maximising existing strengths and building on progress to date They recognise that there are immediate business needs that must be addressed in a practical way The existing system can meet these needs but may not be able to meet the longer term needs

6 6 2 Long Term Recommendations

Whilst the changes outlined in 6 6 1 above will achieve some worthwhile improvements in the short-term, it is recommended that a new Customer Billing and Information System on a modern computing platform is implemented in the medium to longer term. A modern comprehensive Customer Billing and Information System is critical to the efficient management of KSE-JSC s meter reading billing collection and accounting activities The implementation of ESBI s Customer Accounting and Information System (CAIS) **on a pilot basis only** later in this Project is a first step towards achieving this objective The final report for this Project will incorporate an evaluation of the pilot implementaion of CAIS in KSE-JSC and will outline what would be involved should KSE-JSC decide to procure CAIS for the whole of the utility

6.7 Attitudes

There is a need for a fundamental change in attitudes in both company management/staff and customers. Management and staff in KSE-JSC need to adopt a more commercial approach and at the same time adopt a more customer friendly approach to its customers. The effective management of the metering, meter reading and billing functions and the effective management of money and credit will have a major impact on the viability and future success of the company.

Recommendation — *A comprehensive programme of training should be provided for all management and staff in the Customer Management area covering policies, procedures and systems. Such a programme of training would cover*

- *metering procedures*
- *theft detection*
- *meter reading*
- *billing*
- *payments*
- *cash control*
- *the role of the Customer Service and Credit Manager*
- *credit policy*
- *credit risk assessment*
- *payment terms and credit limits*
- *collection strategy*
- *collection techniques*
- *measuring and reporting on performance*
- *adopting a more commercial approach overall*

In a competitive environment, it is important that a good relationship between company and customer is built up and maintained. This process should begin when a customer first requests supply and continue for as long as that person remains a customer. Customers are more likely to appreciate and pay for a good service.

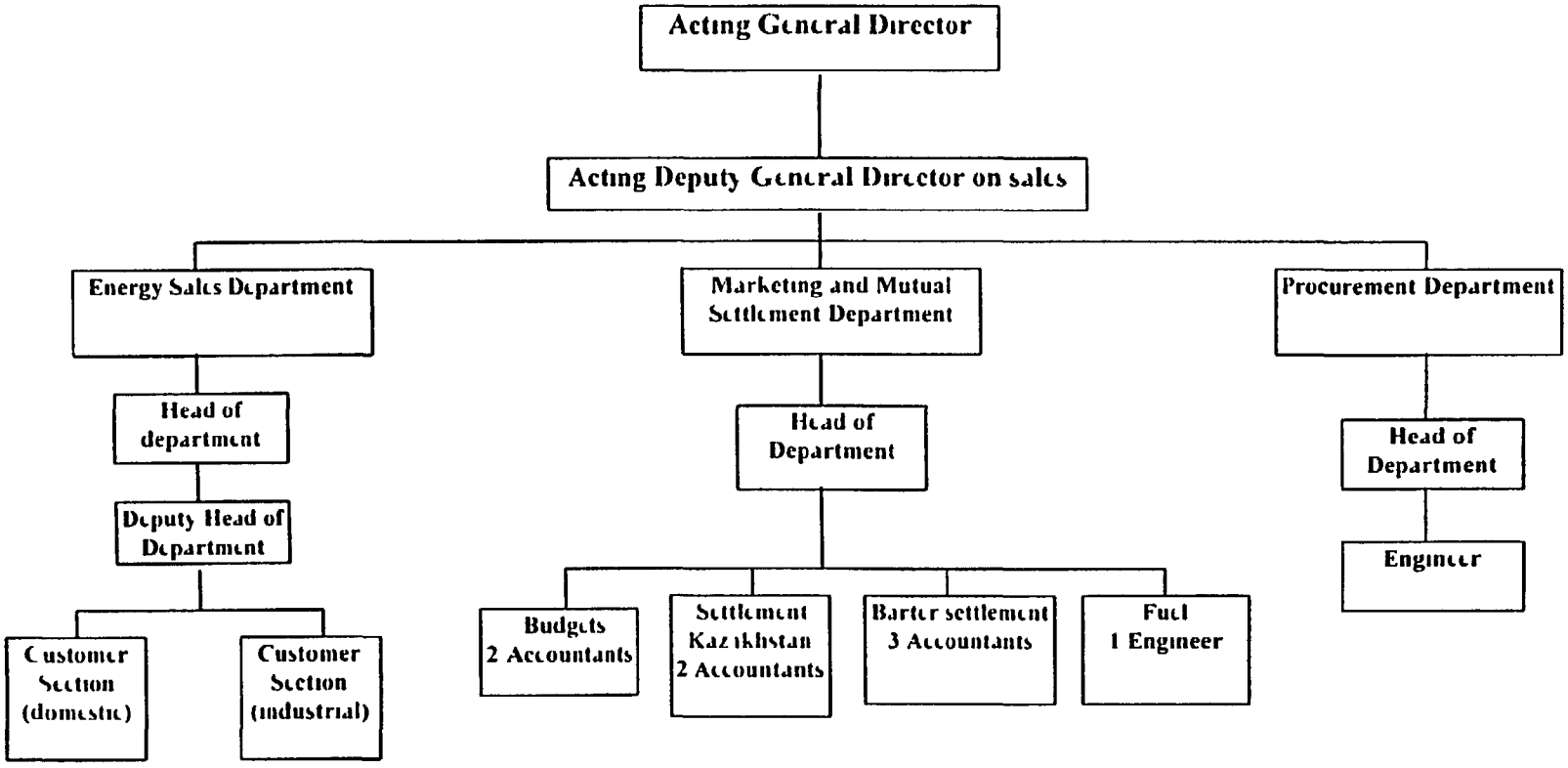
Recommendation — *As a first stage in developing a customer service culture in the company, a customer service training programme should be introduced in KSE for all customer contact staff to familiarise them with the importance of customer service and to make them aware of their role in delivering a good service.*

