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**REGIONAL SEMINAR  
(ENGLISH LANGUAGE)**

**NIS Institutional Based Services Under the Energy  
Efficiency and Market Reform Project  
Contract No CCN-Q-11-93-00152-00**

**CAR Regional Energy Trade,  
Electricity Contracting and Pricing Reform  
Delivery Order No 11**

*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

*Prepared by*

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February 1998

# CAR ELECTRICITY CONTRACTING AND PRICING REFORM

## CAR WORKING GROUP MEETING

Tashkent, Republic of Uzbekistan  
9-11 February, 1998

*Prepared by*

U S AGENCY FOR INTERNATIONAL DEVELOPMENT  
Bureau for Europe  
Office of Development Resources  
Energy and Infrastructure Division  
Washington, DC 20523

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MEETING OF THE CENTRAL ASIA ELECTRICITY WORKING GROUP

*SPONSORED BY*

USAID PROJECT  
ON  
ELECTRICITY CONTRACTING AND PRICING REFORM

9-11 FEBRUARY, 1998  
TASHKENT, UZBEKISTAN

AGENDA

9 February, Monday

11 00 - 13 00                      Registration of the participants  
13 00 - 14 30                      Lunch

Session 1

14 30                                  Welcome and opening remarks by Dr Barry Primm Energy  
and Environment Officer, USAID Mission for Central Asia  
14 45                                  Opening remarks by Mr I Ametov, Chairman of the  
Electricity Working Group  
15 00                                  Introduction of the participants    Review of the agenda  
15 15                                  Review of information received during Study Tour of US  
Power Pools - discussion led by Chairman Ametov with  
presentations from each nation s delegation  
16 00 - 16 20                      Break  
16 20 - 18 00                      Setting of near-term, mid-term, and long-range goals  
necessary for the achievement of the Central Asia Power Pool  
19 00                                  Reception, hosted by USAID

10 February, Tuesday

Session 2

09 00 Presentation on results of US water usage study tour and proposed formation of regional water and energy resources consortia

by Mr B Mambetov, Deputy Chairman of the ICKKU Executive Committee

09 30 Presentation, discussion, and legal review of draft multilateral agreements pertaining to the Unified Power System of Central Asia

10 30 - 10 50 Break

10 50 Presentation, discussion, and legal review of draft multilateral agreements pertaining to the Unified Power System of Central Asia (continued)

13 00 Lunch

Session 3

14 30 - 15 45 Presentation, discussion, and legal review of draft multilateral agreements pertaining to the Unified Power System of Central Asia (continued from previous session)

15 45 - 16 05 Break

16 05 - 17 00 Presentation, discussion, and legal review of draft multilateral agreements pertaining to the Unified Power System of Central Asia (continued)

17 00 - 18 00 Discussion of items to be included in the Memorandum recording the accomplishments of the meeting

19 00 Dinner

11 February, Wednesday

Session 4

09 00 Presentation from JSC "KEGOC" regarding the creation of a power pool and wholesale market within the Republic of Kazakhstan

Mr A. Nauryzbaev, Vice-President, JSC KEGOC

10 30 Break

10 50 Presentations and discussions regarding pricing methodologies for transit of electricity, frequency regulation, and peaking power

David Thornton Hagler Bally Consulting

11 30 Preparation of the Memorandum recording the accomplishments of the meeting

13 00 Lunch

Session 5

15 00 Signing of the Memorandum

16 00 Adjournment of the meeting

# ELECTRICITY CONTRACTING AND PRICING REFORM

## A List of the Participants for the CAR Working Group Meeting

Tashkent, Republic of Uzbekistan  
February 9-11, 1998

### NATIONAL PARTICIPANTS

#### KAZAKHSTAN

- |                         |                                                                     |
|-------------------------|---------------------------------------------------------------------|
| 1 Barsukov Vladimir M   | Head of the Dispatch Center of Kazakhstan                           |
| 2 Pastushkov Vladimir N | Head of the Department for Budget Planning and Pricing, JSC "KEGOC" |

