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**UKRAINE INDEPENDENT ENERGY SUPPLIERS
BUSINESS DEVELOPMENT AND ENERGY
EFFICIENCY ACTIVITIES
(LOCAL ELECTRIC COMPANY TASK E.1 & 2)**

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

**Ukraine Power Sector Reform
Delivery Order No. 18**

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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EXECUTIVE SUMMARY

S.1 TASK DESCRIPTION

The work on this task was initiated under Delivery Order 18 of the Ukrainian Power Sector Reform Project. The Scope of Work for these activities included the specific Local Electric Companies (LECs)-Task III E which states

Support Independent Energy Suppliers (IES) Business Development

- (1) Assess IES potential for involvement in energy efficiency activities,
- (2) Define program of support to encourage participation of IES in full provision of services including energy efficiency

S.2 METHODOLOGY AND APPROACH

In November, 1997, recognizing the growing impact and importance of the Independent Energy Suppliers (IES) in the Ukrainian Energy Sector, Hagler Bailly undertook a full survey and analysis of the number of IES licenses that had been issued and a statistical evaluation of the actual portion of electricity sales which were flowing through these suppliers. A copy of this report is included as Appendix A.

Based on the results of this analysis and in recognition of the significant new business opportunities which are being pursued by Independent Energy Suppliers in March of 1998, Ms Lynn K Goldfarb (L K Goldfarb and Associates), previously employed by Central Maine Power Company as Vice President of Marketing, and recognized as a leader in development of innovative energy management programs, was invited to Ukraine to work with the newly formed Association of Independent Energy Suppliers and several of their larger members to assess the and develop an approach for working with the Independent Energy Suppliers in the area of Energy Efficiency. The key requirements of this activity was to help the IES identify and begin to develop business activities which might assist in the implementation of energy efficiency in the Ukrainian electric power sector. Ms Goldfarb's findings and recommendations, as well as her final report on the success of the Seminar, are included as Appendix B. The action plan which guided the development of this work is shown in Appendix C.

Upon receipt of these recommendations, it was agreed that, in order to interest and involve the IESs in energy efficiency activities, it was necessary to provide them with information on how such an involvement could provide new and profitable business opportunities. To provide this information to the several of the larger IESs and set the stage for future

development, it was agreed to coordinate all activities with the Association of Independent Energy Suppliers whose members include fourteen (14) of the largest IESs in Ukraine. Several meetings were held with the Executive Director of the Association Ms Yelena Zolotaryova and her associates, and it was agreed that a 2-day seminar would be conducted to provide business development information, market information, and general technical information and demonstrations, and thus will hopefully lead to future business development by these independent businesses.

Development of the seminar agenda and content was coordinated with the Association of Independent Energy Suppliers, and involved Energy Service Companies and equipment suppliers who are already been involved in the application of energy efficiency technology in various regions of Ukraine. Additional information concerning the financial aspects of the Ukrainian EnergyMarket as well as opportunities for ongoing business development through energy efficiency activities, were provided by Hagler Bailly's US and Ukrainian experts, with a significant emphasis placed on involvement of Ukrainian staff. Invitations and announcements were coordinated with the staff of the Association of Independent Energy Suppliers. The full agenda and details of the Seminar, including speakers presentations and attendees, are included in Appendix D of this report.

S.2 SUMMARY OF RESULTS

The Seminar for Independent Energy Suppliers was conducted June 30-July 1, 1998 at the Energy Efficiency Center of Kiev Polytechnical Institute. While it was well attended and well received with significant interest in the topic of future business development, there appears to be little prospect of significant business impact at the present time, due to a lack of tariff incentives and the large percentage of business that is conducted in the Ukrainian electricity sector through the use of non-cash transactions.

Independent Energy Suppliers in Ukraine have developed a full and aggressive understanding of how to take advantage of non-cash transactions which allow them to provide electricity to consumers at rates that are significantly below the rates of regulated tariff suppliers while still making significant profits. Since the IES customers already have access to reduced rates through their IES suppliers, they are perhaps less motivated to invest in energy efficiency equipment and technology, however we believe that the IESs themselves, may provide an avenue for implementation of this technology, through their innovative business development capabilities.

Implementation of energy efficiency technology will indeed provide an area for future business development for the Independent Energy Supplier, but is highly dependent upon the implementation of wholesale tariffs that provide the incentive for such development. There is no question that when this occurs, the progressive Independent Energy Suppliers will be in the forefront of the application and development of these opportunities. Examples of the progressive leadership of the Association of Independent Energy Suppliers can be seen in the

news articles that are included as Appendix E of this report.

APPENDIX A

Report on IES Businesses

REPORT ON IES BUSINESSES
by Alexander Petrov and Yaroslav Brisiuck

The Independent Electricity Suppliers (IES) firstly appeared in Ukraine in 1996 as a result of the comprehensive restructuring of the power sector. The IESs are licensed by the National Electricity Regulatory Commission (NERC), an independent regulatory authority established in 1995. As of October 1997 the number of IESs exceeds three hundred, and they account for 20 to 30 percent of the electricity sales in Ukraine.

The majority of IESs despite the fact that they are licensed by NERC are not involved in the trading of electricity. Out of hundreds of licensed IESs (on October 22, 1997 there were 326 licensed IESs registered in Ukraine (see Appendix 1)) the number of those which are actively involved in the electricity market ranges from 30 to 50 depending upon the month (See Appendix 2 and Fig 1). Mr. Alexander Zapara of Pravex-Energy company which has been involved in IES business since 1994 elucidated this phenomena by explaining that a lot of private companies are using barter schemes where they receive electricity in exchange for products or services. However getting NERC's license takes relatively long time. So, if entrepreneurs intend to utilize some barter operation where electricity may be one link in a chain of barter transactions, then they prefer to get a license from NERC in advance. In other words, entrepreneurs prefer to receive licenses in advance to avoid problems which could appear in the future if they have to work with electricity.

In accordance with Mr. Golub of NDC, National Dispatch Center will not provide us with information regarding IES activity because allegedly such information is proprietary and constitutes commercial secret. We believe that information about the participants of Energomarket should be made publicly available otherwise there would be a contradiction with the notion of an open competitive market which this country is trying to build.

There still are certain limitations as to with who the IESs can sign contracts for the supply of electricity. For instance, on October 23, 1997 the Energomarket Board adopted a decision that Zaporizhya Ferro-Alloy Plant, Zaporizhya Aluminum Plant and Nikopol Ferro-Alloy Plant will be supplied with electricity exclusively via their LEC at a fixed tariff of €2.00 per kWh. Before this decision, all of these enterprises with total maximum load of over 1 GW were supplied by different IESs. For example, Zaporizhya Ferro-Alloys Plant was fully provided with electricity by Energometcomplex company. If this decision of the Energomarket Board is carried out, the share of IESs in the market will be considerably decreased, because as is well known, the load of these plants is very considerable.

The general picture of Ukraine's IES market is shown on the figure 1. It can be derived from the graph that the IES market is dominated by a small number of large companies with supply levels ranging up to 800,000 MW h a month, that supply up to one-third of electricity in the IES electricity market. However, the majority of IESs are small companies whose supplies rarely exceed 100,000 MW h a month.

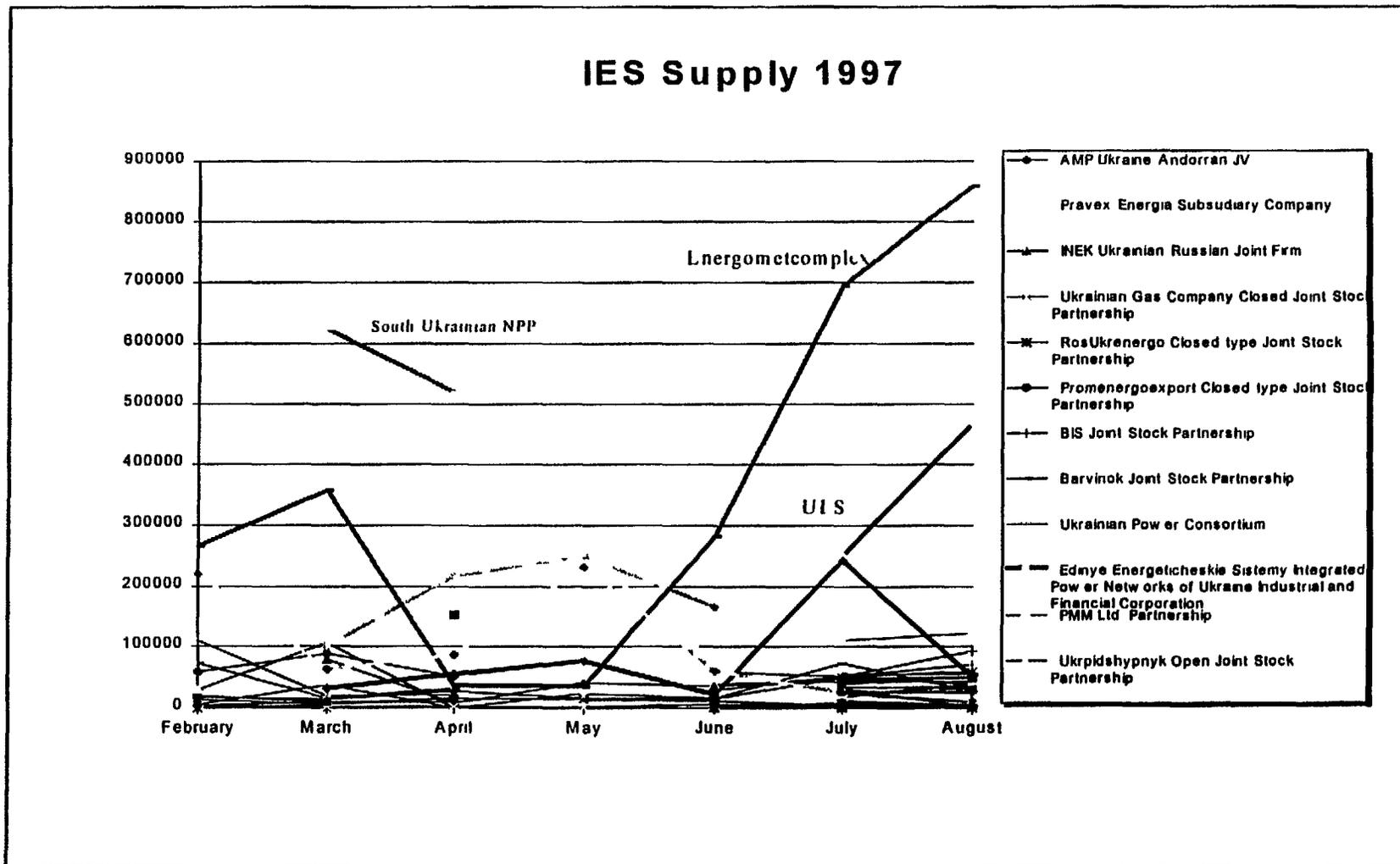


Figure 1 IES Supply in 1997¹

¹Sources NDC NERC

The share of two largest IESs in Ukraine, namely Energometcomplex and the United Energy Systems of Ukraine (UESU), was 58% of the total energy supplied by all IESs in July and 57% in August 1997 (see Fig 2, 3)

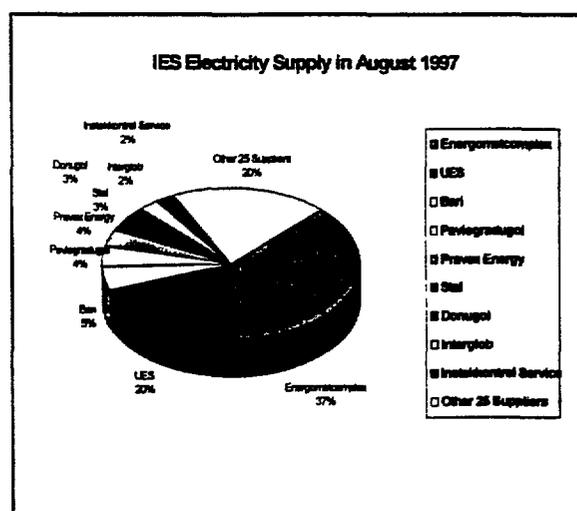
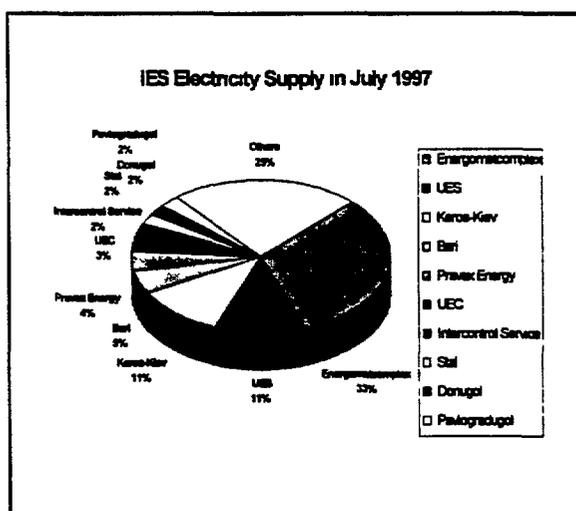
Figures 2 and 3 IES Supply in July and August 1997²

In accordance with Mr Golub Energometcomplex recently completely left the electricity market. At the same time the share of the UESU considerably decreased during last two months (as the result of the decision by UkrGazProm that prohibited the UESU to work on Ukraine's gas market)

Despite the withdrawal of these companies from the electricity market the share of IESs was fairly stable in September and in two weeks of October (20-23% of sales). Mr Golub is explaining this fact that some other IESs came to the market and took the former clients of Energometcomplex and the UESU (unfortunately, Mr Golub refused to name those companies)

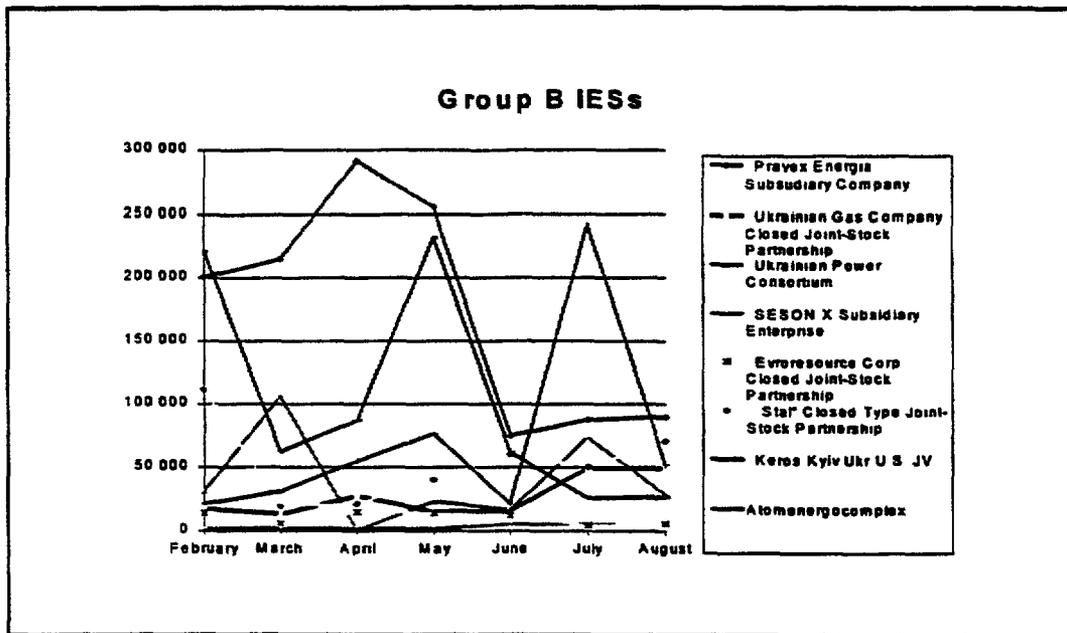
All the IESs conditionally can be divided into the following five groups

- a Large IESs whose success on the electricity market is fully determined by the political situation in the country. There are two distinguished representatives of this cluster: Energometcomplex and the United Energy Systems of Ukraine. Allegedly, their business success and huge values of sales were a consequence of the protectionist policy of the ex-Prime Minister Lazarenko. These two companies are no longer considered viable as a result of recent changes in the market,
- b Medium IESs that are constantly present on the market, have dozens of customers and as it seems are the bona fide² IESs. Representatives of this group are Pavex-Energia,



²Sources: NDC, NERC

Figure 5 Group B IESs⁴



As we can see on this graph the companies of this group are constantly involved in the trading of electricity, being active on the market throughout the whole year. The companies of this group have established long-term contracts with end users of electricity and suppliers of fuel which they provide to generating companies. Many of these companies have customers in several oblasts and are interested in expanding the network of their business contacts. Electricity sales is the main business for group B companies and some of them have up to sixty enterprises to which they sell electricity.

As a rule, most of the IESs use the following scheme of work. The IES purchases fuel (coal, nuclear fuel rods etc.) from a supplier. As an alternative, IES may sometimes, although quite rarely, receive fuel as a consignment. The IES then delivers fuel to power plant which generates electricity and delivers it to the Energomarket. The power plant provides the IES with documents for the amount of electricity equivalent by cost to the amount of fuel that the IES had supplied. The IES then arranges the delivery of electricity to its customer via corresponding LEC and pays transit fees to that LEC. The customer pays for the electricity supplied by the IES in the form of goods which that customer is producing. The goods are supplied to the IES with

significant discount, which may be 10 percent or more since the supplies of electricity are very considerable, and thus commodities are offered at wholesale prices and additional discounts. The IES then sells the goods that it received from the customer as payment and receives cash, the amount of which is greater than the amount spent by the IES on fuel and other expenditures. The revenues are then reinvested into purchases of fuel and subsequent business cycles. Typically, one business cycle, i.e. from purchasing of fuel or arranging its delivery to power plant, to

⁴Sources NDC NERC

collecting revenues lasts up to two months. These cycles in most cases overlap to provide for the continuity of service. Large IESs may work with several power plants located in different parts of the country to service clients throughout Ukraine, yet the geographical affiliation is more widely spread.

A month ago an Association of Independent Energy Suppliers (AIESs) was created. It incorporated the following fifteen IESs from all over Ukraine: Sirius, Inter-Contract, PromEnergExport, Ukrainian Gas Company, Stal, Ukrainian Energy Consortium, Vis-a-vis, Triverton International, Galev, UkrPodshupnik, Keros-Kiev, Inek, Sinta, Bitimpex Energy Corporation and PromEnergComplex. This is a non-political, non-profit, non-governmental organization whose main objective is the lobbying of the interests of IESs at the Energomarket Board, in the Government, and in the Parliament.

According to their Charter the Association's main goals are as follows: coordination of actions of generators in the electricity market, including the development of a united position in relation to the formation of prices and amounts of supply, market analysis and forecasts of possible changes, maintaining statistical information on generation supplies and consumption of electricity, preparation of proposals for improving the work of the members of the Association and for attracting foreign investments into generation and supplies of energy, preparation of proposals on state procurements, preparation of proposals that need to be considered in the process of drafting enacting statutes and regulations that affect the power sector, including tax regulations and formation of prices⁵.

Members of the Organizing Committee of the Association have already met with Chairman of the NERC Butsio. The main issues they discussed with Mr. Butsio were the possibility to incorporate one or two representatives of IESs on the Energomarket Board, as well as to receive guarantees of equal competition conditions for oblenergos and IESs on the electricity market. Members of the Organizing Committee of the Association had met with Pat Shapiro twice.

They asked USAID for advisory services from an American consulting firm to obtain current information on the situation on the electricity market as well as to gain access to the latest legislative information regarding IESs. The Association representatives in a meeting with Jim Stanfield, Irina Yegorchenko and Alexander Petrov which took place in our office on Friday of October 24, 1997 said they would like to use Hagler Bailly as the consultant.

We believe that "Group B" of the above given classification is the most attractive one to work with because the IESs of this group consider electricity supply as a serious, long-term business. This group constitutes the core of the IES segment of Ukraine's electricity market since it encompasses viable suppliers which are not any of the extremes currently present on the market, such as politically protected jumbo companies or companies for which electricity is a sideline business. The companies of group B are shaping the IES market of Ukraine, and the number of these companies is constantly growing.