19

Recommendation With regard to improving customers' understanding of the Company's operations a National publicity campaign is recommended in order to explain how the company is planning to read, bill and operate debt management in the future and to encourage customers , with payment problems, to meet with Company staff for discussions on how to solve their problems etc The campaign should be co-ordinated to allow for the dissemination of this information through the Media and through direct contacts with the customers

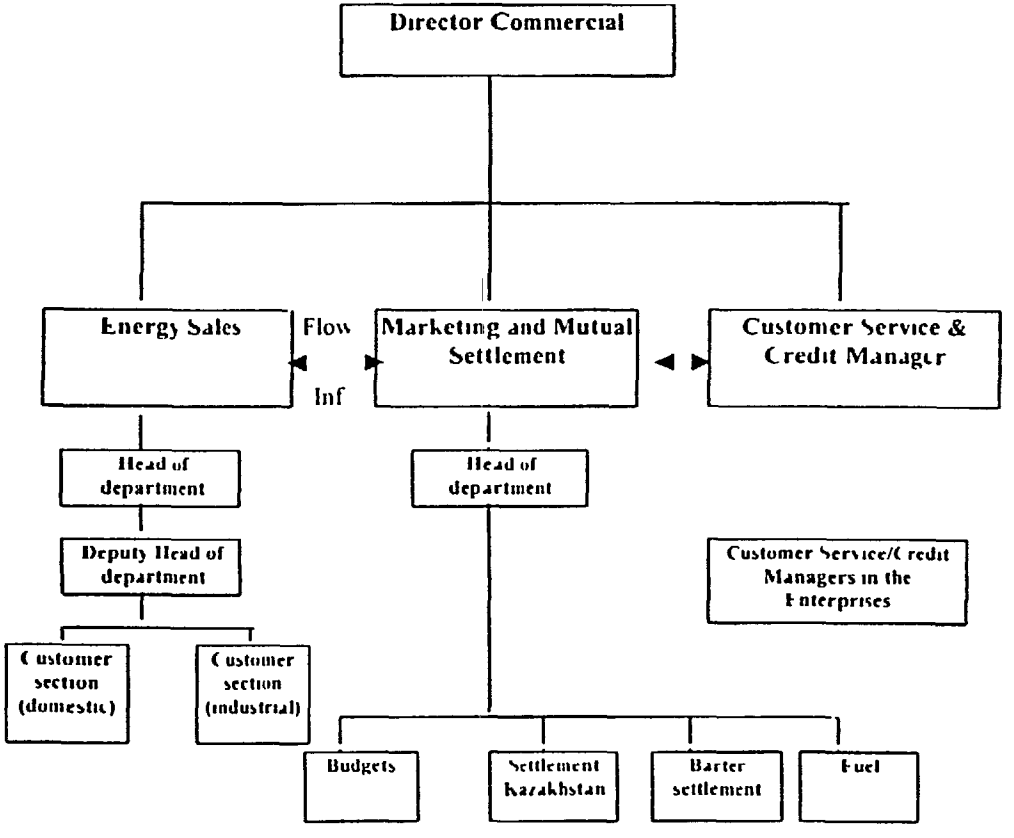
Appendix 3

Present Commercial structure of KSE-JSC



Appendix 4

Proposed Commercial Structure of KSE-JSC



APPENDIX 5

COMMENTS AND SUGGESTIONS FROM WORKING GROUP MEMBERS

Suggestions

1 That only electronic or tamper proof meters should be erected

2 That the service from pole to meter position be carried out using insulated cable only This would make illegal connection more difficult