#### KYRGYZSTAN

- |                         |                                                         |
|-------------------------|---------------------------------------------------------|
| 3 Davydov Ilias A       | First Deputy General Director of the JSC "Kyrgyzenergo" |
| 4 Pedan Boris I         | Head of the Dispatch Center of the JSC "Kyrgyzenergo"   |
| 5 Tvumenbaev Akvilbek R | Deputy Director of the State Energy Agency              |

#### UZBEKISTAN

- |                          |                                                                                                   |
|--------------------------|---------------------------------------------------------------------------------------------------|
| 6 Rakhmanov Nariman A    | Deputy Minister, Ministry for Power Industry and Electrification                                  |
| 7 Khidovatov Anvar A     | Head of the Central Dispatch Service, Ministry for Power Industry and Electrification             |
| 8 Abdullaev Khamidulla A | Head of the Economic and Planning Administration, Ministry for Power Industry and Electrification |

#### TURKMENISTAN

- |                           |                                                                    |
|---------------------------|--------------------------------------------------------------------|
| 9 Niyazov Suyun K         | First Deputy Minister of Energy and Industry                       |
| 10 Kochetov Victor D      | Head of the Dispatch Center, "Kuvvat" Corporation                  |
| 11 Arazmuradov Matmurad A | Head of the Marketing Department, "Kuvvat" Corporation             |
| 12 Ilyasova Mayagozel S   | Head of the Planning and Economic Department, "Kuvvat" Corporation |

## TAJIKISTAN

- |    |                       |                                                                                                     |
|----|-----------------------|-----------------------------------------------------------------------------------------------------|
| 13 | Khalikov Kholnazar Kh | Head of the Department for Fuel and Power Complex under the President of the Republic of Tajikistan |
| 14 | Silantiev Alexey N    | Vice-President of the "Barki Tochik" Company                                                        |

## **REGIONAL PARTICIPANTS**

- |    |                       |                                                     |
|----|-----------------------|-----------------------------------------------------|
| 15 | Mambetov Bazarbay E   | Deputy Chairman of the ICKKU Executive Committee    |
| 16 | Ametov Iskander J     | Chief Dispatcher of the UDC "Energiya"              |
| 17 | Lyskov Yury N         | Deputy Chief Dispatcher of the UDC "Energiya"       |
| 18 | Smolyakov Vladimir K  | Deputy Head of the Department of the UDC "Energiya" |
| 19 | Bychikhina Svetlana P | Deputy Head of the Department of the UDC "Energiya" |

## USAID

- |    |                       |                                                                |
|----|-----------------------|----------------------------------------------------------------|
| 20 | Dr Barry Primm        | Energy and Environment Officer, USAID Mission for Central Asia |
| 21 | Talgat Seitkazin      | Energy Project Specialist, USAID Mission for Central Asia      |
| 22 | Alexander Kalashnikov | Project Management Specialist USAID CAR/Tashkent               |

## HAGLER BAILLY

- |    |                 |                                |
|----|-----------------|--------------------------------|
| 23 | Douglas Miller  | Senior Advisor                 |
| 24 | David Thornton  | Electricity Pooling Consultant |
| 25 | Joellyn Murphy  | Manager for the Program        |
| 26 | Galina Semenova | Project Analyst                |

## GUESTS - PRESENTERS

- |    |                   |                                   |
|----|-------------------|-----------------------------------|
| 27 | Nauryzbaev Aset K | Vice-President of the JSC "KEGOC" |
| 28 | Kay Heilig        | Regional Director, CH2MHILL       |

DRAFT

## MODEL CONTRACT

of electric energy sale and purchase among the Central Asia states

“ “, \_\_\_\_\_ 199\_\_

\_\_\_\_\_ in the person of \_\_\_\_\_,  
hereinafter referred to as “Seller”, on the one hand, and \_\_\_\_\_  
\_\_\_\_\_ in the person of \_\_\_\_\_  
on the other hand, hereinafter referred to as “Buyer”, guided by their  
Articles of Association, each hereinafter referred to as “Party” or  
collectively as “Parties”, have agreed as follows

### 1 SUBJECT OF THE CONTRACT

1 1 Seller is selling, and Buyer is buying electric energy delivered to Buyer by Seller in the amount, at rates and under the terms and conditions hereof, including terms and conditions given in Appendix 1 without any withdrawal