⁵Business # 44 (251) 3 November 1997 p. 39

Appendix 1
Independent Electricity Suppliers

Independent Electricity Suppliers

#	Number of NERC Order	Date license issued	Subject	Oblenergos	Declared supply, MWh	Supply in 1996, MWh	Supply in February 1997, MWh	Supply in March 1997, MWh	Supply in April 1997, MWh	Supply in May 1997, MWh	Supply in June 1997, MWh	Supply in July 1997, MWh	Supply in August 1997, MWh
1	81	11 09 96	AMP Ukraine-Andorran JV		2 100 000	293 748							
2	82	11 09 96	Naphtokhimiya Fuel and Power Association		2 000 000								
3	83	11 09 96	Pravex Energia Subsidiary Company	Rovno Zaporozhye Crimea Nikolayev Poltava Sumy Kharkiv	1 500 000	3 251 013		215 170	291 668	256 414	74 273	87 363	89 542
4	84	11 09 96	Pravex Brok Cyprus-Ukrainian JV		55 000								
5	85	11 09 96	INEK Ukrainian-Russian Joint Firm	Donetsk Luhansk Chernihiv	1 200 000							39 058	50 886
6	86	11 09 96	Ukrvimkom Singapore Ukrainian JV		500 000								
7	87	11 09 96	Ukrainian Gas Company Closed Joint Stock Partnership	Donetsk Zaporizhya Luhansk Nikolayev, Poltava Chernigiv	600 000		17 884	13 254	27 644	15 047	15 425	49 379	49 378 85
8	97	17 09 96	ARTOR Ukrainian American JV		1 800 000								
9	98	18 09 96	RosUkrenergo Closed type Joint-Stock Partnership		1 800 000		156		23 323		21 967		
10	99	18 09 96	SEN TRADING UKRAINE Firm with Foreign Investments		2 076 000								
11	99	18 09 96	Promenergoexport Closed type Joint-Stock Partnership	Volyn Zaporizhya Lugansk	1 112 000	242 478	58 389	89 617	51 234			10 872	3 522
12	101	18 09 96	Electropostachbut Private Trade and Production Enterprise		800 000								
13	102	18 09 96	BIS Joint Stock Partnership	Donetsk	100 000							25 363	31 419

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14	103	18 09 96	VEGA Joint Stock Partnership		220 000								
15	104	18 09 96	Stan Complex Ukrainian Russian JV		285 000								
16	105	18 09 96	Barvinok Joint Stock Partnership	Kharkiv	600 000		2 288	2 022		3 594	1 838	2 108	
17	106	18 09 96	Ukrainian Power Consortium	Vinnitsa Kievenergo Khmel'nitsky	1 850 000	30 446	105 603	879	23 151	16 351	73 439	28 466	
18	109	24 09 96	Region Inter Branch Fuel and Power Syndicate		600 000								
19	110	24 09 96	Trading House of Metals Ltd Partnership										
20	111	24 09 96	Sistemy Integrated Power Networks of Ukraine Industrial and Financial Corporation	Dneproblenergo							251 000	467 718	
21	112	24 09 96	PMM Ltd Partnership		500 000		10 714						
22	116	24 09 96	SP-SALUS Ltd Partnership		1 810 000								
23	117	25 09 96	CYNTA Joint Stock Scientific Productive Amalgamation										
24	118	25 09 96	Ukrpidshypnyk Open Joint Stock Partnership	Donetsk	800 000	678 973				40 130	42 619	49 200	
25	119	25 09 96	SESON X Subsidiary Enterprise	Lviv	90 000	2 140	1 985	1 991	1 971	5 610	5 500	5 619	
26	120	25 09 96	Alina Private Enterprise		400 000								
27	121	25 09 96	Ilyok Joint Enterprise		200 000								
28	122	25 09 96	Intertrade Ukrainian-American JV		1 590 500								
29	123	25 09 96	Ukvit Closed Joint Stock Partnership		600 000								

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30	124	25 09 96	Tekhnika Ukrainian Manufacturing and Commercial Firm	77 365					
31	125	25 09 96	Dimelot Closed Joint-Stock Partnership	150 000					
32	127	01 10 96	Etalon Closed Joint Stock Partnership	800 000					
33	128	01 10 96	Intergas Closed Joint-Stock Partnership	1 800 000					
34	129	01 10 96	Manufacturing and Power Group Closed Joint Stock Partnership	1 200 000					
35	133	01 10 96	Inter Contact Closed-Type Joint Stock Partnership	1 800 000	989 278				
36	134	01 10 96	Kyiv Donbas Closed Joint Stock Partnership	1 800 000	1 779 501				
37	135	01 10 96	Interkas Kyiv Luxemburg Ukrainian JV Ltd	1 800 000					
38	136	02 10 96	Labyrinth Private Enterprise	200 000	6 699	37 150	896		
39	137	02 10 96	KDM Manufacturing and Financial Company Joint Stock Partnership	1 000 000					
40	138	02 10 96	Energokom Partnership Ltd	600 000					
41	139	02 10 96	Electrotek Small Collective Enterprise	150 000					
42	140	02 10 96	Khortytza Corporation Joint-Stock Partnership	250 000					
43	141	02 10 96	Zmiv Building Partnership Ltd	100 000					
44	142	02 10 96	Triverton International LTD Partnership Cyprus-Ukrainian Closed-Type Joint-Stock Partnership with Foreign Investment	1 800 000	72 567	14 897	31 112		
45	143	02 10 96							

46	144	02 10 96	Rassvet Open Joint Stock Partnership		857 300								
47	147	09 10 96	Ternopiloblenergo State Joint-Stock Electricity Supplying Company										
48	150	09 10 96	'Energobud" State Joint Stock Holding Company		45 000								
49	153	16 10 96	Transenergogas Partnership Ltd										
50	154	16 10 96	Ukrvostokprom Closed-Type Joint-Stock Partnership		500 000				3 147				
51	159	16 10 96	Energosbutprom Open Joint Stock Partnership		2 160 000								
52	160	16 10 96	Agropromexport Joint Stock Partnership		800 000								
53	161	16 10 96	Orion Kyiv Affiliated Company	Prikarpattya Khmelnitsky Zaponzhya	3 600 000	621 325					24 616	9 185	
54	166	23 10 96	Promsnab Diversified Firm Partnership Ltd		200 000		3 500	10 600	9 159		7 091		
55	167	23 10 96	Soiuz Ltd Ukrainian Russian JV with Foreign Investment		100 000								
56	168	23 10 96	AMPA Joint-Stock Partnership										
57	169	23 10 96	"Hydraulic Small Private Enterprise		100 000								
58	170	23 10 96	Service Center Alpha Ukrainian-Austrian JV Ltd		300 000								
59	171	23 10 96	Alkor Dnipro Ukrainian Russian JV State Enterprise of Rural Electricity Networks of Donetskuvuhilia		1 800 000			14 203					
60	175	30 10 96	Industrial Amalgamation Energovuhilia - Electricity Network Enterprise Open		50 000						50 677	58 711	
61	176	30 10 96	Joint Stock Partnership		200 000								

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62	180	30 10 96	SBM Invest Special Construction and Design Open Joint-Stock Partnership								
63	181	30 10 96	Ivanna Agricultural Company		1 006	529	1 945				
64	182	30 10 96	Transnaphtoproduct Small Private Enterprise								
65	183	30 10 96	Ukrenergostroy Closed Joint Stock Partnership	1 800 000							
66	184	30 10 96	Promenergocomplex Closed Joint Stock Partnership	450 000							
67	185	30 10 96	Ukrinterproduct Affiliated Company with Foreign Investment	600 000							
68	186	30 10 96	Visavi Closed Joint Stock Partnership and Manufacturing Center of Dnipropetrovsk Oblast State Administration	1 800 000	1 227 790	100 000	216 794	250 781	166 538		7 400
69	189	06 11 96	Arkivist Small JV	1 810 000							
70	190	06 11 96	Arkivist Small JV	25 000							
71	191	06 11 96	OLGasENERGO Affiliated Company								
72	192	06 11 96	Elita Closed Joint-Stock Partnership								
73	193	06 11 96	AMT Closed Joint Stock Partnership								
74	194	06 11 96	Arma Joint Stock Partnership								
75	195	06 11 96	Energoservice Firm Closed Joint-Stock Partnership	2 250 000			2 473	1 863			
76	196	06 11 96	Intermash Closed Joint-Stock Partnership	100 000							
77	198	13 11 96	Energy-Service Partnership Ltd								

78	199	13 11 96	Valt Partnership Ltd					
79	200	13 11 96	Sumy Leased Enterprise of Thermal Networks					
80	201	13 11 96	DniproMed Ukrainian Russian Partnership Ltd	360 000				
81	202	13 11 96	Chornobyl NPP State Enterprise	9 962 000		1 288		
82	203	13 11 96	Rivnenska NPP State Enterprise	10 900 000				
83	204	13 11 96	ZapEcoProm Partnership Ltd	350 000				
84	207	13 11 96	Atamar Open Joint-Stock Partnership					
85	208	13 11 96	Energia Concern Closed Joint Stock Partnership Transnational Industrial and Financial Corporation	800 000				
86	210	20 11 96	Donprompostavka Partnership Ltd					
87	213	20 11 96	Velyka Transportna Companiya Partnership Ltd					
88	214	20 11 96	Radon Closed-type Joint-Stock Partnership					1 981
89	215	20 11 96	Ukrtekhresursy Closed Joint-Stock Partnership					
90	216	20 11 96	Ukratomenergozapchasty na Ukrainian-Russian JV					
91	217	27 11 96	Energoelectronica State Enterprise					
92	218	27 11 96	Rebar-Ukraine Affiliated Company					
93	219	27 11 96	Promzviazok Open Joint-Stock Partnership	155 000				

94	220	27 11 96	Mashproekt Scientific and Manufacturing Enterprise JV with Foreign Investment of Information and Technologies Partnership Ltd																
95	228	27 11 96																	
96	234	03 12 96	HEM Open Joint Stock Partnership																
97	235	03 12 96	Luhanskpostach Luhansk State Commercial and Manufacturing Firm		1 200														
98	236	04 12 96	Energocontract Partnership Ltd																
99	237	04 12 96	Combifodd LTD JV																
100	238	04 12 96	Comecenergo Partnership Ltd																
101	239	04 12 96	Dobrobut Open Joint Stock Partnership																9 000
102	240	04 12 96	Office Manufacturing and Commercial Firm							152 900									
103	241	04 12 96	Bitimpex Partnership Ltd	Donetsk Odessa Kherson					78 838	7 990	40 802	36 292	48 698	39 122					
104	242	11 12 96	Atomservis Open Joint-Stock Partnership																
105	250	11 12 96	Kolir Ukraine Italian JV Ltd																
106	251	11 12 96	Halev Ltd Open Joint Stock Partnership																
107	252	11 12 96	Evroservice Company Closed Joint Stock Partnership																
108	253	11 12 96	Evroresource Corp Closed Joint Stock Partnership	Crimea					14 384	5 860	14 872	14 273	12 050	3 956	6 120				
109	254	11 12 96	Ukrzarubezhnaphtogas Corporation	Crimea	300 000				340					299	1 576				

126	2	09 01 97	Regional Agency of economic development Closed Type Joint-Stock Partnership							
127	3	09 01 97	Kraysvest Company LTD							
128	4	09 01 97	'Intercoal Company LTD							
129	5	09 01 97	'Rosukratom" Ukrainian-Russian JV LTD							
130	6	09 01 97	Integratsiya" Closed-Type Joint-Stock Partnership							
131	7	09 01 97	Khmelitsky NPP Enterprise of							
132	8	15 01 97	"Energoatom Energy Company" Open Joint Stock Partnership							
133	9	15 01 97	the Leasing Enterprise 'Svema" Industrial Amalgamation							
134	10	15 01 97	"Kharkivsky Industrial Union" Joint Stock Partnership	Kharkiv					44 730	51 288
135	11	15 01 97	Skhid" Production and Trading Enterprise							
136	12	15 01 97	Metkhim" Closed Type Joint-Stock Partnership							
137	13	15 01 97	Stal" Closed Type Joint-Stock Partnership		110 758	19 000	20 855	60 000	50 908	70 701
138	70	22 01 97	Donvugleservice ' Closed-Type Joint Stock Partnership							
139	71	22 01 97	'DTs Energoprom Ltd Partnership							
140	77	29 01 97	"Sinus" Closed-Type Joint-Stock Partnership							
141	78	29 01 97	"Atomenrgokomplekt" Open Joint-Stock Partnership							

142	87	12 02 97	Energometcomlex LTD Partnership	Dnepr Crimea Rivne Poltava Zaporizhya Prikarpattya	266 680	357 914	36 876	36 448	282494	694 578	857 689
143	88	12 02 97	Ksevol' Small Enterprise		1 194	3 945					
144	89	12 02 97	'Antik' LTD Partnership								
145	93	19 02 97	Pivdenteploenergomonta ge Open JS Company								
146	94	19 02 97	Promenergoresyrsy Fuel and Energy Company								
147	97	19 02 97	Energobudservice								
148	101	26 02 97	Gross Ltd								
149	102	26 02 97	Ukr Belorus Ukrtechnosintez Joint Venture								
150	103	26 02 97	Ukrvygliemash JS Closed Type Company								
151	104	26 02 97	Keros-Kyiv Ukr-U S JV	Lugansk		31 000	55 000	76 714	21 203	242 871	51 871
152	144	05 03 97	Nerudenergoprom Company Ltd Partnership								
153	205	19 03 97	Navigator-L Private Scientific and Production Partnership								
154	206	19 03 97	EnergyResouce Closed Joint Stock Partnership								
155	207	19 03 97	Tako Joint Stock Partnership								
156	215	26 03 97	Astra-International Ltd Partnership								
157	216	26 03 97	Sevals Concern Closed Joint Stock Partnership								

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158	217	26 03 97	Optima Still Ltd Partnership						
159	218	26 03 97	Information and Technology JV						
160	254	03 04 97	Rivne NPP Construction Department Closed Joint Stock Partnership		10 900 000				
161	255	03 04 97	BARK LTD , Partnership						
162	256	03 04 97	Ukrenergozakhist Open Joint Stock Partnership						
163	257	03 04 97	OLBI Partnership						
164	287	16 04 97	BARI Company with Foreign Investment	Poltava				109 575	122 550
165	288	16 04 97	Energoconsulting Ltd Closed Type Partnership	Kiev Donetsk			966	8 664	4 695
166	306	19 04 97	Ukrainian Croatian Inetekcontrolservice JV						
167	307	19 04 97	Intelinvest Small Private Company						
168	308	19 04 97	BIC Energo Trade Ltd Partnership						
169	339	21 05 97	Transenergo Closed Type Joint Stock Partnership						
170	363	04 06 97	Kharta LTD Partnirship						
171	364	04 06 97	Fund Closed Type Joint Stock Partnership	Lugansk				1 423	4 659
172	365	04 06 97	Orion Kiev Closed Type Joint Stock Partnership						
173	380	18 06 97	Enekom Fuel and Energy Concern						

174	392	25 06 97	Alva Partnership LTD						
175	393	25 06 97	Pivdenelectromerezhbud prom	Kirovograd				809	504
176	394	25 06 97	Energy Invest Company Closed Type Joint Stock Partnership						
177	425	25 06 97	Financial and Economic Group Closed Type Partnership						
178	451	02 07 97	LysychanskVuhilia Joint Stock Partnership						
179	452	02 07 97	MakVugleKoksVuhilia State Joint Stock Open Partnership						
180	453	02 07 97	Ukrainian Gas Company Estar Establishment Company Subsidiary						
181	454	02 07 97	Energy Department State Joint Stock Open Partnership						
182	455	02 07 97	UkrVuhleResursy State Company	Lugansk				44 042	44 042
183	456	02 07 97	Linda Farm Partnership Ltd						
184	457	02 07 97	Privat-Invest Joint Stock Closed Type Partnership						
185	458	02 07 97	AgroGasProm Joint Stock Closed Type Partnership						
186	459	02 07 97	UkrVlorResursyTransMet al Joint Stock Closed Type Partnership						
187	497	10 07 97	Pavlogradvuhilia State Holding Company	Crimea			30 517	50 667	92 181
188	502	17 07 97	Ukr Ros Ukrainian-Russian Joint Venture						
189	504	17 07 97	Chervona Zirka State Mining Administration Company						

5

190	505	17 07 97	VugleZbut State Open Joint Stock Partnership																	
191	506	17 07 97	METL Production and Commercial Group Partnership Ltd																	
192	507	23 07 97	Sigma Financial and Production Group Joint-Stock Partnership																	
193	508	23 07 97	Technical Center Automatization and Protection Subsidiary																	
194	509	23 07 97	Grand LTD Partnership Ltd																	
195	511	23 07 97	Dobropilliavuhilia State Holding Company																	
196	512	23 07 97	Olexandr LTD																	
197	513	23 07 97	Yurkovitsa Closed Type Joint Stock Partnership																	
198	514	23 07 97	KyEv LTD																	
199	515	23 07 97	Mekhprom Open Joint Stock Partnership																	
200	516	23 07 97	Hydrocomplex Closed Type Joint Stock Partnership																	
201	517	23 07 97	Energospetscomplexbud Open Joint Stock Partnership																	
202	518	23 07 97	Ravel Inter-Regional Enterprise																	
203	519	23 07 97	Dniprovskia Mine State Enterprise																	
204	520	23 07 97	Kyiv-Code Closed Type Joint Stock Partnership																	
205	521	23 07 97	Sodas Ukrainian Polish Joint Vetur																	

254	689	03 09 97	Donbasenergo
255	690	03 09 97	TMK Ltd
256	691	03 09 97	Luhansk Vuhleresursy State Company 'Torez Commercial Coal Selling Company' Subsidiary of Torez-Antratsyt
257	692	03 09 97	Titan Export' Subsidiary of Titan Company
259	694	03 09 97	VTV Export Import Ukrainian German JV
260	695	03 09 97	Industry Coal Mine No 71
261	696	03 09 97	Oil Processing Amalgamation- Halytchyna
262	697	03 09 97	Pavlogradbud
263	698	03 09 97	Carbon Ltd
264	699	03 09 97	'Institute of New Technologies' Ukrainian Russian JV
265	700	03 09 97	Brinkford Consulting Ukraine Ltd
266	701	03 09 97	Turbostal Ukrainian-Russian JV
267	705	10 09 97	'Tekhtrans Closed Type Joint Stock Partnership
268	706	10 09 97	Kindratievka Coal Mine State Company
269	707	10 09 97	'Energozbutprom' Closed Type Joint Stock Partnership

270	708	10 09 97	Snizhanratsyt Production Amalgamation						
271	709	10 09 97	'Energoinvest Ltd Partnership						
272	710	10 09 97	Svrdlovvuhlezbut State Open Joint Stock Partnership						
273	714	12 09 97	Amending RTS License Issued to Lviv Railway						
274	715	12 09 97	Amending LVNO License Issued to Lviv Railway						
275	743	17 09 97	Khimprom Production Amalgamation						
276	744	17 09 97	Energostroyservice Closed Type Joint Stock Partnership						
277	745	17 09 97							
278	746	17 09 97	Energoresource Closed Type Joint Stock Partnership						
279	747	17 09 97	AKS International Ukrainian German JV						
280	748	17 09 97	Ukrainian Russian Finance and Industrial Company						
281	749	17 09 97	BOVI Company						
282	750	17 09 97	Southern Ukrainian NPP			622 858	519 314		
283	751	17 09 97	'Spyiannia' Leasing Company						
284	752	17 09 97	Ukrainian Scientific Institute of Explosive Protective and Mining Equipment						
285	753	17 09 97	Atratsytvuhleresoursy						

286	755	17 09 97	Ukrtransenergo Private Company									
287	756	17 09 97	Meddy International International Closed Type Joint Stock Partnership									
288			Atomenergocomplex	Nikolayev Kherson	221 347	62 315	86 921	232 477	61 783	26 262	26 806	
289	766	24 09 97	Promatom Ltd Partnership									
290	767	24 09 97	Kimerya Ltd Partnership									
291	768	24 09 97	Korona Capital Private Company									
292	769	24 09 97	Ukrenergokoks Concern									
293	770	24 09 97	Sofit Small Business									
294	821	01 10 97	'Universal' Ltd Partnership									
295	822	01 10 97	'GEOID Corporation Ltd Partnership									
296	823	01 10 97	'Vostok Firm' Ltd Partnership with foreign investment									
297	824	01 10 97	'Ukrainian Stock Society Ltd Partnership									
298	825	01 10 97	'ITERA Ukraine' Commercial Energy Company Closed Type Joint Stock Partnership									
299	826	01 10 97	'TVEL Small Business									
300	827	01 10 97	'Simplex Production Company in Elevator Despatch									
301	828	01 10 97	Letan Ltd Partnership									

318		Parma			20 000	20 370			
319	22 10 97	Irbis	100 000 000						
320	22 10 97	Nezhin Laboratories of Scanning Equipment	6 756 000						
321	22 10 97	Ukrainian Industrial Company	600 000						
322	22 10 97	Fortress Development Corporation	400 000						
323	22 10 97	Zeus Energo	300 000						
324	22 10 97	Transenergoresource	100 000						
325	22 10 97	Priliv	100 000						
326	22 10 97	Produgol	40 000						

**Appendix 2
Economically Viable
Independent Electricity Suppliers**

Economically Viable Independent Electricity Suppliers

#	Number of NERC Order	Date license issued	Subject	Oblenergos	Declared supply, MWh	Supply in 1996, MWh	Supply in February 1997, MWh	Supply in March 1997, MWh	Supply in April 1997, MWh	Supply in May 1997, MWh	Supply in June 1997, MWh	Supply in July 1997, MWh	Supply in August 1997, MWh
1	81	11 09 96	AMP Ukraine Andorran JV		2 100 000	293 748							
2	83	11 09 96	Pravex Energia Subsidiary Company	Rovno Zaporozhye Crimea Nikolayev Poltava Sumy Kharkiv	1 500 000	3 251 013		215 170	291 668	256 414	74 273	87 363	89 542
3	85	11 09 96	INEK Ukrainian Russian Joint Firm	Donetsk Luhansk Chernihiv	1 200 000							39 058	50 886
4	87	11 09 96	Ukrainian Gas Company Closed Joint Stock Partnership	Donetsk Zaporizhya Luhansk Nikolayev, Poltava Chernigiv	600 000		17 884	13 254	27 644	15 047	15 425	49 379	49 378 85
5	98	18 09 96	RosUkrenergo Closed type Joint Stock Partnership		1 800 000		156		23 323		21 967		
6	99	18 09 96	Promenergoexport Closed type Joint Stock Partnership	Volyn Zaporizhya Lugansk	1 112 000	242 478	58 389	89 617	51 234			10 872	3 522
7	102	18 09 96	BIS Joint Stock Partnership	Donetsk	100 000							25 363	31 419
8	105	18 09 96	Barvinok Joint Stock Partnership	Kharkiv	600 000			2 288	2 022		3 594	1 838	2 108
9	106	18 09 96	Ukrainian Power Consortium	Vinnitsa Kievenergo, Khmelnitsky	1 850 000		30 446	105 603	879	23 151	16 351	73 439	28 466
10	111	09/24/96	Edinye Energeticheskie Sistemy Integrated Power Networks of Ukraine Industrial and Financial Corporation	Dneproblenergo								251 000	467 718
11	112	09/24/96	PMM Ltd Partnership		500 000			10 714					
12	118	25 09 96	Ukrpidshyppyk Open Joint Stock Partnership	Donetsk	800 000	678 973					40 130	42 619	49 200
13	119	25 09 96	SESON X Subsidiary Enterprise	Lviv	90 000		2 140	1 985	1 991	1 971	5 610	5 500	5 619
14	133	01 10 96	Inter Contact Closed Type Joint-Stock Partnership		1 800 000	989 278							

15	134	01 10 96	Kyiv Donbas Closed Joint Stock Partnership		1 800 000	1 779 501							
16	136	02 10 96	Labyrinth Private Enterprise		200 000		6 699	37 150	896				
17	142	02 10 96	Triverton International LTD Partnership		1 800 000		72 567	14 897	31 112				
18	154	16 10 96	Ukrvostokprom Closed Type Joint Stock Partnership		500 000				3 147				
19	161	16 10 96	Oron Kyiv Affiliated Company	Pnkarpalya Khmelnitsky Zaporizhya	3 600 000	621 325					24 616	9 185	
20	166	23 10 96	Promsnab Diversified Firm Partnership Ltd		200 000		3 500	10 600	9 159		7 091		
21	171	23 10 96	Alkor Dnipro Ukrainian Russian JV State Enterprise of Rural Electricity Networks of Donetskuvuhillia Industrial Amalgamation		1 800 000			14 203					
22	175	30 10 96			50 000						50 677	58 711	
23	181	30 10 96	Ivanna Agricultural Company				1 006	529	1 945				
24	186	30 10 96	Visavi Closed Joint Stock Partnership		1 800 000	1 227 790		100 000	216 794	250 781	166 538		7 400
25	195	06 11 96	Energoservice Firm Closed Joint Stock Partnership		2 250 000				2 473	1 863			
26	202	13 11 96	Chornobyl NPP State Enterprise		9 962 000					1 288			
27	214	20 11 96	Radon Closed type Joint Stock Partnership										1 981
28	239	04 12 96	Dobrobut Open Joint Stock Partnership										9 000
29	240	04 12 96	Office Manufacturing and Commercial Firm						152 900				
30	241	04 12 96	Bitimpex Partnership Ltd	Donetsk Odessa Kherson				78 838	7 990	40 802	36 292	48 698	39 122
31	253	11 12 96	Evroresource Corp Closed Joint Stock Partnership	Crimea			14 384	5 860	14 872	14 273	12 050	3 956	6 120
32	254	11 12 96	Ukrzarubezhnaphtogas Corporation	Crimea	300 000		340					299	1 576