3 Service connection to private houses should be as high above ground as possible This also would also make illegal connection difficult

4 That work should begin immediately on metering of all feeder lines from 35/10kv sub-stations At present it is not possible to accurately establish technical losses as against non-technical losses through non-billing or theft In regions with extreme theft problems consideration should also be given to conducting a similar exercise at 10/0 4kv substation transformers Following meter reading of customer meters and check meters it would be possible to establish known sales and to establish technical losses The difference between the consumption and the production figures would represent the non technical losses on that particular line

5 Changes in technical policy should be considered in regions with extreme theft problems It might be of benefit to consider replacing long 10/0 4kv lines with shorter lines and transformers for each group of houses

6 On the basis of the recent Energy Law a new agreement should be entered into with all customers This agreement would clearly stipulate the rights and obligations of both customer and company Payment conditions should be clearly explained

7 A full check should be carried out by company electricians of all three phase meter installations, as many customers tamper with these This would also serve as an independent check on the accuracy of meter reading

8 A full check should be carried out on all restricting insulators on poles Many of these are in poor condition and if replaced could result in a reduction in electricity load

9 There should be a move to maximum demand tariffs for industrial and large commercial customers rather than the present usage tariff This would be an incentive to these customers to shift load to a time of day which was of greater benefit to the company in terms of generation requirements

201

Comments

I disagree with the suggestion to install all meters in a single meter location in new multi-storey buildings While this would be useful for meter reading purposes it would add substantially to building costs and would be resisted by developers I think it would be sufficient to insist on a single location on each floor situated in a suitable cabinet With meters in the majority of premises now theft will not be such a problem (R K)

After some discussion it was agreed that this proposal would replace the original suggestion in the report

I think that customers must be made to understand that they must pay for the electricity they use I very much like the idea of erecting a single check meter in all large multi-purpose buildings and in multi-storey developments It will be a simple method of checking for theft in the building This would justify the costs of installation

Regarding the suggestion on control of electricity requests, I agree and will try to introduce this procedure as soon as possible

Meter Reading/Billing The situation regarding contractors needs to be considered carefully It will simply add to our costs Reorganising the way that our existing staff work and making full use of computer facilities may be a better way to proceed It may even be necessary to reconsider our own payment scales for meter readers to encourage co-operation with the changes we propose

I agree with the suggestion regarding press briefings to bring our new policy to the notice of customers There is unfortunately an attitude that electricity should be provided free of charge and theft is therefore a problem for us

I agree with the suggestion that we rotate meter readers around different areas I will try to put this in place and make rotation a constant feature of meter reading

We appreciate the advice on debt management and the importance of proper data base management We have the customer data in two regions of Bishkek complete and we hope to have the remaining two completed by the end of February

In general, I feel that the recommendations are necessary for us

APPENDIX 6

VISITS TO ENTERPRISES

Visit to Karakol Enterprise of Electrical Network - 12/2/97

Discussion took place with Mr Abedakasimov, Director and with Distribution Dept staff It was a good meeting There was no hesitation in providing information on all aspects of the enterprise The Director sees customer debt as his main problem He services a mixture of both urban and rural customers covering a vast area and this brings particular difficulties with customers in rural villages, countryside etc In the main towns many industries have closed down with consequent unemployment and debt problems Disconnections are carried out on all customer categories - 4 200 from 22 000 Karakol customers during 1996

Illegal connections to the system and reconnections following disconnection are a growing problem Disconnections are now rechecked as a matter of course after three or four days When an illegal connection is discovered all possible efforts are made to ensure that it will not happen again There are no guarantees however but additional charges are calculated at the time and a further charge is imposed for time costs Multi-storey buildings are hardest to control Individual houses can be disconnected at the pole and while reconnection is not impossible it is more difficult