### 2 CONDITIONS FOR CONTRACT ASSURANCE

2 1 A Contract shall be concluded for a period of not less than a calendar month

2 2 A Contract shall include a daily schedule of energy and capacity supply per hour

2 3 A Contract on electric energy sale and purchase must be supported by Contracts of electric energy wheeling through power networks of the third states and JSC “KEGOC”

2 4 Seller shall control frequency for Buyer (delivery of peak capacity) Upon failure to satisfy this condition, Seller shall buy a regulating band (peak capacity) from the frequency controlling energy systems (according to current practices)

2 5 For expert examination the Contract shall be forwarded to the UDC "Energiya" not later than 10 days before the Contract effective date

2 5 1 the UDC "Energiya" shall make expert examination of the Contract based on subparagraphs 2 1 -2 4 of this Contract

2 5 2 the UDC "Energiya" shall carry out expert examination as to technical capability of electric energy and capacity delivery

### 3 CONDITIONS OF ELECTRIC ENERGY SUPPLY

3 1 Electric energy shall be supplied at receiving and transmitting centres agreed upon

3 2 The procedure of dispatch control shall be determined by regulations instructions, other resolutions of the UDC "Energiya" and the Central Dispatch Control (CDC) of Kazakhstan

3 3 Energy transmission hereunder shall be carried out consistent with adjusted daily schedules within the limits of a Contractual monthly amount, with direct involvement and supervision of the UDC "Energiya" and the CDC of Kazakhstan

3 4 Operative change of a daily energy amount shall not result in any adjustment of Contractual monthly volume of delivery, with regard to which mutual settlements among the Parties are effected

3 5 Parties shall strictly observe operative discipline, requirements of the executive directives, instructions, directions and rules on mutual relations

## 4 BILLING AND PAYMENT PROCEDURE

4.1 Hereunder, a month shall be established to be the settling period

4.2 The actual amount of electric power received by Buyer shall be determined on a monthly basis as on 24-00 o'clock on the last day of the month of account according to indications of billing metering instruments (meters installation, their specifications and numbers are given in Appendix 1), and shall be confirmed by Buyer with the certificate of meters indications check for the accounting period not later than the tenth day of the month next after the month of account. Points where the metering is taken must be equipped with modern aids for metering electric power, capacity and facilities for broadcasting TV-metering to Dispatch Centres

4.3 Procedure of billing for delivered electric energy are determined in the Appendix hereof

4.4 Billing for services related to frequency control (peak capacity) shall be made by the UDC "Energiya" after the month expires and submitted to power systems for payment

4.5 The rate for power transportation within the networks of the Central Asian states stipulated hereunder shall be established by the Power Council of Central Asia

4.6 The transmission rate through the JSC "KEGOC" internal networks stipulated hereunder shall be established by the Department of Price Adjustment under the Ministry of Economy of the Republic of Kazakhstan

In case, this authority modifies the existing rate, a new rate shall become effective without agreement with the "Customer"

## 5 RESPONSIBILITY OF THE PARTIES

5 1 The deviation (+/- 10%) of the monthly actual delivery from the Contractual amount shall be deemed permissible

5 1 1 Should Seller fails to implement a daily schedule of energy supply, Seller shall be obliged to purchase the insufficient amount of electric energy from the third party (according to the UDC "Energia" recommendations), or impose limitations on its own Consumers

5 1 2 If terms specified in subparagraph 5 1 1 have not been fulfilled, limitations on Buyer shall be introduced with further application of penal sanctions (Appendix )

5 2 Should Buyer fails to pay when due hereunder, Seller shall be entitled to impose restrictions on power supply to end up with complete disconnection, of which Seller shall notify Buyer 72 hours prior to introduction of penal sanctions In this, Buyer shall not be responsible for any possible consequences related to power supply disconnection

## 6 FORCE MAJEURE

6 1 Parties shall be relieved of responsibility for non-fulfilment or improper fulfilment of obligations hereunder, if such failure resulted from force majeure events damages of transmission lines, substation equipment during Acts of God etc Under such circumstances, neither of the Parties shall be entitled to be compensated for damages Any Party that relies on any such force majeure event shall be obliged to provide written notice to the other Party about the occurrence of such event If any Party requires, a commission may be set up to determine about further possibility for fulfilment of mutual obligations