37

33	10	15 01 97	Kharkivsky Industrial Union Joint-Stock Partnership	Kharkiv						44 730	51 288
34	13	15 01 97	Stal' Closed Type Joint Stock Partnership		110 758	19 000	20 855		60 000	50 908	70 701
35	87	12 02 97	Energometcomlex LTD Partnership	Dnepr Crimea Rivne Poltava Zaporizhya Prkarpattya	266 680	357 914	36 876	36 448	282494	694 578	857 689
36	88	12 02 97	Ksevol" Small Enterprise		1 194	3 945					
37	104	26 02 97	Keros Kyiv Ukr U S JV	Lugansk		31 000	55 000	76 714	21 203	242 871	51 871
38	287	16 04 97	BARI Company with Foreign Investment	Poltava						109 575	122 550
39	288	16 04 97	Energiconsulting Ltd Closed Type Partnership	Kiev Donetsk					966	8 664	4 695
40	364	04 06 97	Fund Closed Type Joint Stock Partnership	Lugansk						1 423	4 659
41	393	35606	Pivdenelectromerezhbudprom	Kirovograd						809	504
42	455	02 07 97	UkrVuhleResursy State Company	Lugansk						44 042	44 042
43	497	10 07 97	Pavlogradvuhillia State Holding Company	Crimea					30 517	50 667	92 181
44	621	35662	Kievkhimvolokno Open JS Partnership	Kiev						2 778	2 778
45	750	35690	Southern Ukrainian NPP			622 858	519 314				
46			Atomenergocomplex	Nikolayev Kherson	221 347	62 315	86 921	232 477	61 783	26 262	26 806
47			Zahidvuglezbutpostach	Volyn Lviv						34 105	34 498
48			InterGlobe								58 000
49			Energoton		1 905	2 092	1 799	2 593			1 900
50			Ukrtechnosintez								5 650

82

51	Oktabrugol					30 973	1 552
52	MMK Ilyicha					25 442	25 442
53	Intercontrol service					54 545	54 545
54	BIS Energo Trade					18 182	38 673
55	Artur joint venture			3 001			
56	Intercontact			19 390	9 997		
57	Energozbut			30 000			
58	Parma				20 000	20 370	

APPENDIX B

Findings and Recommended Follow-on Activities
(L K. Goldfarb)

INTER OFFICE

Revised MEMO

To D Wolcott E Haskins, E Hamilton
From Lynn Goldfarb and Alexander Petrov
Subject: Independent Energy Suppliers
Date: April 2, 1998

Recommendation In order to interest IES members in Voluntary Demand Curtailment it will be necessary to educate them on the financial benefits that VDC offers both the Independent Energy Supplier and its customers. Hagler Bailly can and must play an important role in the education process, otherwise VDC will not happen. To this end, I recommend that The Ukrainian Chapter of the Association of Energy Engineers, with support from Hagler Bailly jointly organize an educational program with the Association of IES for IES members. The International Centre for Policy Studies should be contracted to organize this conference. They have the confidence of the Association of IES and are able to mobilize the press. We would also recommend involving Professor Prakhovnik, the Director of the Institute of Energy Savings and Energy Management at Kiev Polytechnic Institute. He has extensive metering knowledge. Additionally, the facilities at his Institute with their extensive metering demonstrations would make a good venue for the conference. The curriculum for this program should cover the following four topics:

How IES Can Increase Profitably Through Load Management

Time differentiated rates

Availability price

Voluntary Demand Curtailment

Load Aggregation

Case Study The California Example

Model Contracts for Load Cooperatives in Ukraine

Metering and Related Technologies for Time Differentiated Rates

Metering

Submetering

Communications

Computer Hardware and Software

D Wolcott E Haskins E Hamilton

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April 2, 1998

The Ukrainian Experience
Case Studies ESCO-East
GE-Harris-Infotek
Load Monitoring Devices

Demand Side Management As A Profit Center for Your IES
Benefit/Cost Analysis
Shared Savings
Lease Purchase
Case Study

Energy Efficiency Technologies for the Industrial Customer
Efficient Motors and Variable Speed Drives
Case Study Rockwell Automation
Lighting
Process Improvements
Case Studies Paper and Pulp, Food Process, Metallurgy

We have discussed appropriate instructors for the various topics and **tentatively** recommend the following

How IES Can Increase Profitably Through Load Management
Time differentiated rates--Innia Yegorchenko
Availability price-Irina Yegorchenko
Voluntary Demand Curtailment--Irina Yegorchenko
Load Aggregation-- Philip Hastings
Case Study The California Example-- Philip Hastings
Model Contracts for Load Cooperatives in Ukraine--Alexander Petrov

Metering and Related Technologies for Time Differentiated Rates
Metering--Arthur Prakhovnik
Submetering--*
Communications--*
Computer Hardware and Software-*
*Ask meter vendors to speak on these topics
The Ukrainian Experience
Case Studies ESCO-East-Vasily Stephanenko
GE-Harris/Infotek-
Load Monitoring Devices-Philip Hastings

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April 2 1998

Demand Side Management As A Profit Center for Your IES

Benefit/Cost Analysis-Philip Hastings

Shared Savings-Philip Hastings

Lease Purchase-Philip Hastings

Case Study

Energy Efficiency Technologies for the Industrial Customer

Energy Audits

Case Study Kiev Municipal Buildings—Sergei Surmin

Efficient Motors and Variable Speed Drives-Alex Tretiakov, Rockwell

Automation

Lighting—Professor Yazev, KPI

Process Improvements

Case Studies Paper and Pulp, Food Process, Metallurgy—Philip Hastings

The metering organizations that are active in Ukraine

Foreign

Energy +

Landis & Gyr

Siemens

Schumberger

ABB

GE-Harris

Ukrainian

INET

INEC

Energy Technology and Energy Metering

Energy+

Ukrainian Maintenance and Metering

We should invite all of them to display their equipment and some, possibly, to speak. If it is within the scope of USAID project, they might also be asked to underwrite the conference.

We will try to meet with Elena Zolotaryova and a representative from the Centre for International Policy Studies while Lynn is still in Kiev. Please advise, if we should proceed.

MEMORANDUM

To: David Wolcott, Eric Haskins
From: Lynn Goldfarb
Date: April 9
Reference: Contract no CCN-0002-Q-00-3152-00 Delivery Order no 18, Task 4
Power Structure Restructuring and Regulatory Reform, Demand Side
Management Task
Subject: My Experiences in Kiev

I was in Kiev from March 21 to April 9, 1998

The objectives of my trip were to:

Participate in and support the activities of USAID's Energy Efficiency Working Group
Provide logistical support for the activities of the Ukrainian chapter of the Association of Energy Engineers including the development and implementation plan for a certification training program
Assess the potential of IES for involvement in energy efficiency activities
Define support program to encourage IES to provide full services including energy efficiency

Summary of Trip Deliverables

Develop a complete business plan for AEE

Draft plan is partially prepared, Phil Hastings will work with A Petrov and A Novoseltsev to complete

Prepare detailed plan for scheduled AEE training programs for 1998

Completed plan is attached Phil Hastings will discuss with A Novoseltsev, modifications of curriculum to include Ukrainian specific data

Meet with senior members of Association of Independent Energy Suppliers and provide a written report to LEC Task Manager

Meetings completed Met with

Vladimir Dresvyannikov the acting director and a member of the board

Igor Lapinin, past president and a member of the board

I was unable to arrange a meeting with Yelena Zolotaryova, executive director because she was campaigning for the Rada early in my stay, and then was out of town

(Recommendation Sponsorship of joint educational program including suggested agenda is attached)

Meet with senior management of at least five Independent Energy Suppliers and provide a written report to LEC Task Manager

Meetings completed Met with

Alexander Zapara, Pravex-Energia

Victor Polun, Ukrainian Energy Corporation

Vladimir Korobov, Ukrainian Gas Company

Vasily Stepnaenko, ESCO-East

Vladimir Solomenk, TVEL

Report and recommendation for action completed (Recommendation Sponsorship of joint educational program including suggested agenda submitted is attached)

Read and commented on paper by Dr Miroslav Strelkov on " Development of Ukraine's Energy Policy and Economy"

Comments submitted in separate document

Detailed Reports of Meetings

On April 23, I met with Alexander Zapara Head of the Energy Department of Pravex-Energia, the oldest IES in Ukraine

We discussed his company s activities and interest it might have in encouraging DSM activities for its customers He explained that they have their own generation, but the blocks are not big, 10 mW gas generators They sell their energy locally with direct contracts They also buy electricity from Russia He said this is clean energy, because the pollution is in Russia and not in Ukraine There customer base consists of 40 different industrial customers

When I asked about DSM for his customers he said it is the problem of our clients not ours DSM technologies are expensive Further he explained that if they invested in technologies for a customers that customer would need high liquidity and his company would require a management position in the customer s firm

His customers have three phase metering, but no time of use capability He also noted that as an IES, they can decrease bill, if their is sufficient payment in cash In terms of their installing metering and letting customers pay them back out of the savings, he believed this metering would lead to lower unit cost He noted that they persuaded one user in Donetsk to install differential meters which the customer did, and he noted the customer is very satisfied

I asked him if he thought his company and other IESs would be interested in a seminar on DSM and how an IES could make a profit on DSM. He seemed to think so. I asked about variable speed drives and he thinks these would save 20%.

He believes the real solution to metering and energy savings technologies is for the IES to own the Oblenergo i.e. privatization. The Oblenergo (private) would require payment for purchased energy. Then it would be interested in efficiently consumed and produced energy. He then mentioned that the Sumy Oblenergo had experimented with cash collection. He said they increased collections from 12-36%. They did this by normal control of transit and stopping non-cash contracts.

I asked him if his company intended to buy an Oblenergo, and his answer was "not yet." He noted some Oblenergos will be bought by foreigners, but he believes they should only be bought by Ukrainians.

On March 24, I met with Vladimir Dresvyannikov, the acting director and a member of the board of the Association of Independent Energy Service Companies.

He stressed that the absolute necessary steps that need to be taken in the energy sector are

- Preliminary financial stabilization of power sector by transfer of control of shares to authorized people who represent private Ukrainian investment
- Privatize the main sectors of power industry
- Create market environment for producers and system

He suggested that the above could be accomplished by private management with state ownership. Further he stated that the price of electricity is too low.

When I questioned him about energy savings in the industrial sector, he noted that new technology is what is needed. I gather he believes much industrial equipment must be replaced because of its age, as opposed to incrementally improved by efficiency measures. He noted particularly a need for improvement in power plants that were built for Russian coal that was "much better." He suggested the following solutions for coal:

- Purchase high quality coal for a fair price from Poland
- Introduce technology for gasification of local coal
- Develop new technologies for burning Ukrainian coal

He noted that the Association of IESs is becoming effective due to the following:

That of the 10 voting Directors of the Energo Market, one is a member of the Association of IES. The Association is kept informed, and its opinion is being asked.

He stated that the IES members are not particularly interested in energy efficiency for their customers.

On March 25, I met with A Petrov, A Novoseltsev and Valery Boiko who are the officers of the Ukrainian AEE Chapter

My work with the AEE consisted of 1) Drafting a skeleton for a of the Ukrainian AEE which the officers are using as a template to develop Business Plans for 1998-1999 and 1999-2000 They will receive further assistance in this effort from Phil Hasting, and 2) The Design and Implementation Plan for the Training Seminar for Certification Energy Managers which has been completed and is attached

On March 26, I met with Professor Arthur Prakhonik, Chairman of the Department of Energy Management of Kiev Polytechnic Institute and Evgeniy Inshekov, Director of the Training Centre for Energy Management.

We met at their offices and I had a tour of their facilities including the library, which is supported by TACIS and is impressive Most interestingly they have a series of Energy Efficient Video Cassettes— there appear to be 15 or more—each on a different technology I was not familiar with these They also have installed heat exchangers and electric radiators in their facility for demonstration purposes

The objectives of the department include training personnel in field of energy savings and academic development of demand side management They are also involved in development of rate policy, time-of-use metering and normative consumption They plan to develop training centers throughout Ukraine

Dr Prakhovnik is extremely knowledgeable regarding metering, including the more advanced technologies and uses such as remote meter reading and prepaid meters He believes that there are a minimum 17 million meters in Ukraine which will need to be replaced over time Once those are completed he assumes the remaining meters will have become obsolete and will need to be replaced He said Siemens, Landis & Gyr and Schuimberger are now here and looking for joint partnerships He wanted to know where the American companies are

I recommend that the LEC team consider Dr Prakhovnik as a participant in the metering segment of their upcoming seminar and that his department be a cosponsor for the training program for IES members which I propose

When I asked what were the most acute DSM needs he listed the following

- Tariffs - time-of-use or real time
- Metering

- Load management
- Legislative basis to fix rules between suppliers and users

Finally, Dr Prakhovnik asked us if Hagler Bailly would support a conference on DSM which is planned to be held in Sevastopol in September. It will bring together universities, institutions and industries. There is support from TACIS. He requested \$10,000 as a sponsorship fee that would be used for publishing the proceeding of the conference.

On March 26, I attended a meeting of experts On the Principles of the Wholesale Electricity Market Operations Gorganked by the International Centre for Policy Studies.

I have submitted a separate memorandum on this meeting.

On March 27, I attended a meeting With Elena Bezvesilnaya, Chairwoman of the Instrument Department of Kiev Polytechnic Institute and Board members of Ukraine AEE

The agenda of this meeting was the development of a Center for Instruments and Savings in Ecology and Resources. This institute would be jointly sponsored by AEE and Dr Bezvesilnaya's department. AEE prefers to work with her, rather than Dr Prakhovnik whom they find too controlling. The proposed center would provide two certifications for those it trains, one from AEE and one that is approved by the Ukrainian Ministry of Education. Dr Bezvesilnaya has served in the Ministry and anticipates obtaining the necessary documents to be able to issue Ukrainian certification. The AEE course takes one week, and the Polytechnic course will take an additional week and will include environmental aspects of DSM. Translated copies of Dr Bezvesilnaya's course outline and budget are attached. There is apparently no funding at the Polytechnic Institute for the Equipment needed for this course. The AEE Board wants to include this funding in their proposed budget plan. They anticipate funding for the course will come from a fee. I asked Dr Bezvesilnaya what sectors she felt were most important to address. She listed metallurgy, power sector, transportation, oil and gas, and the food industry.

I was impressed with Dr Bezvesilnaya, and I have confidence that she can quickly work the system to receive Ministry approval for her certification program. However, from a resource perspective, I feel equipping this program would be duplicating the investments which have already been made by international funding sources for Dr Prakhovnik's laboratory, demonstration projects and program. I would suggest that Hagler, Bailly monitor these activities closely.

On March 30, I met with Nikolai Konontsev, Chairman of the Board and Victor Polunin, Head of the Analytical Department of Ukrainian Gas Company

Mr Konontsev did most of the speaking, he appears to be both sophisticated and knowledgeable.

Ukrainian Gas company has been operating in the market for more than two years. It started as a gas delivery firm but as conditions in the gas market changed, they left that market. They are now solely engaged in the electric supply business to industrial, state budget entities and agricultural consumers. Their first energy supplies came from generation using their own gas. They then moved to coal and then, due to non-payment crisis, moved to barter with equipment. In order to take advantage of excess generating capacity in Ukraine, they have considered exporting electricity via the western Ukraine to Hungary and Poland.

They mentioned several energy projects that they have attempted but were unable to realize:

- Building a DC coupling between Ukraine and the west. This had support from President Kuchma, but didn't work out due to problems with Minenergo.

- A joint venture with Landis & Gyr to expand the use of progressive energy meters. They noted it is currently impossible to disconnect customers, because of the way the system is built. This project has not gone forward due to lack of will in the State to implement reforms in the power sector.

I inquired if they were still working with Landis & Gyr. They replied that the inaction of NERC and Minenergo gives end users no incentive for metering. If things change then customers will be interested in metering. They noted that prior to the Siemens acquisition of Landis & Gyr, the latter was considering pulling out of Ukraine. They have implemented one metering system using Landis & Gyr, for a plant manufacturing glass containers.

In terms of other metering activities, they have considered implementing metering for a group of enterprises whereby Ukrainian Gas Company would own the metering system, monitor it, and calculate consumption.

The company is currently considering supplying fuel to a power plant belonging to a Genco and is negotiating with another power plant. They have business dealings in 12 different Oblenergos and are considering renting blocks of generating capacity. They would supply the fuel, and use the energy to supply their customers. They would use Ukrainian coal for this, but noted there would be no problem in obtaining Russian coal. They have not done this yet because settlement crisis makes it risky.

I asked if they thought a seminar cosponsored by Hagler Bailly and the Association of IESs, of which they are a founding member, on how IESs could make money by metering and providing Voluntary Load Curtailment in conjunction with the availability charge would be worthwhile. They said they were not sure a seminar for IES members would make sense, since only 5 of the members are really in the electric energy supply business and the participants are constantly changing.

They predicted that in the near future the Gencos will be purchased by foreign investors, and then the Oblenergos, and in the long run the IESs will not have a place in the market.

On March 30, I met with Victor Polunin, Head of the Analytical Department of Ukrainian Energy Corporation.

The Ukrainian Energy Corporation is a commercial venture founded in 1994 by three state companies a Genco, and 2 Oblenergo, as well as a number of foreign companies The company has four objectives

- Promote progressive technologies in the energy sector
- Supply fuel
- Supply electricity
- Reconstruct power plants

The company is currently one of the top suppliers of energy in Ukraine Their interest in the electricity market is long term, and they plan to participate in privatization They want to introduce new technologies into the marketplace in order to optimize load shapes of their customers They have a permanent circle of customers most of whom have one year contracts with them

In response to a question as to what they have been doing in metering, we were told that a major customer of theirs is a large chemical company They are working with Landis & Gyr to equip that plant with modern metering The metering is being financed by a complicated bartering scheme that involves the customer, the Oblenergo and Landis & Gyr Ukrainian Energy Corporation's interest in metering is further fueled by the fact that their current supply graph by which their price is determined is estimated, and they desire an accurate one

He seemed receptive to a seminar sponsored by Hagler Bailly and the Association of IESs on metering and profit potential by taking advantage of the availability price He asked detailed questions regarding how we calculate cost/benefits and avoided costs in the States from which I concluded a seminar should include these topics

I asked if his company intends to purchase a Genco or Oblenergo He said by itself it would be difficult but with other they could do so The have currently rented a 300 mW block so they have their own electric energy and fully supply the operations of that block

He concluded by telling us that a Landis & Gyr metering system to calculate mean hourly load in real time would cost \$500 000 for an Oblenergo

On March 31, I met with Igor Lapinin, Country Manager for Landis & Gyr (Ukraine)

He noted that his company finds doing business in Ukraine difficult and has thought of pulling out and putting their efforts in other countries, he has encouraged them to stay here He claims that the World Bank thinks that Minenergo will resist metering in preference for funding of fuel and spare

parts He believes that the current ministry is confused The Prime Minister would like to decrease the number of ministries and eliminate Minenergo in favor of a single Ministry of Fuel and Energy as in Russia Though there is an agreement for a Financial Recovery Act, he sees no clear vision for near future

I asked him what successes Landis & Gyr has had in Ukraine He noted that they are known here as world leaders Their meters were first purchased here 30 years ago for interstate links between Soviet Union and Western Europe That system was replaced 10 years ago by a System for National Dispatch This system does not work properly, because only hardware and software were purchased but not engineering, therefore the communications piece is missing Landis & Gyr has been hoping to replace this system for the past six months, but there has been no action

Commercially, they have had some success He notes they try to protect their customers from the utility By that he means measuring electrical use properly, so customers do not over pay They are supposedly doing a metering system for the Zaporozhnia Oblenergo They signed a contract 4 months ago, but the Oblenergo has had no money to fund it, so they have asked Landis & Gyr to find a middleman The system they have contracted for is to help them manage inter-system links It involves a central processing unit and 100-125 metering points The cost is \$100 000 A second phase would involve linking to major industrial customers Individual metering for customers of up to 150 KV is about \$500-900 per meter

He then showed me various Landis & Gyr meters including a t-o-u meter These meters would cost about 80 Hr as compared to the current Ferrary meter that cost 52 Hr He also demonstrated a prepayment devise that can be attached to their meter with one screw He believes there are residential payment problems with about 10% of the residential customers, so only a small number of prepaid devices would be needed He suggested that a separate company could be set up to handle prepayment meters He believes that the Oblenergos need signed agreements with their customers that stipulate disconnection for non-payment

In response to my questions, Mr Lapinin said he would be very happy to participate in the upcoming Credit and Collections Improvement Conference and could be prepared with three days notice

He was also enthusiastic in response to a proposed conference with AEE and Association of IES on the profit potential of the availability charge and the metering necessary for the implementation of Voluntary Demand Curtailment He recommended the Centre for International Policy Studies to coordinate such a conference He would participate and would exhibit his metering systems

On April 1, I met with Vasily Stepanenko of ESCO-East and his associate who is planning to start an ESCO in Kiev

We talked about their success with metering. I asked if he would be interested in participating in a conference with other IESs on metering, the Availability price and DSM. His first reaction was that IES was a Landis and Gyr company, and so he would not. But when I explained we would be inviting all of the metering companies, both foreign and domestic to participate, he said he would take part. He uses ABB meters.

He also discussed his plans for a pilot program in Slavutich where by electrical equipment could be imported without duty and VAT, thus making the investment cost effective. He is also considering a shared savings program with his customers.

On April 3, I attended a meeting of a subcommittee of the Energy Efficiency Working Group

The group is anxious to have Hagler Bailey's formal rate proposals to incorporate in their report which will go to the Working Group for its meeting on May 6. The next meeting of this subcommittee will be on April 20 or 21. (I have shared this information with Jim Stanfield.) The discussion centered on time differentiated rates, whether the current laws allow for inclusion of environmental charges in tariffs, the heat tariff and tariffs that are differentiated by voltage level. A Petrov was asked to explain where Hagler Bailey took issue with Professor Prakhovnik. There was also significant discussion on the heat tariff.

The representative from the Ministry of Economy believes that there should be time differentiated tariffs only between market and supplier. He believes the relationship between the supplier and the consumer is a voluntary business agreement between them and should not be regulated. He also noted that enterprises that pollute should pay for measures to mitigate, collecting from the consumer is starting at the wrong end.

It was announced that President Kuchma received a letter that day from the President of the World Bank and from the EBRD, 80% of which focused on the energy sector and most of that on energy savings. If the Working Group wants its ideas included in the President's response, they would need them by Monday, April 6.

Vasily Stepanenko then presented his ideas of tax relief for energy efficiency that he had discussed with me the preceding day. He has discussed this idea with the head of the State Committee on Energy Conservation who agreed with them. Stepanenko is now going to submit them to the Kuchma-Gore Commission for adoption. In response to a question regarding leasing of equipment for energy efficiency, he replied that this technique was included in his plans. He also had a Russian

document on the implementation of energy efficiency that he made available to the group. He appears to think it is a model that should be adopted in Ukraine. He may create an Association of Energy Service Organizations modeled after NAESCO in the US.

On April 6, I met with Vladimir Solomenko, President, and Eugene Fedorovich, Advisor to TVEL.