Meter Reading For the complete enterprise there are 70 meter readers with 12 in Karakol Urban meter readers have been allocated 3,000 meters each and rural readers 1 500 Apart from disconnecting at the meter in multi-storey buildings readers do not do disconnections for security reasons The situation differs from Bishkek in that readers are not permanently confined to a particular area All report to the Head of the local Regional Electrical Network each morning and go from there to the area allocated to them Rural readers are taken by company transport and dropped in groups in different locations They are picked up again each evening Because of the lack of payment facilities in rural areas readers collect money from customers This is brought each evening to the Regional Electrical Network and paid into the cash office The reading level has been set at 35 meters per day in urban because of problems of non-access and at 25 per day in rural because of distance and cash collection duties

Cash Facilities There are two cash offices in Karakol city one in a Bank and a temporary payment facility for two days each week in the Micro-regions Use is no longer being made of the Post Office or Savings banks due to difficulties of money transfer Each month approximately 500,000 soms is collected between barter and mutual settlement Barter is mostly in food or materials such as electrical goods and where possible is utilised as part salary for employees Mutual settlement may be with the Tax authorities or for essential services such as auto service Cash is banked each day but is no longer automatically transferred to the Head Office account Each month payment must be made

to Toktogul Hydro Electric Station for electricity supplied and sufficient retained to pay salaries, taxes and social funds The balance is transferred to the Main Account

State Debt This accounts for 50 percent of outstanding debt Any payments received are most often in the form of barter

Unmetered Supplies There are approximately 1 000 of these We discussed the methods being employed by Mr Kolobaev in Bishkek to try to convince customers to buy meters The Director had not heard about this and was very interested A copy of the agreement with the city management in Bishkek will be forwarded to him He is willing to try out any new methods

PC System is available in all of the seven Regional Electrical Networks but the full customer database is not yet up on it In most locations only one person has been trained in the operation It is vital that the balance of the customer database is inputted quickly even if it means having this done with help from Head Office At least one other person should be trained on the system in each location

The meeting closed with a discussion on the TACIS Project generally and the Director was very interested He was given a copy of the draft recommendations and he has agreed to consider them A meeting was also held with the staff in the Distribution Department and with the Chief Accountant

Visit to Choponata Regional Electrical Network - 14/2/97

Meeting with Head of Regional Electrical Network Mr Dosaliy As could be expected the major problem for Regional staff is debt collection Geographically the region is very spread and difficult to cover adequately There are 17 800 domestic customers 960 state customers and 500 between industrial and commercial The customer breakdown is 10% urban and 90% rural Disconnections are being carried out regularly on both urban and rural customers and on Industrial customers The region includes the resort complexes of Issyk-Kul lake all of which are state properties Debt for the Regional Network is 13m Som (7 5m Som domestic 5 5m Som State - including 2m Som for Agriculture and 2 5m Som for State properties resorts etc) While in theory it is feasible to disconnect State accounts, in reality it is not done In Winter the level of disconnections is approximately 100 per month In Summer it can be as high as 500 All disconnections are registered in the office and a permanent record is kept

As in Karakol **illegal connections and reconnections** are a problem In an attempt to try to control it the Head of the Regional Network encourages the reporting of these from any source It has even been intimated to customers that this is one of the main reasons for low voltage problems and this has produced quite a lot of information on theft In cases of illegal reconnection, a recalculation of charges is done and a charge of 75c for staff costs is also charged Many customers cannot afford the additional charge so if an account is paid the charge is often waived

There are 12 meter readers in Choponata While in effect each has been allocated an area readers normally work in groups This is mainly for safety reasons as they collect money from rural customers On one day each week meter readers and electricians work together on disconnection and electricity theft follow up A policeman goes out with each group Work is also done at night as it is easier to spot light in disconnected premises

The areas which readers work in each day is decided by the Head of Network This is based on debt and theft information Each day he gets figures on line overload letters from customers information from staff etc There are 28 villages in the area with varying distances of between 10 and 15 kilometres between them Readers do not have permanent transport and usually use bus services Each has been allocated 1,500 customers but with distance etc it is difficult to cover these often To cover all meters adequately he feels that an additional eight readers are needed Each reader would then cover approximately 800 customers and would allow for a constant reading schedule is to be established The Head of Network tries to ensure that they work as full a day as possible and has set them a target of 60 readings per day This is difficult to achieve in rural areas when time must be spent collecting, issuing receipts etc

Cash Facilities There are two cash payment centres available one in Choponata and another in one of the villages Most collection is by meter reader All moneys collected are transferred in total to the Enterprise of Electrical Network

Disconnection Meter readers are only permitted to do disconnections at the meter mainly in multi-storey buildings Private houses are normally disconnected at the pole by electrical staff All disconnections done are registered at the office and a permanent manual record is kept

Unmetered supplies At present about 1,000 customers are unmetered There are problems particularly in the new housing micro-regions Illegal connections are done at the pole or from other customer premises In Komsomol village for instance there are sixty houses connected illegally The Head of Network threatened to switch of supply at the sub-station, but was threatened that if this was done the sub-station would be burned He is at a loss to know what to do now !