In this, neither of the Parties shall be relieved of liability to make payments hereunder

## 7 MODIFICATION AND CANCELLATION

7 1 Any disputes of the Parties pertaining to performance, modification and cancellation of this Contract, shall be regulated by way of exchanging letters (telegrams), conclusion of documentary agreements as well as with the help of other necessary measures, in case of failure to reach an agreement a dispute shall be settled in the court

7 2 On the initiative of either of the Parties terms and conditions of the Contract may be revised, for which effect a corresponding additional Appendix hereto must be executed for 15 days and signed by both Parties

## 8 CONTRACT TERM AND LEGAL ADDRESSES OF THE PARTIES

8 1 This Contract shall become effective from 00 o'clock \_\_\_\_\_ 1997 and be in effect till 24 00 \_\_\_\_\_ 199\_\_

8 2 If requisites of the Parties are changed, they shall be obliged to inform each other of all changes within 3 days, otherwise losses ensuing from failure to notify or untimely notification shall be incurred by the Party at fault

8 3 This Contract may be extended for the next year period, and energy delivery amount and rates shall be made exact, unless any of the Parties shall make a cancellation application one month before its expiry

## 9 APPENDICES

Appendices that form an integral part of this Contract

1 Volume of power supply, price (rates)

2 A list of energy and capacity billing metering instruments, their specifications and place of installation

3 A certificate on electric networks affiliation and operation responsibility of the Parties

4 A daily schedule of power consumption per hour

5 A form of day-to-day power consumption information transfer

**10 LEGAL ADDRESSES OF THE PARTIES AND THIER  
SETTLEMENT ACCOUNTS**

BUYER  
Address

SELLER  
Address

“ ” \_\_\_\_\_ 199

“ ” \_\_\_\_\_ 199

# TRANSIT TARIFFS

## Purpose:

- For a grid company: to recover cost of operation, including earning a fair profit; also to provide proper market signals for expansion and efficient operation
- For integrated utilities: to bring fair compensation for use of grid by others; also to provide proper market signals for expansion and efficient operation

Items to be considered:

- **Capacity charge**, based on either:
  - Embedded costs
  - Short-run marginal costs
  - Long-run marginal costs
  - Rental of Assets (replacement cost)
  - Allocated by share of peak load
  - Variable charge on flows over transmission constraints

## Basic considerations:

- Should reflect physical flows (as nearly as possible)
- Stimulates competition
- Provide revenues which provide reasonable returns
- Be reasonable and objective
- Protect the consumer's interests
- Non-discriminatory by location
- Reflect actual cost profiles

Items to be considered:

- **Capacity charge**, based on either:
  - Embedded costs
  - Short-run marginal costs
  - Long-run marginal costs
  - Rental of Assets (replacement cost)
  - Allocated by share of peak load
  - Variable charge on flows over transmission constraints

- **Entrance fee**; based on some measure of usage:
  - Annual peak load
  - Average of monthly peak loads
  - Installed capacity
  - Annual energy delivery

- **System losses (technical losses)**
  - Transactional basis (buyer contracts for energy to be delivered to his point of delivery)
  - Grid owner pays for losses, with the cost recovered through a tariff component based on energy delivery
  
- **Distance factor**
  - Discriminates against remote buyers and sellers, but can provide market signals to new generation

# USAID/HAGLER BAILLY'S RECOMMENDATION

Two-part transit tariff:

- Postage-stamp capacity charge, based upon the replacement value of the entire Central Asian transmission grid
- Losses supplied on a transactional basis

# Compensation for Frequency Regulation and Peak Loads

Vertically-integrated companies without competitive market:

Dispatch is based upon the utility's mix of base-load, intermediate-load, peaking generation, and contract purchases, observing must-run considerations

In the old NEPOOL:

Owners of generating units received a small premium for committing peaking units to the regime of Automatic Generation Control, their method of frequency regulation. This payment was meant as an incentive for pool members to fairly share the costs of dedicating generation to regulation service.

In market-based pools:

Besides an energy market, the Pool will operate a market for ancillary services, one of which will be for frequency regulation. Owners of generation will offer regulation at bid prices which they expect will be competitive and will be dispatched by the ISO. Such bid prices will be regulated by market forces.