This is a new IBS which is a joint venture between a Russian nuclear fuel supplier, backed by Income Bank, which owns 45% and by AMP (an IBS), Bank Ukraine and the Nuclear Power Committee of Ukraine. They told us that they supply fuel to the nuclear plants in exchange for electricity, and that they have an exemption from the Energo market (Decision ^60) and can sell their electricity directly to their customer. Mr. Fedorovich has worked for the State Committee on Nuclear Power. They consider Hagler Bailley work and the activities of the Association of IESs to be on the retail supply of the market, while they are on the wholesale side. They use two criteria to select their end users: the ability to pay in hard cash or the ability to pay in liquid goods. When I asked if their firm had started selling, they answered "not exactly." They noted that even though nuclear plants represent only 26% of installed capacity, they represent 45% of the energy produced. This is due to the high percentage of idle thermal plants.

Because of their exemption from the Energo market, they explained they were not familiar with the Availability price or with load shedding initiatives. He asked us to explain it. Sasha Petrov gave an excellent description. They feel that the Energo rules that "were developed by Putnam, Hayes and Bartlett, Hagler Bailley, Price Waterhouse, etc. were forced upon us." They believe that the price of electricity on the market is not competitive, because transit payment makes electricity 10-15% more expensive than the State's (Oblenergo) price. They confirmed what we have heard from other IESs that there are about two dozen IESs who are active in the market.

During our discussion of energy efficiency, they noted that DSM is not moving forward because the manufacturing plants have no resources. They cited a need for the replacement of basic manufacturing equipment, because the current stock is outdated.

There greatest concern is the "government's inability to create conditions under which commercial entities work", i.e. disconnection for non-payment and payment in cash.

When I asked them about an interest in attending the seminar that we are proposing to the Association of IESs, they suggested that we participate in the upcoming conference in Crimea that is being sponsored by Minenergo.

interoffice

MEMORANDUM

To David Wolcott
From Lynn K Goldfarb
Subject: PROJECT REPORT Seminar of Independent Energy Suppliers
Date June 27, 1998
CC Eric Haskins

Scope of Work

Implement a program of support for Independent Energy Supplier's business development by preparing and conducting a seminar on the potential business available through energy efficiency applications and services

Original Intent

To encourage the Association of Independent Energy Suppliers and its members to endorse load management and energy efficiency and to develop load management coops which will participate in the Energomarket voluntary load curtailment bidding process To educate managers of Independent Energy Suppliers on the financial benefits to their firms from participation in load curtailment and energy efficiency activities

Measures of Success

- 1 Presentation of a Seminar on Profiting from Load Management and Energy Efficiency in the Energomarket under the sponsorship of USAID, Hagler Bailly, the Association of Independent Energy Suppliers, and the National Technical University of Kiev (Kiev Polytechnic Institute [KPI])
 - Seminar held on June 30-July 1, 1998 at KPI
 - Attended by 30 people including 13 representatives of 10 Independent Energy Suppliers, NERC, Minenergo and several metering manufacturers
 - Attachments to this memo
 - Agenda
 - List of attendees
 - Copy of Seminar Notebook

- Analysis of participant evaluations
- 1 Ongoing dialogue between Association of Independent Energy Suppliers, Hagler Bailly and the Institute of Energy Savings and Energy Management at Kiev Polytechnic Institute
 - Yelena Zolotaryova, Executive Director of the Association of Energy Engineers, is participating as a member of the Energy Efficiency Working Group

Recommendations for Follow-up

- 1 Development of Load Reduction Coop by one or more Independent Energy Supplier
 - Follow up survey with Independent Energy Suppliers needed to ascertain the following
 - Interest in creating a load cooperative among customers
 - Interest in supplying energy efficiency services to their customers directly or in cooperation with an energy services company
 - Interest in supplying upgraded metering to their customers
- 1 Facilitate project with one or more Independent Energy Supplier for energy efficiency improvements at facility of one of their customers
 - Recommend having Certified Energy Manager from Association of Energy Engineers provide audit and audit training at the site of customer of one or more Independent Energy Suppliers
- 1 Develop ongoing dialogue between Association of Independent Energy Suppliers, Hagler Bailly and the Institute of Energy Savings and Energy Management at Kiev Polytechnic Institute
 - Facilitate development of ongoing seminars of load shedding and energy efficiency sponsored by the Association of Energy Engineers in conjunction with the Training Center for Energy Management of KPI and the Ukrainian Chapter of the Association of Energy Engineers

Other Attachments

IES Seminar Scheduling Calendar
 Vendor/Exhibitor Confirmation Letter
 Vendor Exhibit Requirements Form
 Speaker Confirmation Letter
 Speaker Audio-Visual Requirements Form
 Contract with Training Center for Energy Management of KPI

APPENDIX C

**Action Plan for Support of
Independent Energy Suppliers (IES) Development**

ACTION PLAN for SUPPORT OF INDEPENDENT ENERGY SUPPLIERS (IES) DEVELOPMENT

Purpose To determine areas of mutual interest between Hagler Bailey and the Association of Independent Energy Suppliers (IES) and their members To encourage the Association of Independent Energy Suppliers to endorse load shedding and energy efficiency To educate the management of Independent Energy Suppliers on the financial benefits to their firms from participation in load shedding and energy efficiency activities

Measures of Success

- Presentation of a Seminar on Energy Conservation and Load Management under the sponsorship of the Association of IES, Hagler Bailey, the Ukrainian Chapter of the Association of Energy Engineers and the Institute of Energy Saving and Energy Management of Kiev Polytechnic Institute
- Development of a load shedding cooperative by one or more Independent Energy Supplier
- Facilitation by one or more Independent Energy Supplier for implementation of an energy efficiency improvement by one or more of its customers
- On going dialogue between Association of IES and Hagler Bailey, AEE and the Institute of Energy Saving and Energy Management

Action Strategies

I SEMINAR

- Obtain agreement between Association of IES, the Ukrainian Chapter of the Association of Energy Engineers and the Institute of Energy Saving and Energy Management of Kiev Polytechnic Institute on a date, location and agenda for a seminar on Energy Conservation and Load Management
- Have seminar proposal translated into Russian
- Meet with
 - ⇒ Ylena Zoiotaryova
 - ⇒ International Center for Policy Studies
 - ⇒ Professor Prakhovnik
 - ⇒ Board of AEE
- Determine a time line for planning and execution
 - ⇒ Who
 - ⇒ When
 - ⇒ Where
- Develop budget
- Invite presenters
- Invite meter vendors to participate

II Load Management and Energy Efficiency

- Follow up Seminar with a letter to all IES attendees asking them to meet with Hagler Bailey representative (Phil Hastings) to discuss how we might facilitate their development of energy management and load management strategies

III On Going Dialogue

- Have Ylena Zolotaryova participate as a member of the Energy Efficiency Working Group
- Plan a second Training Seminar

Evaluation

Assess effectiveness of strategy implementation in achieving predetermined measures of success

APPENDIX D

Profiting from Load Management and Energy Efficiency in
the EnergoMarket

(A Seminar for Independent Energy Suppliers)
June 30/July 1998

A Seminar
presented to:
The Association of Independent Energy Suppliers

PROFITING FROM LOAD MANAGEMENT AND
ENERGY EFFICIENCY IN THE ENERGOMARKET

National Technical University Of Ukraine
"Kiev Politechnic Institute"
June 30 B July 1, 1998

SPONSORED BY

United States Agency for International Development
Hagler Bailly, Inc.
The Association of Independent Energy Suppliers
Training Center For Energy Management

CONTENTS

- A. **Seminar Agenda**
- B. **List of Participants**
(Separate List of Participating IES Companies)
- C. **Speaker Information**
 - 1 David R Wolcott
 - 2 Alexander A Petrov
 - 3 Alexander E Silakin
 - 4 Lynn K Goldfarb
 - 5 Phil C Hastings
- D. **Presentations (not all the presentations were available)**
 - 1 Voluntary Demand Curtailment A Step Towards Firm Service in Ukraine's Restructured Power Sector

(Availability Price and Load Management Bidding)
 - 2 Load Management Coops Experience in the United States
 - 3 Basis for Load Coops in Ukraine
 - 4 Financing Energy Efficiency Projects
 - 5 Energy Saving is Our Business or What ESCO Is?

(ESCOs Business Opportunity for IESs)
 - 6 New Retail Tariff System (Basics of Tariff Methodology)
 - 7 Time-of-Use Tariffs

Opportunities for the Customer, the Supplier, and the Economy
 - 8 Legal Aspects of Wholesale Electricity Market Activity and Electricity Law
 - 9 Instruction (Procedure) on the use of funds of the Wholesale Electricity Market in Ukraine
 - 10 Economic Basis for Energy Efficiency

(Experience of Energy Auditing at Enterprises of Ukraine)
- E **Summary of Seminar Evaluation by Participants**

F Addenda

- 1 IES Seminar Scheduling Calendar
- 2 Letter of Invitation
- 3 Information Forms
- 4 List of Invitee's
- 5 List of Manufacturers Exhibiting Equipment

Draft
6/25/98 @ 3 00 PM
PROFITING FROM
LOAD MANAGEMENT AND ENERGY EFFICIENCY
IN THE ENERGO MARKET
Seminar for Independent Electricity Suppliers
Sponsored by USAID, Association of IESSs and Hagler Bailly
AGENDA

Tuesday, June 30, 1998

SESSION 1

MODERATOR YELENA ZOLOTAROVA

8 30 - 9 15

Registration and Coffee

9 15 - 9 30

Welcome

Victor Polunin, IESSs and David Wolcott, Hagler Bailly

9 30 - 10 00

Availability Price and Load Management Bidding
David Wolcott, Hagler Bailly

10 00 - 10 45

Load Management Coops Experience in the United States
Lynn Goldfarb, Hagler Bailly/LKGA

10 45 - 11 00

BREAK & EXHIBITS

11 00 - 11 30

The Basis for Load Coops in Ukraine,
Alexander Petrov, Hagler Bailly

11 30 - 12 30

Performance Contracting Financing Energy Efficiency Projects
Philip Hastings, Hagler Bailly/CMPI

12 30 - 13 30

LUNCH & EXHIBITS

SESSION 2
Moderator Alexander Petrov

13 30 - 14 15,
ESCOs Business Opportunity for IESs,
Vasily Stepanenko, ESCO-East

14 15 - 15 00
Metering and Control Technologies
Arthur Prakhovnik, Institute of Energy Conservation and Energy Management or
Oleg Razumovsky, Energy +

15 00 - 15 15
BREAK & EXHIBITS

15 15 - 16 30,
Basics of Tariff Methodology,
Irina Yegorchenko, Hagler Bailly

16 30 - 17 00
Time of Use Tariffs Opportunities for the Customer, the Supplier, and the
Economy
Lynn Goldfarb, Hagler Bailly/LKGA and Philip Hastings, Hagler Bailly/CMPI

17 00
VENDOR EXHIBITS AND RECEPTION HOSTED BY HAGLER BAILLY

**PROFITING FROM
LOAD MANAGEMENT AND ENERGY EFFICIENCY
IN THE ENERGO MARKET**
Seminar for Independent Electricity Suppliers
Sponsored by USAID, Association of IESs and Hagler Bailly

Wednesday, July 1, 1998

SESSION 3

Moderator Arthur Prakhovnik

9 00- 9 15

Opening Remarks

Lynn Goldfarb, Hagler Bailly/LKGA

9 15-10 15

Legal Aspects of Energomarket Functioning and Electricity Law
Svetlana Golikova, Hagler Bailly

10 15-10 30

BREAK & EXHIBITS

10 30-11 30

Peculiarities of Legal Work within the Framework of the Energomarket Agreement
Svetlana Golikova, Hagler Bailly and Konstantin Yemelyanov, Hagler Bailly

11 30-12 30

Energomarket Funds Procedure

Vladimir Tsyssin, Hagler Bailly

12 30-13 30

LUNCH & EXHIBITS

SESSION 4

Moderator Yelena Zolotarova

13 30-14 15,

Experience of Energy Auditing at Enterprises of Ukraine,
Mikhail Tarnovsky and Alexander Silakin, Burns & Roe

14 15-15 00

Case Study on Energy Efficiency in Ukraine

Victor Gureyev, GE-Harris/Infotec

15 00-15 15
BREAK & EXHIBITS

15 15-16 00
Case Study on Energy Efficiency in Ukraine
Vasily Stepanenko, ESCO-East

15 45-16 00
BREAK & EXHIBITS

16 00-16 15
AEE Certified Energy Manager Training Program,
Alexander Petrov, Hagler Bailly

16 15-17 00

Open Discussion (Question/Answer) and Wrap Up
Moderators Yelena Zolotareva?, IESs and Alexander Petrov, Hagler Bailly

LIST OF IESs AND OTHER IES SEMINAR PARTICIPANTS

No	Name	Company	Address	Post	Telephone
1	Victor Anatolyevich Polunin	"Ukrainian Energy Consortium"	67 Victory Avenue	Dep General Director	568-07-83
2	Vladymir Grygonevich Dresvyannikov	AHF13 GENCO	3/46 Basseinaya Str	Executive Director	246-48-25
3	Alexander Eduardovich Sylanin	Burns & Roe ^A Enterprise	20 Esplanadnaya Str	Energy Management Expert	220-13-67 227-06-26
4	Vladymir Ivanovich Olifyrenko	"Energohym"	3b Kruglo-Universitetskaya Str	Director	246-67 52 224-04-14 220-74-25
5	Elena Mikhailovna Melnick	"Fortress Development"	6/1 Kostyolnaya Str	Office Manager	229-22-54 229-51-60
6	Mikhail Vasilyevich Tarnovsky	Burns & Roes Enterprise	20 Esplanadnaya Str	Energy Management Expert	220-13-67
7	Vladymir Grgoryevich Sumonenko	"Intotekh"	Kyiv post box 44	Dep General Director	271-34-52
8	Vladymir Grgoryevich Taromenko	"Intotekh"	Kyiv post box 44	Chief Engineer of Project	271-34-52
9	Vladymir Ivanovich Ny/hnin	"Inlotekh"	Kyiv post box 44	Chief Engineer of Project	271-34-52
10	Victor Alcxandrovich Clurcyev	"Inlotekh"	Kyiv post box 44	Dep Director	271-34-52
11	Vladymir Anatolyevich Antonov	"Ukr ^A ossugol	4 B Khmeintskogo Str	Director of Kyiv's subsidiary	229-88-05
12	Arthur Venyaminovich Prakhovnick	KPI	37 Victory Avenue	Director of Energy Management Institute	241-70-37
13	Alexander Mikhailovich Kalyuzhny	"Inet"	83 a Lepse Boulevard	Engineer	488-90-24
14	Roman Poskonny	ECM "Europe Capital Manancment"	Mikhailovskaya Str	Analyst	462-06-07
15	Oleg Victorovich Kotsar	"Inet"	83a Lepse Boulevard	Vice-president	488-90-24
16	Vladymir Nickolaevich Petrenko	MCC of Minenergo	27 Komintema Str	Chief of Complex	220-91-16
17	Valery Ivanovich Tsaplin	NERC	27 Komintema Str	Leading Specialist of Technical Department	271-12-04/94 220-08-62
18	Eugenyu Nickolayevich Inshekov	Energy Managers' Training Center (TACIS Project)	27 Victory Avenue build 22 apt 307	Director of Tech Training Study	241-70-87 441-17-74 241-70-88
19	NinaNickolay Kramareva	"Ener ^A oservice"	8 Reytarskaya Str	Dep Director	228-50-07
20	Vladymir Konstantinovich Nastorzhitsky	DMTF (Machine Tools Factory)	93 Stroitelej Str	Chief Engineer	92-92-90
21	Oleg Alexandrovich Shido	"Energomera Concern	12 Stepnaya Str -	Director	(8652) 35-67-43

22	Alexander Nickolayevich Lopatyn	"Energomera" Concern	12 Stepnaya Str	Chief Engineer	(8652) 35-67^3
23	Vyacheslav Alexeyevich Pyndyura	MCC ofMinenergo	27 Komintema Str		220-91-16
24	Leonid Stepanovich Symonenko	NERC	27 Komintema Str	Director of Department	220-08-62
25	Victor Petrovich Rosen	KPI		Professor	
26	Vasily Anatolyevich Stepanenko	ESCO-EAST	11, Mayakovskogo Str Zaporozhie	Technical Director	(0612) 34-35-67 Fax 33-15-75
27	Valery Mikhail Geizytsky	EGO-CENTRE	Slavutych	Gen Director	2-67-70
28	Oleg Valeryevich Razumovsky	"Energy +"	115 Borschagovskaya Str	Tech Director	441-13-97
29	Vladimir Vasilyevich Prokopenko	Bums & Roe			220-1367
30	Alexander Sergeyevich Kononenko	Fortress Development Corporation, Kiev office			229-2254
31	Anatoly Vasilyevich Voloshko	INET	83a Lepse Boulevard	Gen Director	488-90-24

Independent Energy Suppliers
who attended the IES Seminar

Ukrainian Energy Consortium

67, Pobedy ave , Kiev

568-0783

Polunin, Victor, Anatolievich

Dep Gen Director

GENCO

3/46, Basseinaya Street, Kiev

246-4825

Dresviannikov, Vladimir Grigoriyevich

Executive Director

Energokhim

3 b, Kruglo-universitet-ska st , Kiev

246-6752

224-0414

220-7425

Olifirenko, Vladimir Ivanovich

Director

Fortress Development

6, Kostiolna street, Kiev

229-2254

229-5160

Melnik, Yelena Mikhailovna

Office manager

AUkrRosUgol

4, B Khmel-nitskogo st , Kiev

229-8805

Antonov, Vladimir, Anatoliyevich

Director of Kiev branch

INET

83-a, Lepse boulvd , Kiev

488-9024

Voloshko, Anatoly

Vasiliyevich

President

Kotsar, Oleg Victorovich

Vice-President

Kaliuzhny, Alexander Mikhailovich

Engineer

Energoservice

8, Reytarska street, Kiev
228-5007
Kramareva, Nina Nikolayevna
Deputy Director

DMTF (Machine Tools Factory)

93, Stroitelej st
92-92-90
Kastorzhytsky,
Vladimir Konstantinovich
Chief Engineer

Energomera concern

12, Stepnaya street, Stavropol
(8652)
35-67-43
Lopatin, Alexander
Chief Engineer

Shydo, Oleg Alexandrovich
Director of Representation

ESCO-East

11, Mayakovs-kogo street, Zaporozhiye
(0612) 34-35-67
fax 33-15-75
Stepanenko, Vasily Anatoliyevich
Technical Director

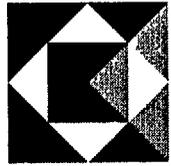
ECO-Center

Slavutich
(044 79)
2-67-70
Genzitsky, Valery Mikhailovich
General Director

ECM

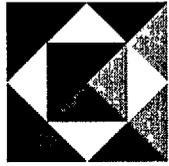
("Europe Capital Management")
Mikhailov-ska street, Kiev
462-0607
Poskonny, Roman
Analyst

229-2254
Kononenko, Alexander



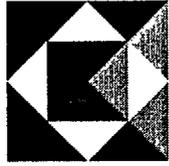
Voluntary Demand Curtailment: A Step Towards Firm Service in Ukraine's Restructured Power Sector

David Wolcott/ Alexander Petrov
Hagler Bailly Kiev, Ukraine
June 1998



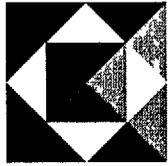
Demand Management in The Ukrainian Electricity Market

- Goal: Eliminate arbitrary and mandatory load curtailment
- SWG-11: “ Capacity Shortages and Demand Management” (presented to Energomarket Board of Directors, 8 July 1996):
 - “...Sets out proposed arrangements for:
 - A) Simultaneously dispatching load and generation based on price offers; and
 - B) Voluntarily shedding load when available generation capacity is nearly exhausted by the demands on the Ukrainian integrated power system.”



Near-Term Objectives

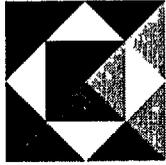
- Provide Firm Electricity Service at international standards to those customers willing to pay for it.
- Reduce, and eventually eliminate, reliance on Command Load for which customers are subject to arbitrary, mandatory demand curtailment by the system operator
- Introduce a voluntary, market based mechanism that allows participation by suppliers and customers who have hourly meters and the capability and willingness to curtail load.



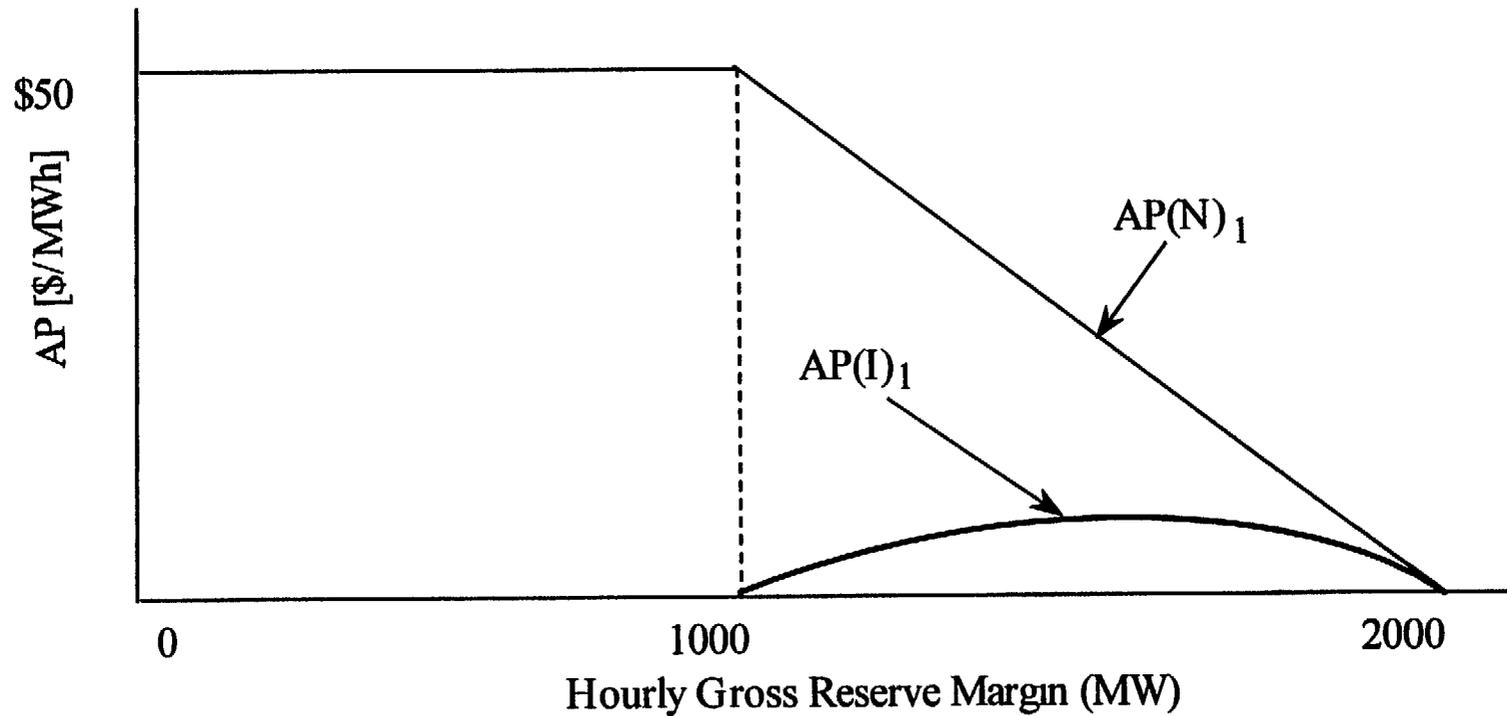
Near-Term Objectives (Continued)

How?