205

PC System There is one PC at the Network office Only industrial customers are on the database at present so the full benefits of the system cannot be utilised It is intended to have all customers on the system eventually but only one staff member has had any training in using the PC Training should be provided to at least one other person If resources are available in Head Office this should be arranged as a priority

Additional Measures In Choponata in an effort to get customers to pay the Head of Network has begun to publish lists of defaulting customers in the local newspaper They are listed by village name amount outstanding and type of debt It is early yet to establish how effective this is but it is a good example of trying every possible method It should be considered for use in other locations

Politics There appears to be a lot of political interference in the running of the region The Head of Network is often called to answer for his actions at Local Administration Level On occasion he will be instructed not to disconnect in particular cases or areas This does little to help the debt collection effort Unfortunately it seems to be a fact of life

Comment ***The impression of the Consultant is that management and staff in both locations are knowledgeable, helpful and extremely courteous There was no hesitation in answering questions or providing information Their worry about the increasing debt position is obvious The impression was of an enterprise company working hard but fighting a losing battle at present***

Visit to Osh and Kadamjai - 24th / 25th February 1997

Osh is the only enterprise which managed to reduce the level of debt per customer in 1996 Mr Myrzagotov had recently visited and discussed the proposals and recommendations which had come from the working group Osh management were very interested in the project and requested a general discussion A visit was organised to Osh on 24th Feb and to Kadamjai on 25th Consultant and Mr Myrzagotov met with the Regional Director, Deputy Directors in charge of the Distribution Centre and the Regional Electrical Networks and with their staff There is a very positive attitude throughout the staff in Osh They are fully aware that they have problems with customer debt etc and they are very interested in anything which might improve the situation

There are approximately 260 000 residential customers 308 commercial and 307 industrial customers in Osh 151 000 of the Residential customers are located in urban areas and 108,000 in rural areas The enterprise has the same problems as the other enterprises In urban locations, there is a very large unemployment problem and consequently a large debt problem The situation in rural areas is different however The Fergana Valley is very fertile and farmers generally are able to pay for electricity Barter is the usual method of payment but the goods which are bartered are easily turned into cash (agricultural goods, silk etc) This method accounts for seventy five percent of payments at present

There are 208 meter readers in the Enterprise and the intention is that they read every meter once a year but the reading targets would appear to be set low at 20 to 25 urban and

15 to 20 rural each dav As in other locations This seems to be because of access problems in urban areas and distance problems in rural areas Meter readers do internal disconnections in urban areas There was quite a lot of interest and a good discussion on the proposal for contract reading

Theft of electricity through illegal connections or reconnections following disconnection are a problem

There is a follow up programme in operation to try to reduce the problem The possibility of a major publicity campaign to try to change the attitudes towards electricity both with customers and with legislators was discussed Also discussed was the handling of cases of electricity theft in Ireland the court system, fines, possible imprisonment etc

Political interference is not as major a problem as it is in Issyk-Kul The Enterprise Director is a strong figure in local politics, having been the Lord Mayor of Osh for the past two years He feels that in the future State debt may not be as serious a problem as before It appears that local administrations will now be responsible for the debt of budget organisations in their own areas and that it will be easier to get paid locally He also raised the question of pre 1991 debt (soviet) which is still sitting on accounts and will never be paid now The recommendation for a company write-off policy was discussed in this regard

There was a visit also to the Customer Payments area in the main building to speak to the staff and see how they operated There is one PC here to input payments and readings All customer receipts are entered into a register and the details are inputted from the register to the PC When the Consultant queried the need for a register still he was told that the PC system was only in place since September Only one person in this area is fully trained but four more are learning the system A separate PC is used for the industrial / commercial customers and the preparation of their bills Readings for Industrial customers are taken each month by staff Unfortunately all of the Regional Electrical Networks do not have PCs as yet

In Kadamjai, where there are twenty two thousand customers all records are on paper still The Head of Regional Network was annoyed that they have been left for so long without computer facilities There was also a discussion here on the project and recommendations and staff were very interested in both the project and in ESB generally i e staff numbers customer numbers, price of electricity collection policy disconnection policy treatment of theft cases etc It was a very worthwhile visit generally