- First, use the Availability Price (AP) mechanism to drive up the Wholesale Purchase Price (WPP) when there is a shortage of availability capacity.
- Operate a real-time interruption system using an economic incentive which reduces the Availability Price for those customers willing to competitively offer interruptible load.

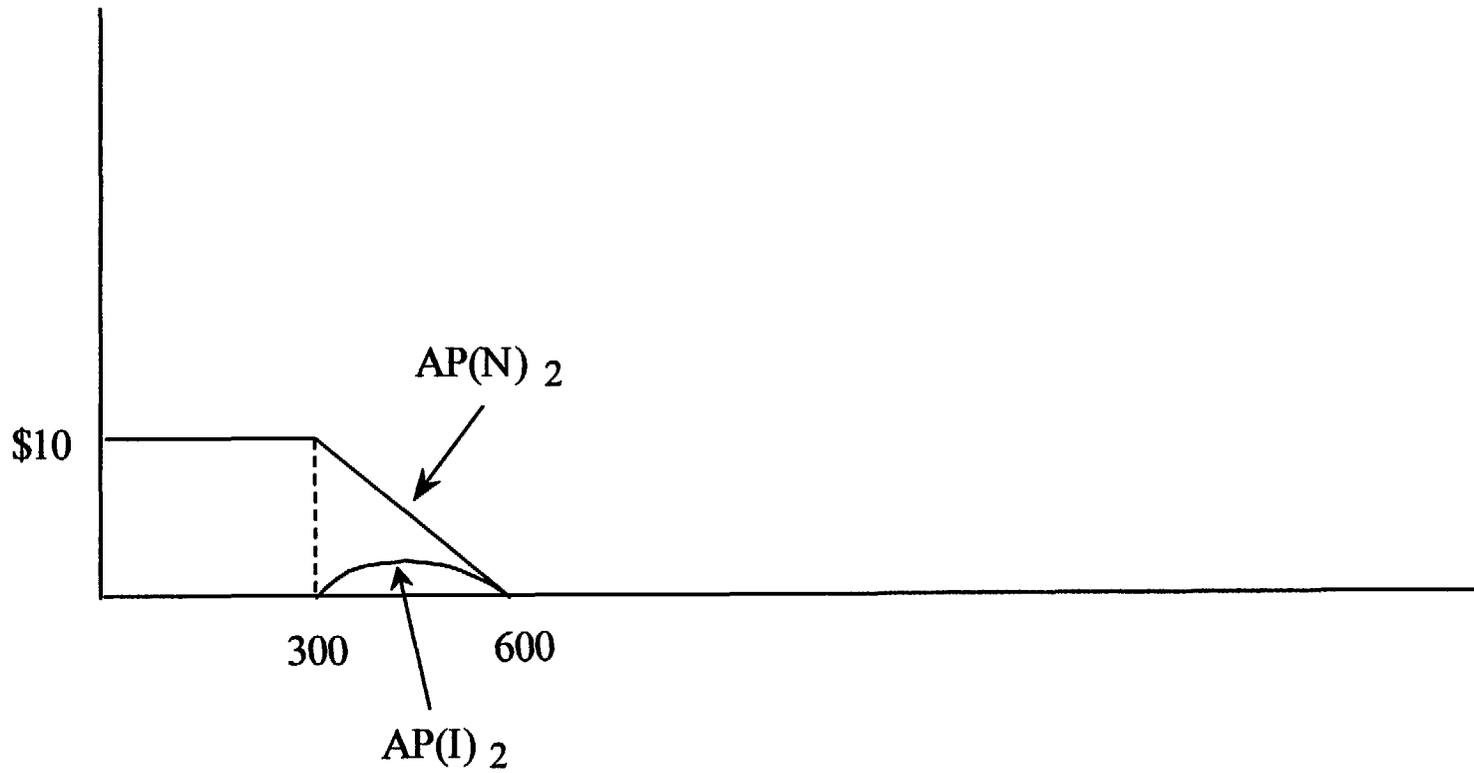
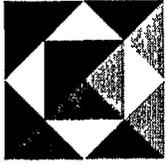


Availability Price Formula



AP (N) = Availability Price paid by Non-Interruptible Load customers

AP (I) = Availability Price paid by Interruptible Load customers (illustrative)



nl



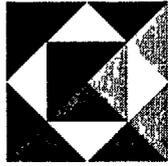
Interruptible Load: How would it work ???

“**INTERRUPTIBLE LOAD (SWG-11)**...consists of demand by customers who have the technical ability to curtail demand within 30 minutes, and gives the right to Energomarket to curtail them under specified circumstances in exchange for a wholesale price discount.”

Implemented in three parts:

(1) PROPOSED ARRANGEMENT

- Wholesale Purchase Price (WPP) = System Marginal Price (SMP) + Availability Price (AP)
- AP increases rapidly from zero as Gross Reserve Margin (“Available capacity minus non-interruptible load”) falls below 2000 MW
- Customers offer interruptible load and the AP discount required by them in exchange for volunteering to be interrupted.
- Energomarket curtails Interruptible customers according to competitive bids, highest AP discount first, when Net Reserve Margin (“Available capacity minus total load”) falls below 2000 MW.



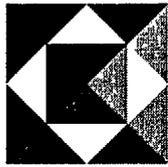
Interruptible Load: How would it work?? (Continued)

(2) CUSTOMER INTERRUPTION AGREEMENT Between three-parties: Energomarket, Suppliers, Customers

- Defines relevant loads and means of measuring them
- Sets out incentives and penalties for parties to cooperate.
- Sets out operational rules by which curtailment is to be conducted.

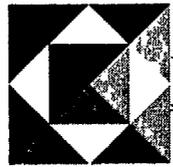
(3) REAL-TIME OPERATIONAL RULES

- If Net Reserve Margin falls below 2000 MW, high discount Interruptible Load customers will be curtailed
- If Net Reserve Margin continues to fall below an emergency level (1000 MW) or for any other system emergency situation, Energomarket will revert to Command Load at Minenergo's direction



IMPLICATIONS OF LOAD MANAGEMENT BIDDING IN UKRAINE'S POWER SECTOR RESTRUCTURING

- 1) Load Management Bidders Will Have Full Access to Energomarket Operations
- 2) Energomarket Will Establish Internal Mechanics to Evaluate Load Management Bids and Dispatch Competitive Load Management Resources
- 3) Supplier Agreements Will Include Provisions for Load Management Bidding to Energomarket
- 4) Load Management Bidding May Be Initially Limited by Lack of Communication and Metering Technology
- 5) Monitoring and Verification Will Be Essential



HOW WOULD LOAD MANAGEMENT BIDDING WORK IN PRACTICE ???

ELIGIBLE BIDDERS AGGREGATE DEMAND CURTAILMENT BY CUSTOMERS (LOAD COOPERATIVES)

- LOCAL ELECTRICITY SUPPLY COMPANIES (LEC)
- INDEPENDENT ELECTRICITY SUPPLIERS (IES) INCLUDING ENERGY SERVICE COMPANIES (ESCO)
- LARGE CUSTOMERS CONNECTED AT HIGH VOLTAGE

COMPETITIVE BIDS RECEIVE RESOURCE PAYMENT FROM ENERGO MARKET

DEMAND CURTAILMENT ACHIEVED THROUGH CONTROLS

- LOAD MANAGEMENT (PEAK CLIPPING, SHIFTING)
- VOLUNTARY DEMAND CURTAILMENT

ECONOMIC POTENTIAL ESTIMATED TO BE 3,500 MW

LOAD MANAGEMENT COOP EXPERIENCE IN THE UNITED STATES

Changing the Way Customers Use Power

In the United States special rates have been used successfully as a way to influence customer energy consumption. These special rates fall into two distinct categories: those which are linked to a specific technology or end use and those that provide a price signal to encourage either a change in the level or timing of customer consumption. Today I am going to center my remarks on the later

Special rates designed to encourage customers to change the amount of electric energy consumed or the time at which it is used allow the customer flexibility to determine the way in which they will achieve the load reduction or load shifting. The economic incentive offered to customers vary based on various attributes of the load reduction including

- \$ Magnitude
- \$ Duration
- \$ Reliability
- \$ Value of the load reduction to the utility
- \$ Level of inconvenience which the customer will tolerate

Survey of Programs in the United States

My presentation is based on data from nearly 150 different utilities throughout the United States, which have offered more than 200 special rate programs and from my experience at Central Maine Power Company. The rates we reviewed fall into five basic categories

- \$ Interruptible or Curtailable Rates
- \$ Time-of-use Rates
- \$ Economic Development rates
- \$ Real Time Rates
- \$ Coincident demand rates

This discussion will focus on interruptible and curtailable rates and their use by load cooperatives

Interruptible or Curtailable Rates

Almost half the rates in the study were either interruptible or curtailable. In these programs customer were given economic incentives to reduce their demand upon request from the utility. Usually, the utility negotiated a yearly or seasonal contract for a specific quantity of demand reduction (e.g., 100kW) or a specific level (e.g., 10%) of reduction within a certain amount of time, often within 15 minutes of notification. In return the utility agreed to certain economic incentives and to limit the number and duration of the interruptions. The contracts were usually structured in two ways: either the load reduction was mandatory or voluntary. Some rates were just that, a special rate, less than the usual rate for that customer class. The

customer was billed for the season or the year at the interruptible rate whether or not the utility actually requested one or more reductions or not. In other instances, the utility offered a specific credit for each period of reduction. Over 60% of the utility programs we reviewed included time-of-use rates. These rates offered different demand and/or energy charges at different times of the day to encourage customers to shift their usage to off-peak periods.

In all of the cases studied, the customer was given the option of how to achieve the contracted reduction either by shutting off non-essential load or by using their own back-up generation such as on-site diesel generators.

Promoting Load Curtailment Programs

In recruiting customers for special rate programs utilities use a number of different methods to inform customers and to enlist them in their programs. The most frequent method used by 75% of the utilities in the study and the one we found most effective at Central Maine Power Company, was direct contact. We had a special meeting at our headquarters to describe the rate and encourage large industrial customers to participate. We then called on customers to work out the details with them and to obtain signed contracts. Other promotional strategies include

- \$ Direct Mail
- \$ Bill Inserts
- \$ Brochures
- \$ Newsletter
- \$ Seminars/Workshops
- \$ Shows and Exhibits
- \$ Newspaper Advertising
- \$ Energy Audits

Financial Incentives

Interruptible rates programs usually allow for bill credits based on the value of the interruption to the utility. There were basically three types of payment arrangements used in the States

\$ An interruptible rate which was less than the standard rate for that category of customer

YAnnual

YSeasonal

C Pre-determined credit payment for each interruption

C Combination of interruptible rate and payment for each interruption

An Example of Interruptible Rates Central Maine Power Company

At Central Maine Power Company we first introduced Interruptible Rates in 1986. They were offered to customers who had large and relatively constant loads and who had industrial processes of 500kW or more that could be controlled for several hours at a time. In the first year we signed up six customers for a total of 66,500kW. We

offered two interruptible rates. One was effective all year and met the needs of the New England Power Pool as part of CMP's capacity requirements. The other rate was used to reduce CMP's peak capacity requirements and was available during the high load months from December through March.

The following year, we added a summer interruptible rate. While CMP was a winter peaking utility, the rest of New England is summer peaking, thus, the summer reduction in load was value to the Power Pool. CMP was able to sell interruptible load to the pool in place of generating capacity at peak periods. This is similar to the voluntary load curtailment program proposed for the Energomarket in Ukraine. In 1997 CMP began offering an additional load reduction program, the Voluntary Interruptible Rate. This rate provided the opportunity for customers to decrease load or for those with generating capacity to participate if, and when they wanted. The interruptions were not mandatory, and credits were awarded only for the load actually interrupted.

An Example of Load Coops Southern California Edison

In 1981 Southern California Edison, one of the largest investor-owned utility in the United States, signed a contract with the Southern California Energy Coalition, a group of five businesses who provided load reduction from a total of 14 buildings. The Coalition was formed to take advantage of a new Conservation/load Management Program offered by the utility. Under this program the customers would provide interruptible load in return for incentive payments from the utility.

It might be helpful, if I review some of the terms I will use to further discuss this program.

Coalition Demand Coincident demand in kilowatts of the Members as recorded on Edison's demand meters.

Firm Service Level The maximum level of demand that the Coalition agreed to establish and maintain when notified by Edison of a Firm Service Period and which was the reference for computing the incentives paid by Edison to the Coalition.

Firm Service Period The period of time during the On-peak and Mid-Peak Periods, as defined in the Edison Tariff Schedule when the company required the Coalition to maintain the Coalition Demand at a level no greater than its Firm Service Level.

Non-Interruptible Load The average monthly kW demand which was included in the Coalition's Firm Service Level and not subject to interruption under the Program.

Summer Season Season time periods as defined in Edison's Tariff Schedule.

Winter Season Seasonal time periods as defined in Edison Tariff Schedule.

On-Peak Period Daily time periods as defined in Edison's Tariff Schedule.

Mid-Peak Period Daily time periods as defined in Edison's Tariff Schedule

Incentive Payments The monthly payments to be paid by Edison to the Coalition at provided in the agreement and subsequent amendments

Southern California Incentive Payments

<u>Year</u>	<u>Winter Rates</u>	<u>Summer Rates</u>
1981	\$2 50/kW/month	\$2 00/kW/month
1982	\$4 00/kW/month	\$2 00/kW/month
1983	\$4 16/kW/month	\$2 08/kW/month

Excess Demand Charge The forfeitures required of the Coalition should they exceed Firm Service level

Escrow Account A separate account managed by a third party, designated by the Coalition with the approval of Edison, established to assure the proper distribution of the amounts paid by Edison under the contract

Energy Audit Survey of participant's premises to

C Identify the potential for electrical energy conservation, demand reduction, demand shift or power factor correction

C Recommend methods for reducing energy consumption and/or demand requirements and improving the power factor

How the Co-op Worked

The Coalition was required to establish and maintain a Coalition Demand level no greater than its Firm Service Level when a Firm Service Period was declared by Edison. Members determined their own level of use of electric power. However, the Coalition was required to make every reasonable attempt, upon notice from Edison

Edison had complete discretion to determine the time and duration of Firm Service Period and to notify the Coalition of same. Notice was given by telephone either by telephone message or an automatic telephone terminal supplied by Edison and located at the convenience of the Coalition. Edison was required to give the Coalition not less than thirty minutes notice before the initiation of a Period of Firm Service.

Edison agreed not to declare a Firm Service Period more than fifteen times in any one calendar year and to limit each period to six hours or less in duration. Periods of reduction required under the California State Electrical Emergency Plan were not included and could not be counted under the Program.

Establishing Firm Service Levels

The coalition established two Firm Service Levels. One was the Summer Season Firm Service Level and was effective during the Summer Season On-Peak and Mid-Peak Periods and the Winter Season Mid-Peak Periods. The other was the Winter Season Firm Service Level and was effective during the Winter Season On-Peak Periods. During the length of the contract it was permissible to decrease the Firm Service Level by mutual agreement. It was more complicated to increase the Firm Service Level. Increasing it required a 60-day written notice to accommodate a new Member or an increase in an existing Member's load. And for members wishing to reduce their participation in the Program, a three-year written notice was necessary.

Paying for the Load Reduction

Payments for the actual reduction of load were made monthly by Edison to the Coalition's representative. However, to assure that the Coalition abided by the contract, Edison withheld a portion of the Incentive Payment each month. The portion withheld was equal to the share of payment due to the largest single Member of the Coalition. These funds were then placed in an Escrow Account. After the first three years, the funds placed in the Escrow Fund during the first year were distributed, plus interest and minus any forfeiture. Then every twelve months, a similar distribution was made. The Coalition was responsible for distributing Incentive Payments to the Members.

Excess Demand Charges

If the Coalition Demand exceeded the established Firm Service Level during a Firm Service Period, it was required to forfeit funds from the Escrow Account to Edison based on the following schedule:

FORFEITURE FOR NON-COMPLIANCE

<u>Failure to Maintain Firm Service Level</u>	<u>Penalty</u>
First Failure	Excess kW Demanded x Monthly Payment x 6 months
Second Failure	Excess kW Demanded x Monthly Payment x 6 months
Third Failure	Excess kW Demanded x Monthly Payment x 12 months

Billing

Under the contract, each Member was required to have a minimum monthly demand of 500 kW or greater and to receive service under a specified tariff. Customers were billed individually under that tariff.

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Linking Energy Efficiency to the Program

Under the terms of the contract, Edison has the right, at its expense and without interfering with the activities of the Coalition or its Members, to perform Energy Audits of Members' facilities. The results of these audits were confidential and could be released only with written request from the Coalition or the Member.

Equipment Needed to Run the Program

The system needed to run this program consisted of a central computer owned, operated and maintained by the Coalition at its expense, telephone lines owned and operated by a telephone utility company and leased separately by the coalition, each Member and Edison, and, interfacing micro-computer terminals owned and maintained separately by the Coalition, each Member and Edison. The Coalition provided telephone service and staff to answer calls from Edison and receive notice of a Firm Service Period. Edison had the right, at its expense, but was not required to provide an automatic telephone terminal to interface with the System to access load data and notify the Coalition of a Firm Service Period.

Total Load under Contract

Eventually Edison had two Load Shedding Co-ops in its program. Group 1 consisted of 14 commercial buildings with a total Firm Service Load of 21,500 kW. Group 2 included 14 commercial buildings also, but its Firm Service Load was only 8,500 kW. The last of these contracts are coming to end this year. They will not be renewed, due to the major structural changes taking place in the utility industry in the United States as the industry moves from regulated monopolies in protected service territories to a competitive energy market.

A Second Example Commonwealth Edison Energy Cooperatives (CEEC)

Let's take a look at a peak-shaving co-op that was developed in the Chicago area. In this example, 20 companies banded together in a three-year cooperative. At that time, this was the largest of the 13 load reduction coops in the United States and was organized to deliver nearly 20 mW of demand reduction. In Chicago, demand peaks in the summer due to air conditioning loads. Natural gas or jet-fuel-driven turbines traditionally provided this peaking capacity, however these sources use fossil fuels that are a finite resource and which are considered, when burned, to be environmentally detrimental. Therefore the goal of this co-op was to eliminate or dramatically reduce the use of these traditional generators,

Reduction Periods

In the CEEC contracts the curtailments were limited to no more than three times per week and no more than 120 hours per season. The season ran from mid-July through September.

Load to Be Shed

In order to meet the load reduction in their shedding contracts, the members of this co-op had the following options

- \$ Cycling air conditioning
- \$ Turning off decorative lighting
- \$ Reducing common-area lighting
- \$ Idling some elevators
- \$ Dropping certain systems
- \$ Resetting space temperatures

Payments

In the CEEC program members of the co-op received payment at the end of the year. This payment was based on both the individual firm's reduction and the reduction of the co-op. Participants who signed up for the full period during the first year earned \$30 per kW shed. Those who joined in July received \$28.50/kW, and those who waited until August, \$27/kW. In the second year all co-op members received \$30 a kW and in the final year \$80. Some firms received as much as \$30,000. And remember the reduction period was only 10 weeks long. In addition to the financial benefits, the participants found the following advantages to being part of the co-op.

- \$ Impetus to install, upgrade and expand building automation and energy management systems
- \$ Gaining insight into one's energy consumption. One member of this co-op found it had a water well that cycled in the middle of the peak period and was able to move this 350 horsepower load to an off-peak period.
- \$ Development of noncurtailment load-shedding strategies
- \$ Reducing demand, overall electric usage and therefore cost

Developing the Co-op

The Chief Executive Officer of Commonwealth Edison, the sponsoring utility, recruited the members of this Chicago co-op. He personally called the chief executives of the firms that the utility had targeted as potential participants. This type of high level commitment was considered essential, if the load shedding was to be achieved.

Once the firms agreed to join the load-shedding effort, it was necessary to develop contracts that covered the details such as compensation and the curtailment protocol. The details included identifying

- \$ Each piece of equipment that would be included
- \$ The associated kW's
- \$ Strategies for phasing, shutdown, restart and cycling

Communications

Participants in this program stressed the importance of communications at each facility in order to ensure the success of the program. It is important that all

employees understand the program goals and the need for the load reduction. It is important that everyone is reassured that appropriate load-shedding will not significantly impact

- \$ Comfort levels
- \$ Indoor air quality
- \$ Product quality
- \$ Day-to-day business

Other Examples

In 1983, Pacific Gas & Electric, another California utility paid \$250,000 to four coops for a load reduction potential of 11mW. In New England, Boston Edison Company developed a pilot load shedding program in 1988 that involved 10 customers. They offered participants about \$25/kW. Boston Edison's interest in setting up the co-op was based on the utility's need to meet increased load growth in its service territory. The company saw load shedding as an alternative to building expensive new capacity.

How Do These Experiences Relate to IES's in Ukraine?

Interruptible Rates can be used here in Ukraine to increase your customers' choices with respect to the cost of the electricity they use. The voluntary load curtailment program proposed for the Energomarket offers you the opportunity to broker curtailable load between your customers and the market, to the benefit of your customers and yourselves. Interruptible Rates can also focus attention of these customers on the importance of energy management. When customers begin to realize the value to them of load shifting and load shedding, they will become more interested and more willing to invest in the sophisticated metering and communications technology which allow them to respond to price signals. Additionally, as they begin to save money through special rate signals, they will begin to investigate more permanent load reduction strategies that are afforded through energy efficiency. As suppliers of energy in this market, you have the opportunity to not only sell energy to your customers, but also position yourselves as the energy experts providing metering and other technology as well as advise and equipment for permanent load reduction. Given the rolling black outs which you have been experiencing, you may find profit in permanent load reduction as well as in the selling of energy. And through proper metering you will be able to collect the real value of the electricity you sell rather than collecting on the estimated value.



BASIS FOR LOAD COOPS IN UKRAINE

Alexander Petrov

Hagler Bailly, Kiev, Ukraine

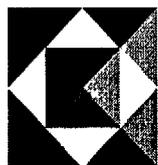
June 1998

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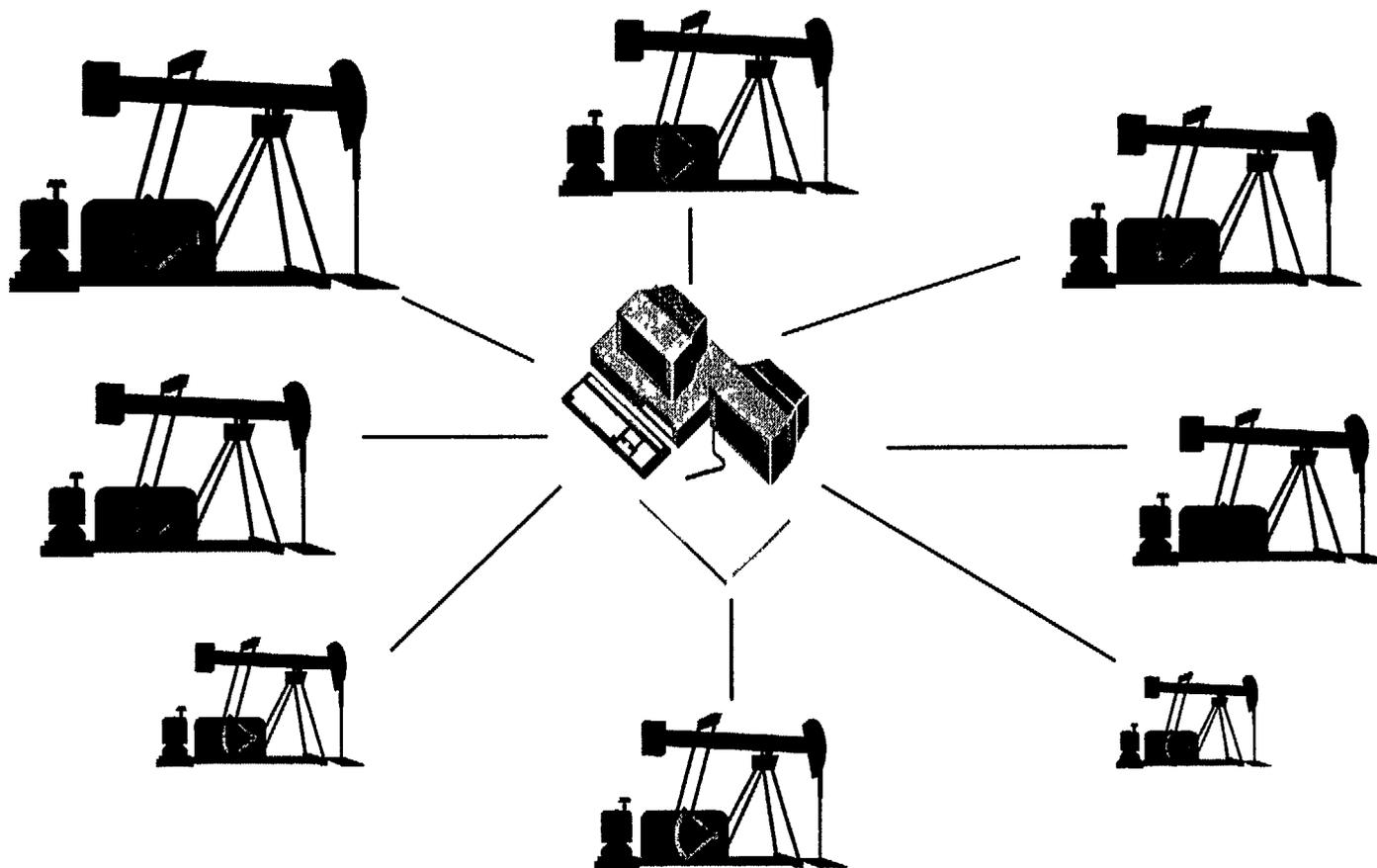


WHO CAN ESTABLISH LOAD COOPS IN UKRAINE?

- 1. Local Electric Companies
(Oblenergos)**
- 2. Independent Energy Suppliers (IESs)**

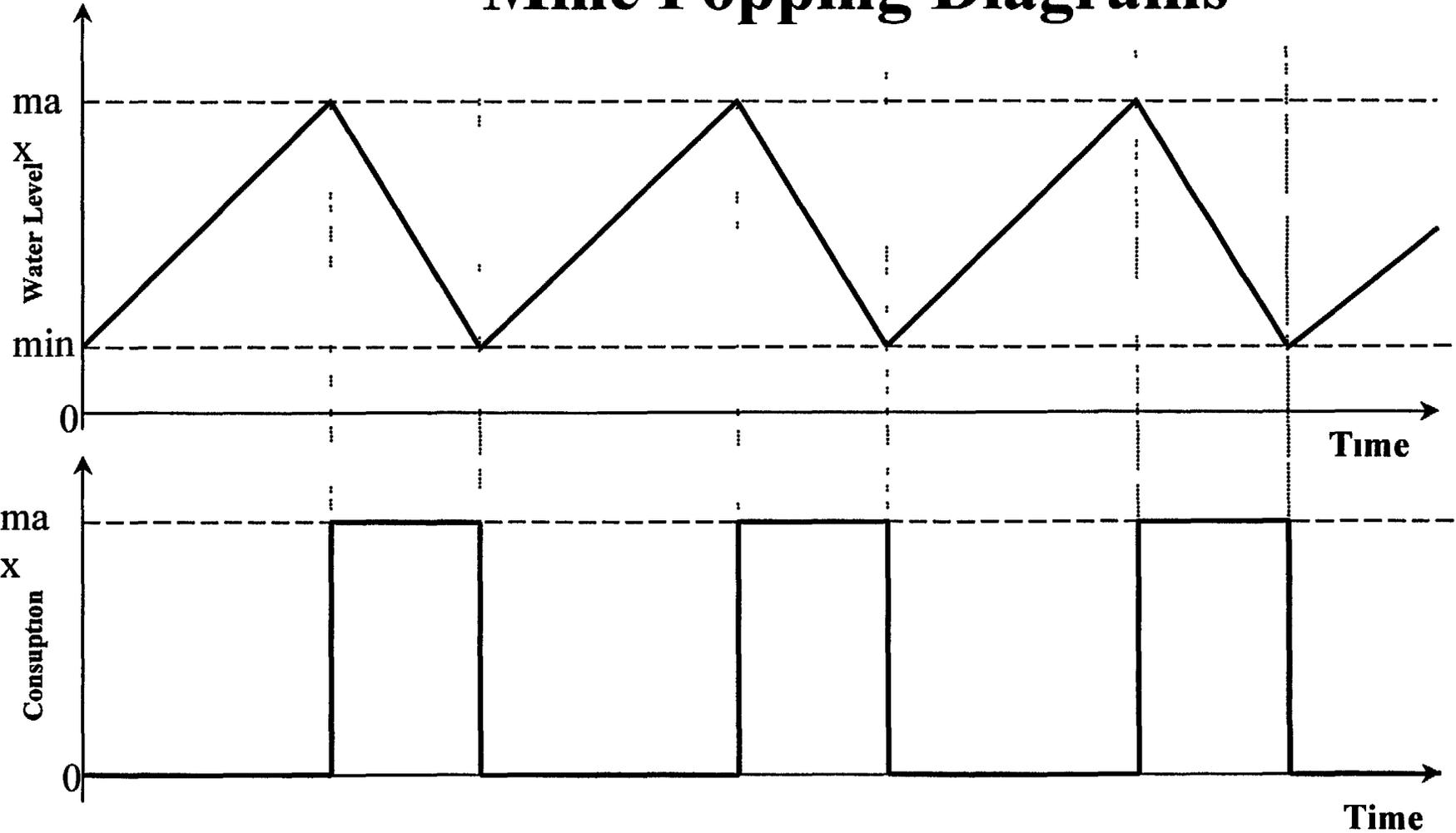


LOAD COOP OF COAL MINES (example)





Mine Popping Diagrams



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CURTAILMENT AGREEMENT: Load Classes

- 1) Firm Load
- 2) Despatchable Load
- 3) Interruptible Load
- 4) Command Load

03



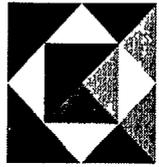
CURTAILMENT AGREEMENT:

1. Parties

1.1 Buyer: *[Retail Customer]*

1.2 Supplier: *[Tariff or Nontariff Supplier]*

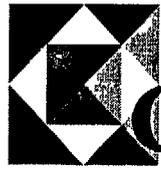
1.3 Energomarket Enterprise



CURTAILMENT AGREEMENT:

2. Buyers Electricity Load

- 2.1 Hourly load for sailing (location, metering)
- 2.2 Method of monitoring of load reduction by Energomarket
- 2.3 What part of the load is:
 - a) “Despatchable” or “Interruptible”?;
 - b) “Command”?



CURTAILMENT AGREEMENT:

3. Cutoff Offers

3.1 For Despatchable Load, Buyer specifies a Price Curve (Cutoff Price) based upon Energomarket's Wholesale Perches Price, above which Buyer agrees to curtail:

- a) Entire Dispatch Load, or
- b) Certain part of entire Despatchable Load.

3.2 For Interruptible Load, Buyer offers to curtail its load promptly upon notice by Energomarket in exchange for a discount of some % of AP charge which would have been incurred by Buyer, if were non-interruptible.

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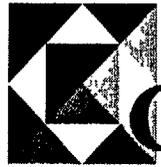


CURTAILMENT AGREEMENT:

4. Energomarket Obligations

- 4.1 Supply Buyer with day-ahead hourly price forecasts.
- 4.2 Notify Buyer in advance about changes of planned load.
- 4.3 Notify Buyer about unpredicted real time changes.
- 4.4 Give Buyer with Interruptible Load a discount

•



CURTAILMENT AGREEMENT:

5. Energomarket Rights

- 5.1 Energomarket has no curtailment rights for Despatchable Load Buyers.
- 5.2 Energomarket may curtail Interruptible Load Buyers in the specified hours.
- 5.3 Energomarket may curtail Command Load Buyers whenever it is necessary.



CURTAILMENT AGREEMENT:

6. Buyers Obligations

- 6.1 Notify Supplier regarding his projected demand.
- 6.2 For Interrapable Load, Buyer mast:
 - a) Develop and operate systems to enable it to voluntary curtail demand;
 - b) Immidiately curtail demand if and as ordered by Energomarket.



CURTAINMENT AGREEMENT:

7. Buyer Rights

7.1 May alter the Cutoff offer parameters on 24 hours notice.

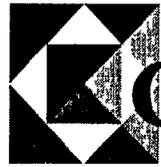
7.2 Buyer, if not a Comand Load Buyer, may terminate the Curtainment Agreement.



CURTAILMENT AGREEMENT:

8. Suppliers Obligations

- 8.1 Collect Buyer demand forecast each day and convey it to Energomarket.
- 8.2 Promptly Credit Buyer for any rebate earned by Buyer from Energomarket.
- 8.3 Promptly enforce any penalty against Buyer on request of Energomarket.



CURTAILMENT AGREEMENT:

9. Penalties

9.1 For Despatchable Load:

- a) If Buyer demand forecast error is greater than 5%;
- b) If Buyer actual load deviates from the despatched load profile greater than 10%.

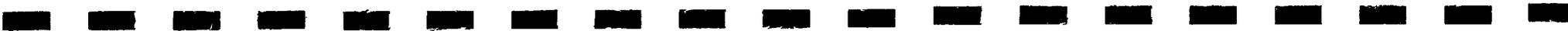
9.2 For Interruptible Load:

If Buyer fails to comply with an Energomarker curtailment order.

9.3 For Command Load:

If Buyer fails to comply with an Energomarker curtailment order.

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Financing Energy Efficiency Projects

Philip Hastings, P.E.
CMP International

June 30, 1998

USAID/Hagler Bailly/CMPI

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Customer's View

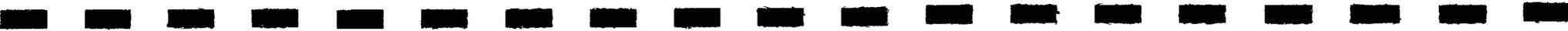
- Save money
- Improve production
- Improve operating efficiency
- Reduce capital requirements

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ESCO's View

- Make money
- Expand business
- Establish relationships
- Increase jobs

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Barriers to Energy Efficiency

- Energy pricing
- Availability of capital
- Interest rates
- Inflation

Barriers to Energy Efficiency (continued)

- Business risk
- Business priorities
- Political & economic stability

Project Development Process

- Identify target customers
- Contact and sell concept
- Pre-qualify customer
- Conduct preliminary audit
- Preliminary agreement
- Conduct detailed audit

Project Development Process (cont'd)

- Identify cost-effective measures
- Negotiate contract
- Arrange financing
- Design and install measures
- Monitor & verify savings
- Billing and payment

Types of Project Financing

- Purchase
- Lease
- Vendor finance
- Performance contract
 - Shared savings
 - Guaranteed savings



Performance Contracting is...

A contract for energy services, with payment based on satisfactory results, generally energy or energy cost savings.

Customer Advantages

- Improved facilities
- Reduced operating costs
- Little or no up-front cost
- More efficient = more competitive
- Use money paid for wasted energy
- Get guaranteed results

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ESCO Advantages

- Sell additional services to customers
- Sell to customers with “no money”
- On-going customer relationship
- On-going income flow
- Shared business objectives

Performance contracting is a complex process

- Sophisticated concept
- Multi-party arrangement
- Multiple approvals
- Complex contract
- On-going monitoring

Performance Contracting Components

- Detailed energy audit (“Investment Grade”)
- Project financing
- Construction management
- Performance guarantee
- Maintenance
- Monitoring and verification
- Risk sharing or transfer

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Performance Contracting Options

- Shared Savings
 - Customer and ESCO share energy cost savings
 - Off-balance-sheet financing
 - ESCO carries financing
 - Equipment often leased
 - If savings exceed guarantee, customer pays more

Performance Contracting Options (cont'd)

- Guaranteed Savings
 - Guarantees level of energy saved
 - Provides for payment if energy savings level not realized
 - Usually customer carries financing
 - If savings exceed guarantee, may or may not share benefit

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Financing Sources

- Customer
- Equipment vendor
- Bank loans
- Multi-national banks
- Commercial financial institutions
- Government programs

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A simple example

An old motor can be replaced with a more efficient one:

- The new motor costs \$15,000 and will save 150,000 kwh/year
- The new motor will last 20 years, electricity costs \$0.05/kwh, and the minimum return requirement is 20%.

Life cycle cost analysis

Annual energy savings	\$7,500/yr
Present value (20 yrs;20%)	\$36,522
Initial cost	\$15,000
Net PV Savings	\$21,522

Finance option 1 - Cash

- Customer pays \$15,000 cash for motor
- Customer saves \$7,500/year in energy cost

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Finance option 2 - Shared savings

- ESCO provides motor at no initial cost
- Customer pays ESCO 80% of savings for 5 years

\$6,000/yr or \$19,165 NPV

- Customer retains 20% of savings for 5 yrs, (\$1,500) then retains 100%

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Finance option 3 - Guaranteed savings

- ESCO provides motor at no initial cost
- Customer pays ESCO \$5,600/yr for 5 years
- Customer saves \$1,900/yr net for 5 years, then retains 100% of savings
- ESCO guarantees savings -
will pay customer \$0.04/kwh for any savings shortfall in 5 years

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Conclusions

- Energy efficiency can be profitable for both customer and energy supplier/ESCO
- Alternative financing, like performance contracting, can be helpful in completing projects and increasing sales and profits

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**ENERGY SAVING IS
OUR BUSINESS,
Or What ESCO Is?**

*Vasily STEPANENKO
Technical Director of
"ESCO - East"*

Introduction

One year back, in Kiev, we modestly celebrated the first graduation of professional energy managers group, who received the certificates from the US Association of Energy Engineers (AEE) Owing to the AEE and US Association of Energy service companies during 3 months 42 experts from different regions of Ukraine have passed retraining, and many of them have opened for themselves the new world - world of Western energy service

When I have received the invitation to study, I was near fifty About twenty years out of them were given to work in SRI (Scientific Research Institute) and DB (Design Bureau) of former USSR - mainly, defensive I had skeptical attitude toward western notions of energy management distinctly seeing a huge difference in a condition of our municipal services, industry and power Few meetings with western experts on energy service only strengthened my skepticism

To-day I recollect with gratitude the lectures of madam Sheerly Hansen – the president of US Energy service companies who has changed me during the week we dealt with each other From the skeptic I have turned into romantic – pragmatist of energy business though this combination seems very strange

I am very much worry about the present conditions of mutual relations between Ukraine and Russia, I can not accept of that border, which becomes more and more solid between us

Therefore I was very glad to meet at our finale exam Victor Petrovich Grytsyna - the executive director of Association of Energy Managers of Russia We began to call up to each other, exchange our opinions I have published a few articles from "ENERGYMANAGER" bulletin in our "ENERGYSAVINGS" bulletin and was glad by receiving his invitation to tell to our Russian colleagues about our modest experience of formation the Energy service company (ESCO)

Maybe this article will not be accepted by you in all aspects but I take responsibility for sincerity

Energy Service Company

We take money from our Customers but that we help them to reduce consumption of energy resources or payments for energy sources What way is used for that? The number of options is equal to the number of Customers

In the foreground, certainly, works on reduction of unproductive losses and costs of power resources - as a rule, we solve these problems by a combination of organizational and technical measures

How to find and evaluate these losses? Our **Energy Auditing Department** is responsible for the fulfillment of this task "Energy Audit" is not yet common for the most of our

Customers and many of them are very suspicious to this stage of our work. I will try to give brief description of this stage of work.

At the first stage of energy audit the analysis of payments for energy sources helps to determine dominant and narrow the focus of immediate works. Dynamics of payments in the year interval shows dependence on season. On correlation the month's indices of volumes and cost of consumed energy sources with the volume and cost of manufactured product we receive the dynamics of energy sources specific consumption. These indices are very important as we can try to prove the necessity of our works as a whole.

On the second phase of works on energy audit we (on the chosen directions) estimate in details the structure of power resources losses separately on the kinds of energy sources and on kinds of productions - we are dug in deeper in technology.

Ours energy auditors know the main methods of these losses decrease, which are in our arsenal and at **our partners** (today our company has more than 20 domestic and foreign firms-partners, specializing in concrete directions).

Result of this phase is **the report on energy audit** where we are proving for the Customer (and for ourselves) the orientation and efficiency of our cooperation. The key parameter of the report is payback time of the enclosed costs on the chosen directions of works, separately on each.

As a rule, we do not offer the works, exceeding annual payback time (simply fixed them for ourselves for the future).

Then our **contractual department** enters fight. By my experience this phrase could be characterized best of all just so - the fight. Often quite exhausting and long.

Taking into account continued narrowing of the money circulation, we go on covering payments by agreement by production of our customers - actually, it is **barter**.

For the purpose to realize the agreement it is necessary to use the tandem of a contractual department with a **commercial service** of the company, which estimates the liquidity of our customers' production and is responsible for its sale.

It is necessary to tell, that by cash this production, as a rule, costs a little bit cheaper. This so-called "discount" we include in the terms and conditions of contract (as well as **temporary costs** necessary for production realization).

The company's turnover and even its destiny depends on ability to predict and make decisions by these two divisions. I know quite a lot technical companies and groups which underestimated the importance of availability of these divisions. They had strengths, quite good staff and inventions - but today they already are not present at the market - "c'est la vie".

At last, the agreement is signed. The person shall be appointed with a personal responsibility for the agreement fulfillment. It could be skilled employee or Chief expert of the company. It can be the chief of firm - partner. The main idea is that this expert was available and could conduct all work up to the end, and if it is necessary to accompany the development of works at the Customer in the future. For this activity he should receive a share from the ESCO profits on the agreements conducted by him.

Here I shall not open America and I shall not speak about organization of works etc. I shall tell only, that smart management of works by agreement guarantees to considerable

extent the **Competitiveness of the company**

Many companies have started quickly – but it is necessary to have cool and prudent brain with an extensive professional knowledge and knowledge of the people to bring the work up to the end - if these brains are not present in ESCO - better to not begin

I am personally as a technical director act as a **Leader for leaders** my sphere of activity in the company is **engineering and policy**

The very important moment is the availability of bank – partner for ESCO The partner because this bank should be interested in directions of effective investments in the medium-term and long-term programs

The energy saving and energy efficient programs lose only to the pure commercial programs that have a fast turn-over But they have other properties, attractive to banks - potentially huge niche of the market, requiring **proportional investments of capital during many years** (I has told this about the potential of works on $\gamma\dot{\alpha}\delta\ddot{\alpha}\ddot{\iota}\ddot{\nu}\ddot{\alpha}\ddot{\alpha}\ddot{\delta}\ddot{\alpha}\ddot{\epsilon}\ddot{\alpha}\ddot{\iota}\ddot{\epsilon}\ddot{\nu}$ in our countries – This problem was not yet considered properly)

Energy savings is huge and stable business, but its development is slow and difficult – it has the large rights, by the way, for preferential taxation

The bank - partner for ESCO is necessary by the 4 main moments

as a **source of a credit means** for the beginning of works on the concrete energy savings projects,

as **the guarantee and subcreditor** of the investment projects executed by the budget and international programs,

As the guarantee and participant in sharing profit received on realization

energy savings projects, where **the complete investment of means** on realization of the project is required from the ESCO party (especially, when the settlements with the Customer are carried out from the received economies by its production in during several years) In USA such principle has received the name of "efficient energy contract",

On fulfillment the agreements **on the basis of leasing**, the dominant in the energy savings projects is the cost of equipment Effect from project realization could be small at the beginning, but growing and stable in time In this case leasing is the most perspective form of ESCO, bank and Customer cooperation

And, to be honest I shall tell that we were going during one year to this structure by the most own method - trial and error method We had a lot of them and it seems that we will have more

Our ESCO has started to practice **integration** in its structure (keeping the right of legal person and independence) small, but potentially capable to our work companies and groups - even those that we were earlier in the competitive relations

Our approach is simple - having authority, resources and resources of our partners, we offer them the guaranteed amounts of works, our help and support (very much diversified) In exchange we require individual share in the profits - we can say 50 % by 50% - or on the contrary, we offer individual share in the profit, but actually it's the same

This is an advice for those who requires constant development of ESCO **executive infrastructure**

Finishing this section, I shall not dwell on concrete works on energy savings I believe that respected readers know about it considerably more than our experts

I only want to emphasize that technical divisions of our ESCO make up by number 60-70% of a total number of our employees - now it is not easy to determine the exact bound

ESCO policy and market

From the very beginning our company was formed, as regional We knew quite well our possibilities and did not suffer of heightened self-esteem and gigantic ideas The moment of formation our ESCO has coincided with the turn over of our oblast authorities structures in approach to energy savings By realizing futility of long-term cooperation with Chichikovs (swindlers) and Manilovs (day dreamers), they have begun to search for the pragmatists

Formation of key sections for the energy savings regional program "**INDUSTRY, POWER, ADMINISTRATION MANAGERIAL CONTROL OVER ENERGY USE**" We have offered to the oblast administration simple and clear approaches which are not requiring budget financing

validity of the program - 1 5-2 years,
rely on already existing resources without centralized investments,
rely on one time use of **real incentives and legal measures of administrative compulsion,**

There were a lot of opponents – it was not easy to recognize that slush fund is closed – but realism prevailed

The first program of ESCO was the program of taking customers capacity out of maximum zone in the twenty four hours interval or as it called by majority – diftariff program (transition to the payments for electricity by the tariffs differentiated by time zones) I shall not dwell on its essence I shall only say that we lanced very big boil in our economy, the power sector of Ukraine has fallen seriously ill caused by the lack of capacity maneuver because it was taken out of united energy system

Inefficient use of fuel increased price for generated power and lack of electricity during peak load hours resulted in the huge losses in industry caused by the constant limits of customer's capacity Our program allowed significant **decrease of these losses** and maneuvering with a capacities in the twenty four hours interval allowed significant **decrease of price for kWh.**

So, OJSC "AvtoZaZ" having transferred (with our help) to the new tariff began to save up to 40% of payments for electricity

We received (or created) the **segment of new market** – works and services on introduction the systems of electricity commercial account 72 regional enterprises with a declared capacity over 1 5 MW became our potential clients

It was a big work, first of all organizational work, and resistance was quite big too

Having this opportunity I would like to express my enormous gratitude for the help and support to our Russian partners – Andrew Denisov (ABB-VEI-Metronika) and Alex Tretiakov (ROCKWELL AUTOMATION) and to their employees, their help was invaluable

Having wide experience of business activity at different posts in the former USSR I never faced such feeling of help and I would say gentlemen's attitude to the partners

The scope of this program will allow to set serious relations with our bank KB @PRIVATBANK demanded to form the managerial vertical of energy savings in the regional authority structures (oblast state administration, city executive committees, district state administrations), activity with press, TV, ministers and institutions in Kyiv

One year later I realize that necessity to take part in policy activity became acknowledged – to-day some small group of people helps me to do this job on professional level

Gas deficit in Ukraine now is very keen Our company started new program "GAS

RATIONALSAL USE” having the aim to decrease by 20% consumption of gas and heat in the base spheres of region’s economy, first of all by the way of energy savings

This is a new segment of our market which has a big potential of return We have calculations showing the possibility to reduce gas supply to Ukraine by 2-3 times on complete realization the potential of this program

We consider it as pilot program in Ukraine and propose as a program of state importance

Such focus of activity of our company attracted interest of the other regions of Ukraine To-day jointly with a partners from other oblasts we already created Dnepropetrovsk Energy Service Company (ESCO-DNEPR) and Western Energy Service Company (ESCO-ZAPAD) These are also new segments of the market on works and services on energy savings and energy efficiency

Half a year before, by the invitation of American party, we were included as a members into the Working Group on Energy Savings and Energy Efficiency of Kuchma Gor Committee – this is very imposing forum for joint activity with other politicians over the improvement of legal, legislative, financial and technical energy saving mechanisms

The issue by the company, at the regular base, the information bulletin “ENERGYSAVINGS” became one more strong side in ESCO policy realization and energy savings market segments formation

Heads of regional authority structures and main experts of regional enterprises began to receive monthly 40-50 pages of practical advises and information about this strange business

Coming to the end of this section I want to emphasize that energy savings in the ESCO itself to-day is also the segment – 50-60% of company’s turnover provide business deals with a fast turnover

This is only to emphasize **the necessity of constant investments** into the ESCO development – we are growing and this gives hope to us

I am Energy Manager

My diploma ¹ 4834, that certifies that I am certified manager, was issued by the US Association of Energy Engineers and is valid up to 12 31 1999 It means that I have to prove this status constantly And what does it mean this status for me and for my company? I shall try to explain even if it will be not very much skilled

I have already mentioned that our ESCO prepared and implemented **2 intersectoral projects related** with power sector, gas and heat supply utilities We are preparing in our portfolio 2 similar programs more, programs on municipal service utilities and on drinking water

This is **the first and main level** of ESCO I am **official Manager of these projects** and is responsible for the representation and coordination functions Preparation of one type of programs, fulfillment and development the other one is a constant and deliberate work

These big projects are fallen apart into the set of concrete projects related with the fulfillment (and conclusion) of economic contract of company, this also constantly requires activity of manager who will make balance between Customers interests and real abilities of company’s departments and company’s partners

This is **the second level** of managers duties, we are receiving real money from this source

The life itself put assignment to improve the laws especially in the part of creation of effective incentives for energy savings (low interest credits, concessional taxation and so on)

Interactivity with the regional authorities, public organizations, ministers and institutions in this activity is the necessity The same as preparation the drafts of clauses, resolutions and instructions

This is **the third level** of manager’s activity

My **fourth level** are the duties of Editor in chief for the informational bulletin "Energosavings" - I am "playing coach" in the editorial office, I prepare the articles by myself and I hope that they are about the main issues

I believe, that **the fifth level** of energy managers activity is a partnership development, constant increase of potential for the new programs and works. This is a very thin string where is necessary to balance and develop not only your interests but be honest and obligatory partner for many people, keep under control the fulfillment of accepted commitments through the whole ESCO structure. I have wrote donw this and think over, where is the family, friends etc. But this is not interesting to you

Our objective is to become constant partner of your enterprise by the directions of energy savings and energy efficiency

Main lines of activity

Development and formation of special energy savings programs in the main branches of economy,

Participation in improvements of organizational and legislative mechanisms which provided practical implementation of energy savings and efficiency of economy,

Provide consultative and information service to the commercial entities and regional authorities in the field of practice of energy savings, methods and means of energy efficiency improvement,

Provide services on attracting investments for implementation the energy savings projects in the industry, power sector and municipal services,

Designing and manufacturing the technical means and energy saving systems,

Designing and introduction the "turn-key" energy savings projects in the main branches of regional economy,

Implementation of wide nomenclature of energy savings and energy equipment

Our methods of activity with the Customers.

We do not accept the work that we can't carry out,

We carry out only those works that have reasonable terms of recouplement,

In case of funds absence we try to find and find non-traditional forms of works financing

To be in more close relation with our potential Customers, partners and with all those who works in the field of energy efficiency improvement we issue the "Energysavings" bulletin

The first program of our company is implementation of "**Voluntary Load Curtailment**" Project - the program of removal the customers capacities out of peak zones and transferring in the settlements, on the base of new tariffs differentiated by time zones

The Project in the region is executed by.

"Ekologhicheskkiye sistemy" JSC ("Ecological systems" JSC) concerning large customers,

"VEGA-PLIUS" JSC concerning medium-size customers,

"FAZA" Small Enterprise

The next stage of this program must be the development of "Voluntary Load Curtailment" Project at each enterprise, that is the transition to technical metering (routine engineering checkups) for internal business entities

**Since the second half of 1997, our company has been getting ready
to start the following programmes:**

“economical consumption of gas” program, a gas DSM project at gas utilities and customers
in the region,

“efficient use of heat” program, a standard-type project for heat utilities and customers in the
region,

“economical use of water resources” program for water pipelines, Oblast water utility s
divisions and customers

We have signed an agreement with Zaporizhiaoblenergo and Dniprooblenergo on setting
up regional power sector monitoring systems on a general-contract basis

We are holding a tender to get subcontractors for the projects and seeking domestic and
foreign partners in order to execute those major projects

Our company welcomes partners and is looking forward to business and professional
proposals by legal and natural persons on joint execution of energy saving projects

Our company's address

105 Lenn Avenue
Zaporizhia, 330095
Ukraine

President	Valery (Vladimirovich) Ivanenko	tel 62-50-04
Vice-President	Anatoly (Grigoryevich) Dundich	tel 62-53-85
Technical Director	Vasily (Anatolyevich) Stepanenko	tel 34-35-67
Fax 62-31-11		



Нова система роздрібних тарифів New Retail Tariff System

Ірина Єгорченко

Irina Yegorchenko

ХЕГЛЕР БАЙЇ КОНСАЛТИНГ, ІНК. та СМР ІНТЕРНЕШНА
Hagler Bailly Consulting, Inc. and СМР International Consultants

За сприянням :
АГЕНТСТВА СПОЛУЧЕНИХ ШТАТІВ З МІЖНАРОДНОГО РОЗВИТКУ

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**Повноваження у встановленні
та регулюванні тарифів**
Authority in setting and regulation of tariffs

НКРЕ

NERC

- **затверджує параметри ліцензій - тарифи на передачу місцевими (локальними) електромережами та на постачання електроенергії за регульованим тарифом, а також коефіцієнти витрат, встановлює тарифи на електроенергію для населення;**
approves license parameters - tariffs for transmission by local networks, tariffs for electricity supply at regulated tariff and loss factors, sets residential retail tariffs,
- **затверджує тарифи на виробництво електроенергії АЕС, ТЕЦ та ГЕС;**
approves tariffs for electricity generation by nuclear power plants, CHPs and hydro power plants,
- **встановлює обмеження цінових заявок для теплових генеруючих компаній**
sets limits on bids for thermal generation companies

12/1

Повноваження у встановленні та регулюванні тарифів *Authority in setting and regulation of tariffs*

Компанії, які здійснюють передачу електроенергії місцевими (локальними) мережами та постачання за регульованим тарифом: Distribution and supply companies

- **розраховують параметри ліцензій та представляють їх до НКРЕ на затвердження; calculate license parameters and submit for NERC approval;**
- **у новій тарифній системі: розраховують роздрібні ціни за формулою [1] в Умовах и та правилах ліцензованої діяльності з постачання електроенергії за регульованим тарифом. in the new tariff system will calculate retail prices using the formula [1] in their licenses for regulated supply**

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Основні принципи тарифної політики

Main Principles of the Tariff Policy

<ul style="list-style-type: none">• компенсація виправданих витрат на генерацію, передачу місцевими (локальними) мережами та постачання електроенергії recovery of justified costs of electricity generation, distribution and supply	<ul style="list-style-type: none">• інвестиції у відновлення генеруючих потужностей investment for replacement of generation capacities
<ul style="list-style-type: none">• підтримання енергетичного обладнання в адекватному робочому стані keeping of the appropriate working condition of power industry facilities	<ul style="list-style-type: none">• надійне постачання споживачів електроенергією прийнятної якості reliable supply to consumers of electricity of appropriate quality



Основні проблеми тарифної політики

Main problems in tariff policy

- затримка зростання цін на електроенергію у порівнянні із зростанням цін на паливо delay in electricity price increase with respect to fuel price increase and increase of other costs
- тарифи не відповідають витратам на генерацію та постачання електроенергії inadequate tariffs compared to electricity generation and supply costs
- неадекватне фінансування постачання електроенергії пільговим категоріям споживачів no adequate funding of electricity supply to privileged categories of residential consumers

Забезпечення електроенергією пільгових категорій споживачів
Electricity supply to privileged groups of consumers

16 категорій пільгових споживачів

16 categories of privileged consumers

- **нема обмежень споживання для деяких груп** no consumption limits for some groups
- **не визначені джерела фінансування пільг** sources of funding are not clearly defined

Запропоновані способи вирішення проблем

Suggested solutions

- **Фінансування пільг з місцевих та державного бюджетів** Funding of privileges from local and state budget
- **Фінансування дотацій через Енергоринок: дотаційні сертифікати для компаній-постачальників та надбавки до тарифів** Funding of subsidies through Energomarket subsidy certificates to supply companies and surcharges on tariffs
- **Обмеження споживання електроенергії пільговими категоріями споживачів** Limiting of privileged consumption

Формула роздрібного тарифа на електроенергію, яка відповідає
Умовам та Правилам ліцензованої діяльності з постачання
електроенергії за регульованим тарифом
License formula for the retail electricity tariff

НКРЕ разом з
консультантами
розробила нову
методику розрахунку
тарифів у відповідності
до “Умов та Правил
ліцензованої діяльності
з постачання
електроенергії за
регульованим тарифом”.

NERC together with consultants
developed a new methodology for
calculation of tariffs in compliance
with “Conditions and Rules of the
Licensed Activity of Electricity
Supply at Regulated Tariff”

За новою методикою ціна на
електроенергію розраховується

- за деякий розрахунковий період,
- для різних класів напруги;
- для різних груп споживачів.

In the new methodology, retail electricity price
is calculated

- for some accounting period
- for voltage classes
- for different consumer groups

**Формула роздрібного тарифа на електроенергію, яка відповідає
Умовам та Правилам ліцензованої діяльності з постачання
електроенергії за регульованим тарифом
*License formula for the retail electricity tariff***

$$RT_{ij} = \frac{SPP}{(1-LF_1) \dots (1-LF_j)} + LN T_1 + EST_j$$

$$\text{Retail Price (Class } i, \text{ Group } j) = \frac{\text{Purchase Price}}{(1-\text{Loss Factor, Class } i) (1-\text{Loss Factor, Class } j)} +$$

$$+ \text{Local Network Tariff (Class } i) + \text{Supply Tariff (Group } j)$$

$$\text{Роздрібна ціна (Клас } i, \text{ Група } j) = \frac{\text{Закупівельна ринкова ціна}}{(1-\text{Коеф. втрат (Клас } i)) \times \dots \times (1-\text{Коеф. втрат (Клас } i))} +$$

$$+ \text{Тариф на передачу місцевими мережами (Клас } i) + \text{Тариф на постачання (Група } j)$$

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Закупівельна ціна електроенергії може бути погодинною ціною, або середньою ціною електроенергії за деякий розрахунковий період.

Purchase price can be hourly purchase price for consumers with hourly meters, or average purchase price of electricity over some accounting period .

$$SPP = \frac{\sum (WP * EW) + \sum (NP * EN) \pm R}{\sum EW + \sum EN}$$

**WP = Ціна електроенергії, закупленої на Оптовому ринку електроенергії,
Price for power purchased from the Wholesale Electricity Market,**

**EW = Кількість електроенергії, закупленої на Оптовому ринку електроенергії,
Amount of electricity purchased from the Wholesale Electricity Market,**

NP = Ціна електроенергії, закупленої у виробників, які не продають електроенергію на Оптовому ринку; Price for power purchased from generators which do not sell electricity to the Wholesale Electricity Market,

EN = Кількість електроенергії, закупленої у виробників, які не продають електроенергію на Оптовому ринку; Amount of electricity purchased from generators which do not sell electricity to the Wholesale Electricity Market,

R = Сума, необхідна для коригування між реальними та прогнозованими розрахунками, яка визначається у відповідності до методики, яка має бути затверджена НКРЕ Amount required to reconcile differences between actual and estimated computation factors as determined in accordance with methodologies approved by NERC

Формула роздрібного тарифа на електроенергію, яка відповідає
Умовам та Правилам ліцензованої діяльності з постачання
електроенергії за регульованим тарифом
License formula for the retail electricity tariff

Параметри ліцензії на передачу електроенергії
місцевими (локальними) мережами: License parameters in the
license for electricity transmission by local electricity networks

- **Тариф на передачу електроенергії для 1 класу напруги.** Transmission tariff for the 1st voltage class
- **Тариф на передачу електроенергії для 2 класу напруги.** Transmission tariff for the 2nd voltage class
- **Коефіцієнт втрат для 1 класу напруги.** Loss factor for the 1st voltage class
- **Коефіцієнт втрат для 2 класу напруги.** Loss factor for the 2nd voltage class
- **Тарифи на транзит електроенергії** Tariffs for electricity transit

Формула роздрібного тарифа на електроенергію, яка відповідає
Умовам та Правилам ліцензованої діяльності з постачання
електроенергії за регульованим тарифом
License formula for the retail electricity tariff

Параметри ліцензії на постачання електроенергії за
регульованим тарифом: License parameters in the license for
electricity supply at regulated tariff.

- **Тариф на постачання для споживачів крім населення**
Supply tariff for non-residential consumers
- **Тариф на постачання для населення**
Supply tariff for residential consumers

Формула роздрібного тарифа на електроенергію, яка відповідає
Умовам та Правилам ліцензованої діяльності з постачання
електроенергії за регульованим тарифом
License formula for the retail electricity tariff

- Тарифи, які вказані в ліцензіях, встановлюються таким чином, щоб забезпечити компенсацію витрат на передачу та постачання електроенергії. License tariffs are set to ensure recovery of costs for electricity transmission and supply
- Тарифи на постачання постачальників за регульованим тарифом встановлюються за згодою між постачальником та споживачем. Supply tariff for suppliers at non-regulated tariff is agreed between the supplier and the consumer
- Умови та правила ліцензованої діяльності містять положення про зміну параметрів ліцензії та про регулювання монопольної діяльності. Conditions and rules of licenses contain provisions on review and change of license parameters, and for regulation of monopoly activities

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Формування оптових цін *Formation of wholesale prices*

Постачальники електроенергії за нерегульованим тарифом купують електроенергію за оптовою ціною, яка обчислюється як сума ціни, за якою електроенергія купується у виробників, тарифа на передачу високовольтними мережами та тарифу на оптове постачання.

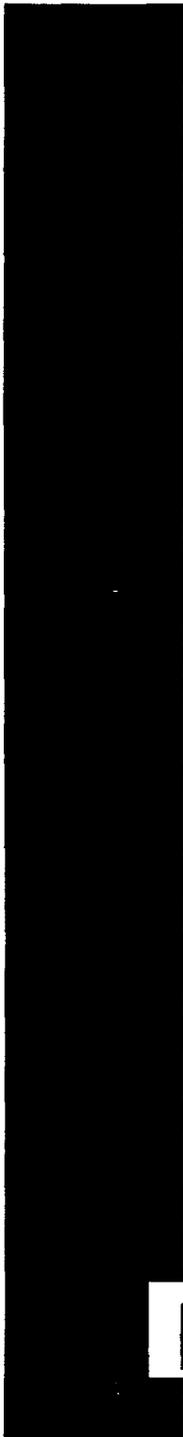
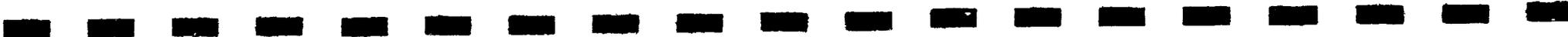
Electricity suppliers at non-regulated tariff purchase electricity at the Wholesale Electricity Market at the wholesale electricity price which is calculated using the purchase price from power plants, high voltage transmission costs and the wholesale supply tariff

Формування оптових цін *Formation of wholesale prices*

У відповідності до Правил оптового ринку ціни на електроенергію формуються щогодини у відповідності до такої процедури: Rules of the Wholesale Electricity Market of Ukraine provide that electricity prices are formed each hour according to the following procedure

- теплові генеруючі компанії подають цінові заявки на Оптовий ринок; thermal generation companies submit bids to the Wholesale Market,
- Національний диспетчерський центр набирає необхідну добову потужність, керуючись найменшою розрахунковою ціною National Dispatch Center fills the requested daily capacity at the lowest calculated price;
- Електроенергія продається на Енергоринку за середньозваженою ціною (за відповідну годину) теплових генераторів, та генераторів, які працюють за двосторонніми договорами, (АЕС, ТЕЦ, ГЕС) Electricity from Energomarket is sold at the average weighted price at that hour of thermal generators and generators working according to bilateral contracts with Energomarket (nuclear power plants, CHPs, hydro power plants)

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Time-of-Use Tariffs: Opportunities for the Customer, the Supplier, and the Economy

Presented to

**The Association of Independent Energy
Suppliers**

Lynn K. Goldfarb Philip C. Hastings

Senior Consultants

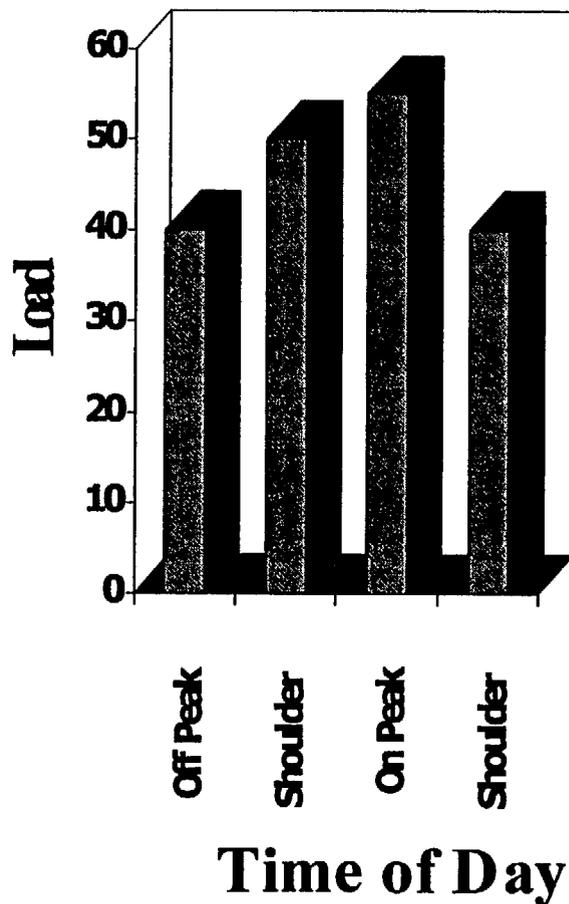
June 30, 1998



Hagler Bailly



What Are Time-of-Use Tariffs?



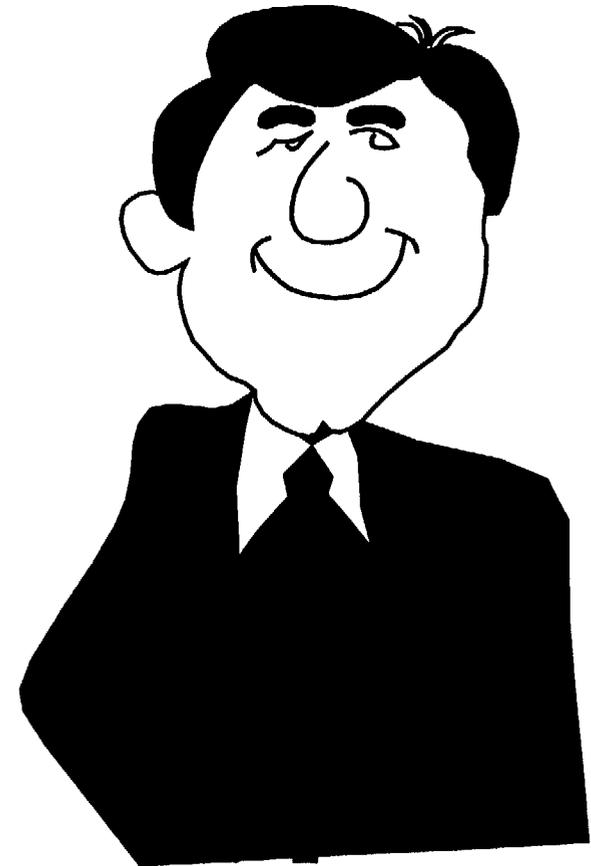
- **Reflect Variations in Cost**
 - Seasonal
 - Daily
- **Optional or Mandatory**
- **Typically Two of Three Time Periods Per Day**
 - Peak
 - Off-Peak
 - Shoulder
- **Typically Two or Three Seasons**
 - Winter
 - Summer
 - Other

Why Time-of-Use Tariffs?

- ❖ Reflects Cost
- ❖ Influences Consumption
- ❖ Encourages Peak Use Reduction
- ❖ Leads to Efficient Resource Use
- ❖ Reduces Customer Bill

Supplier Benefits

- ❖ May Reduce Cost of Purchased Power
- ❖ Increases Competitive Advantage
- ❖ Provides Option to Sell Additional Services



Customer Benefits



- ❖ Provides Opportunity to:
 - Manage Cost
 - Improve Competitive Position
 - Take Advantage of Alternative

Benefits for the Economy

- ⌘ More Efficient Use of Resources
- ⌘ Reduces Need for New Generation
- ⌘ Improves Environment
- ⌘ Frees Capital for Other Investments
- ⌘ Increases Disposal Income of Consumers

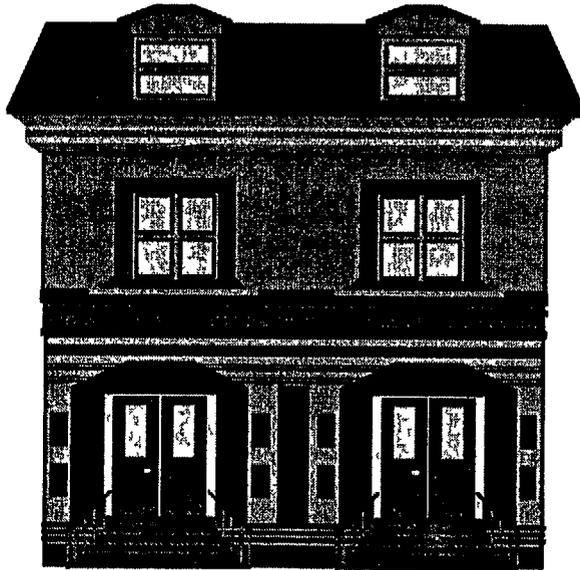
153

Actions Taken in Response to T-O-U Tariffs

- ❖ Paper manufacturer switched pulp grinding from peak to off-peak period
- ❖ Wood products firm had employee come in one hour early to start up equipment
- ❖ Water utility installed storage and moved well pumps from peak to off-peak period
- ❖ Residential customers changed the time of day when they ran water

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Example of How IES Could Work With a Customer



- ❖ **The Customer: Kiev Hotel**
- ❖ **The Problem: Needs to install air conditioning to attract foreign customers**
- ❖ **The Solution: Install a storage cooling system that cools water at night, for use during the day, in place of conventional air condition**

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Example (con't)

Customer Benefits:

- **Attracts new customers;
Increases revenue**
- **System operates during lower
priced off-peak electricity**

IES Benefits:

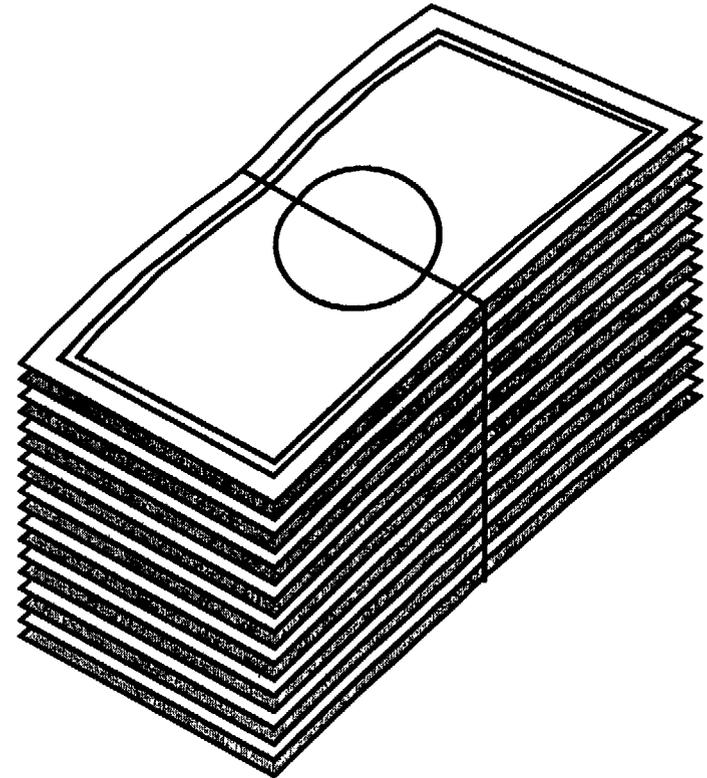
- **Increased sales**
- **Supplied customer with
additional energy at lower price**
- **Made a profit on supply of
storage cooling system**
- **Increased customer loyalty**
- **Introduced customer to energy
efficiency potential for future
equipment improvement**

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Conclusions

T-O-U Tariffs--

- ❖ Expand business opportunities for IES's
- ❖ Open opportunities to provide additional equipment to customers
- ❖ Help customers to solve both energy and business



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**Legal Aspects
Of Wholesale Electricity Market Activity**

Electricity Law

Svitlana Golikova
Hagler Bailly, Inc and CMP International Consultants

Supported by
U S Agency for International Development

July 1 1998

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Major Provisions of the Electricity Law of Ukraine

The Electricity Law was adopted by Verkhovna Rada of Ukraine on 16 October 1997 and put into force on 20 November 1997. The Law stipulates legal, economic and organisational principles of activity in electricity production, transmission, distribution and utilization, ensuring the energy safety in Ukraine, competition and protection of consumer and the sector employee rights.

The Law defines electricity and heat as commodities intended for trading. Before, electricity production and trading had been attributed to the service category.

The electricity purchase and wholesale shall be carried out in the Wholesale Electricity Market of Ukraine operating on the basis of Agreement. The functioning of any other wholesale markets in Ukraine shall be forbidden.

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Wholesale Electricity Market Status

The Wholesale Electricity Market of Ukraine is a market created by economic entities for electricity trading based on the agreement.

The Agreement shall stipulate the objective and terms of activity, rights, liabilities and responsibilities of the parties to the Agreement. The Agreement shall be coordinated with Minenergo, NERC and Antimonopoly Committee of Ukraine.

The Law defines a notion of the “Wholesale Electricity Market Member” – these are electricity generating and electricity distribution companies.

Every entity carrying out an entrepreneurial activity in electricity production and supply shall have the equal access to the Wholesale Electricity Market of Ukraine.

The Market Rules are an integral part of the Agreement, which establishes a load schedule procedure for generating companies, rules for the wholesale electricity market pricing, etc.

1/10

Economic Entities Involvement in Wholesale Electricity Market Activities

- < Having an appropriate license issued by NERC and signing the Wholesale Electricity Market Agreement shall be compulsory for carrying out activities in the Wholesale Electricity Market.**
- < Utilities that have received licenses for generating electricity from NERC shall sell the electricity in the Wholesale Electricity Market. The only exception is the electricity generated at CHPs, which are a part of the energy supplying company, to be consumed within the territory of carrying out licensed activities. Tariffs for the electricity generated at such utilities to be consumed within the territory of carrying out licensed activities shall be regulated by NERC.**
- < Every participant of the Wholesale Electricity Market is a Party to the Agreement. There could be more Parties to the Agreement than Market Members. For example, NDC and Ukrelectroperedacha are not the Market Members, while they are the Parties to the Agreement as far as they provide services to other Members.**

Main Changes To Be Made To

Wholesale Electricity Market Agreement

- < Relations between the generating companies and the Market Settlement System Administrator shall be based on selling electricity to the Wholesale Market under the Agreement of the Commission. The generating companies shall be regarded as electricity owners until the moment the electricity has been sold to the regulated tariff or non-regulated tariff suppliers. Settlement System Administrator shall sell electricity on behalf of his own and is obliged to protect the rights of generating companies, including the handling of claims and complaints against the suppliers in debt.**
- < The issue of the Energomarket legal status, as provisioned by the Financial Recovery Plan for the Power Sector of Ukraine (Cabinet of Ministers Order No.508 of April 18, 1998), needs to be resolved.**
- < Market Rules and Amendments shall be brought into conformity with the Agreement.**
- < It is suggested that the procedure for resolving disputes among the Market Members shall be legalized, with bringing the disputes to the Market Arbitrage Commission consideration.**

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Main Changes To Be Made To

Wholesale Electricity Market Agreement

- < Delimitating functions of state regulation and state administration in the power sector is the main principle of the sector and the wholesale market activity. A state regulatory body in the power sector is the National Electricity Regulatory Commission of Ukraine (NERC).**
- < NERC takes part in establishing and enforcement of a single state policy of the Wholesale Electricity Market development and operation, the power sector pricing and tariff policy, regulation of natural monopolies and adjacent markets operation, regulation of settlements in the wholesale electricity market, etc.**



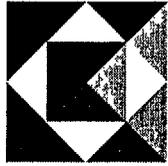
Instruction on the use of funds of the Wholesale electricity market in Ukraine

Vladimir TSYSIN

Hagler Bailly, Kiev, Ukraine

June 1998

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A SYSTEM OF TRANSIT ACCOUNTS FOR ELECTRIC COMPANIES AND MARKET FUND ADMINISTRATOR

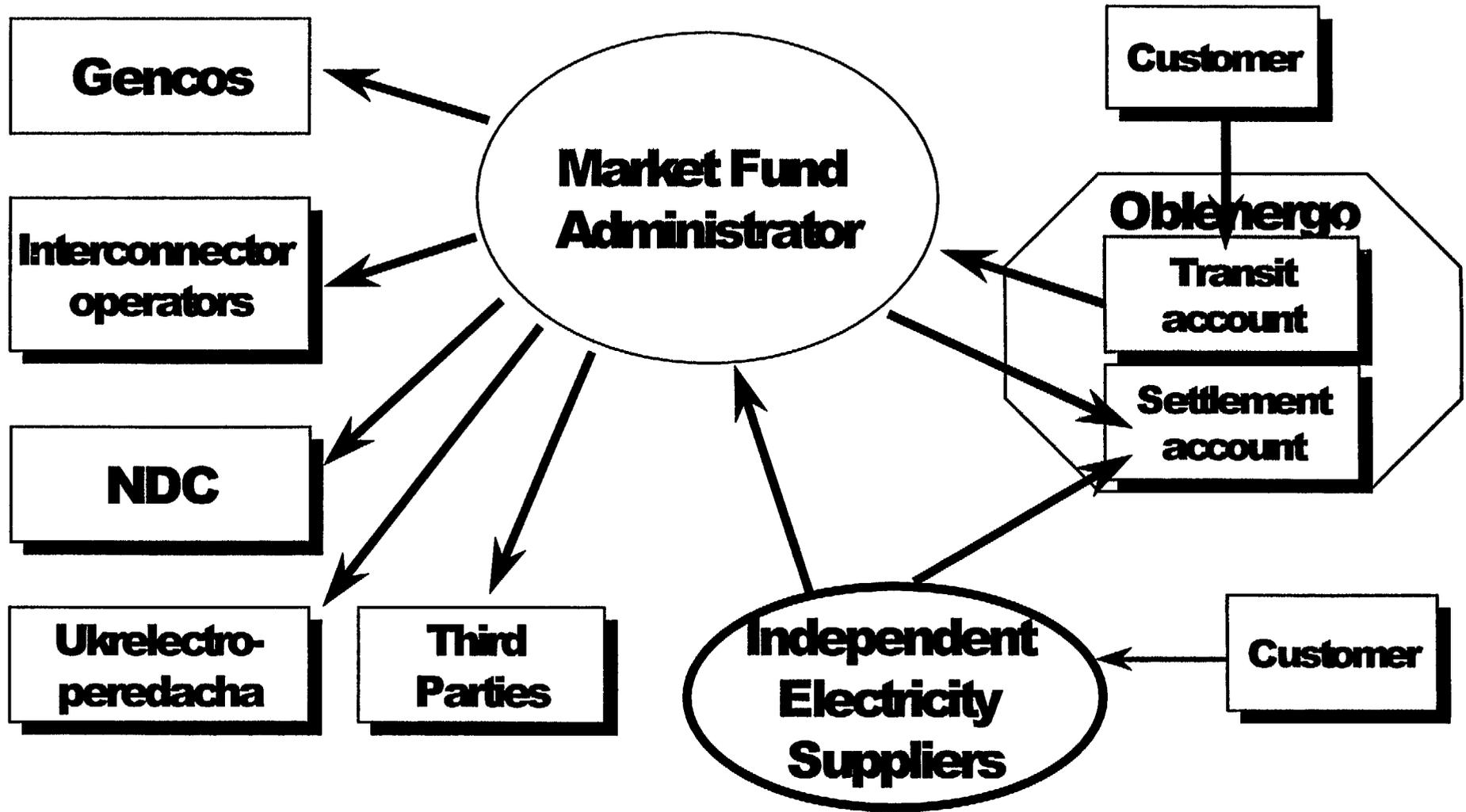
**Objective: Normalization of payment discipline in the power sector of
Ukraine**

**Legislative basis: Joint resolution by the Cabinet of Ministers of Ukraine
and the National Bank of Ukraine as of 5 June 1998 1 811**

- **Provisional character**
- **NDC is a Market Fund Administrator before ‘Energomarket’
enterprise is created**
- **Distributive account of the Market Fund Administrator is serviced by
Prominvestbank (Energomarket’s banker)**



CASH FLOW VIA TRANSIT ACCOUNT SYSTEM



1/10



MARKET FUND PROCEDURE means the following:

- **Payment to suppliers based on regulated tariff.**

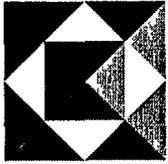
For each Oblenergo:

*Money on settlement account =
Money obtained on transit account*

Transmission tariff + Supply tariff

Price of purchased electricity + Transmission tariff + Supply tariff

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MARKET FUND PROCEDURE

- **Payment to suppliers based on regulated tariff
(continued)**

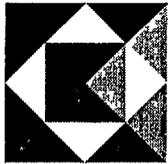
**Provisionally whereas fixed wholesale and retail tariffs
are in force:**

*Money on settlement account =
Money obtained on transit account* ÷

Transmission tariff + Supply tariff

÷

Average weighted retail tariff



MARKET FUND PROCEDURE

2 Payment to Generating Companies, NDC, Ukrelectroperedacha and Interconnector operators:

Money left after payment to oblenergo and third parties are distributed among the above creditors of the Energomarket in proportion to their daily production to which the following is added:

total Energomarket's debt to them at the beginning of the previous month (with 1/45 coefficient); and subtracted:

total sales during previous month (with 1/30 coefficient)

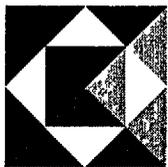


MARKET FUND PROCEDURE

2 Payment to Generating Companies: employment of additional indicators

1/45 of debt at the beginning of the previous month gives a possibility for those entities to get more money to whom NDC's (Energomarket's) debt is greater as well as the possibility to obtain finance during capital reconstruction

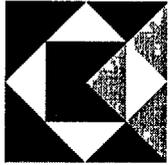
1/30 of total sales for previous month decreases finance by the part of electricity sold to the market for bills of exchange or which was paid for with offsets



MARKET FUND PROCEDURE

SOME OF THE PROBLEMS:

- 1. Low level of cash collection**
- 2. Misbalance of settlements: not all payments to third parties are included into the purchase tariff**
- 3. Improper incentive system**



Some aspects of the wholesale electricity price formation in the Energomarket of Ukraine

Illustrations

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Economic basis for energy efficiency

I. A. Tarnovsky, Burns & Roe

It is a well-known fact that production at Ukrainian enterprises is the most energy consuming in Europe. Our problem, the problem encountered by energy auditors and energy service companies, is reduction of energy resources' costs of the enterprises.

Our commodity product is the knowledge of how to achieve energy saving and to achieve reduction of costs of energy resources. Our business objective is obtaining profit from the decrease in energy consumption, reduction of the cost of energy resources. The bigger volume of energy is saved - the higher is the profit of energy service companies (ESCO).

Energy suppliers today have as their commodity energy resources, suppliers of electric energy - electricity. The higher is the sales level, i.e. the electricity consumption rate, the bigger is the profit of IES, which now looks mostly like non-payments for electric energy.

Our business objectives today seem to be quite opposing each other's, if we take into account that services rendered by ESCOs, as a rule, will resort to the most solvent customers thereby worsening the economic position of energy suppliers. Thus some conflict of interests is evident and, hence, the process of energy saving seems to have certain motivated underlying hindrances which is quite natural.

In order to preserve the balance of interests of energy suppliers, energy service companies and customers it is necessary, in my opinion, to establish some initial conditions:

C Service of energy supply, not physical unit of energy should be rendered.

C Tariffs should incur no losses to supplier at any consumption level provided the quality of energy service is adequate.

IESs would take active part in energy saving only and if they would not doubt it and would see no threat to their profit from such participation. One of the ways for cooperation between ESCOs and IESs is the following: for example, an IES has concluded agreement on energy supply with a solvent enterprise. Energy auditors have determined some possibilities to save energy at the enterprise and proposed for the supplier to become an investor into energy saving in order to obtain his projected profit not from the sales of resources but from their saving. Thus the objectives of both supplier and ESCO coincide - they both earn money on energy efficiency.

SUMMARY OF PARTICIPANT EVALUATION
INDEPENDENT ENERGY SUPPLIER SEMINAR

**PROFITING FROM LOAD MANAGEMENT BIDDING
AND ENERGY EFFICIENCY IN THE ENERGO MARKET**

We would appreciate your filling out this questionnaire. In offering this Seminar, The Association of Independent Energy Suppliers, USAID and Hagler Bailly, Inc are committed to exceeding your expectations, so we want to know where we may have under performed

1 Did the Seminar

Exceed your expectation 2

Meet your expectation 2

Fail to meet your expectations 1

How? Comments

- 1) *A portion of the presented information underscored qualification of those present*
- 2) *Contents of presentations, overheads and demonstration stands corresponded to each other*

2 Were the speakers responsive to your needs?

Exceeded your expectations 2

Met your expectations 2

Failed to meet your expectations 0

How? Comment

- 1) *No comment*

3 Based on the materials we sent to you prior to the Seminar, did we accurately describe the program so that it

Exceeded your expectations 0

Met your expectations 2
Failed to meet your expectations 2

Why? Comment

- 1) *Had no program in advance*
- 2) *Had only an invitation, no program or brief contents of the presentations*

4 Were there aspects of this Seminar that you expected to be addressed that were not covered?

Yes 7

No 4

(If yes, please describe) Comments

- 1) *Up-to-date saving technologies*
- 2) *Relation between Energomarket rules and energy saving*
- 3) *Somewhat insufficient presentation of the issues of obtaining profit, energy saving*
- 4) *Implementation of energy efficient projects during tariff formation based on the formula*
- 5) *Place and role of the State Committee on Energy Saving as regards the issues of energy efficiency*
- 6) *Experience and problems encountered by the speakers while implementing similar solutions in the US or in other countries, regions*
- 7) *The Seminar was adequate to its program and corresponded to the framework of the topic*

5 Did the speakers

Exceed expectations 2

Meet expectations 10

Fail to meet expectations 0

Why? Comment

1) Serious approach and clear-cut presentation with adequate interpretation

6 Did the materials that you received during the Seminar

Exceed expectations 3

Meet expectations 7

Fail to meet expectations 2

How? Comment

1) The materials assisted in more in-depth assessment of the problem

7 Did the facilities at Kiev Polytechnic Institute

Exceed expectations 4

Meet expectations 6

Fail to meet expectations 0

How? Comments

1) Way above all previously seen

2) High level of presenting the information

3) Much higher level than anything seen before

4) Facilities are simply fantastic

8 Did the food service (meals and breaks) at Kiev Polytechnic Institute

Exceed expectations 6

Meet expectations 5

Fail to meet expectations 0

How? Comments

- 1) High level compared to similar undertakings*
- 2) Polite and easy way of communication during breaks and lunch*
- 3) Excellent catering service*

9 Did the metering exhibition

Exceed expectations 2

Meet expectations 6

Fail to meet expectations 2

How? Comments

- 1) Conducted at an extremely high level*
- 2) Too well-known*
- 3) Availability of domestic developments*

On a scale of 1 to 5, with five representing the most favorable rating, please rank the quality of each of the presentations

Original data of each evaluation rank is presented in each cell

Scale

	5	4	3	2	1	Note (s)
SESSION <u>ONE</u>						
Availability Price and Load Management Bidding	55 55	444 4	3 3			
Load Management Coops Experience in the U S A	55 5	444 44	33			
The Basis for Load Coops In Ukraine	5555	4444 4	33			
Performance Contracting Financing Energy Efficiency Projects	55 55	4444 44	3			
SESSION <u>TWO</u>						
ESCOs Business Opportunities for IESs	5555	4444 4		2		
Metering and Control Technologies	5555 555	4444 4 4				
Case Study 1CGE-Harris	5	4444				
Basics of Tariff Methodology	55	4444	33	2		
Time-of-Use Tariffs Opportunities for the Customer, Supplier and Economy	55 55	44 4	33	2		
SESSION <u>THREE</u>						
Legal Aspects of Energomarket Functioning and Electricity Law	5 55	444 4444				
Peculiarities of Legal Work within the Framework of the Energomarket Agreement	5 5	444 4444				
Energomarket Funds Procedure	5555 5	444	3			
SESSION <u>FOUR</u>						
Case Study 2 Burns & Roe (Energy auditing at Ukrainian enterprises)	555 55	4444 4				

Case Study 3 Training Center	5555	4444	3	2		
Case Study 4 B Esco East	5555	444	33	2		
AEE Certified Energy Manager Program	5555	444				

IES Seminar Scheduling Calendar

Task	Description	Date to be Completed	Completed	Responsible Party
1	Seminar Planning			
1 1	Draft Proposal	02 04 98	X	LKG
1 2	Review seminar outline – internal	15 04 98	X	EH
		15 04 98	X	DW
1 3	Review seminar outline – external			
	IES	15 04 98	X	PCH
	USAID (?)	30 04 98		EH (if necessary)
1 4	Revise seminar outline, develop draft agenda	04 04 98	X	LKG
1 5	Finalize seminar dates, location with IES and Kiev Polytechnic Institute	29 04 98		EH
2	Sponsors and Exhibitors			
2 1	Develop list of potential sponsors and exhibitors	08 04 98	X	LKG
2 2	Finalize commitment of seminar sponsors and confirm by letter (IES/USAID/HBC/?AEE)	29 04 98		EH or AP
2 3	Recruit seminar exhibitors	06 05 98		AP
2 4	Finalize list of sponsors/exhibitors and confirm by letter, include form to verify how they want to be listed in the program	13 05 98		AP
2 5	Develop form for exhibitors to use to specify how they wish to be listed in program, size display tables they need and electrical requirements	29 04 98		LKG
3	Speaker Preparation			
3 1	Develop list of potential speakers	08 04 98	X	LKG
3 2	Assign responsibility for contacting speakers	28 04 98		LKG
3 3	Complete contacting speakers	05 04 98		LKG/PCH/EH/AP/YZ
3 4	Draft letter to be sent to speakers confirming their commitment	29 04 98		LKG
3 5	Develop Form for speakers to use to specify how they wish to be listed in program, what audio visual equipment they will require Confirmation letter for speakers including tentative agenda, deadline for their materials to be reproduced, translated for seminar handouts and request for biographic information	29 04 98		LKG
3 6	Set due date for receipt of speaker materials	28 04 98		LKG/EH
3 7	Send confirming letter to speakers	13 05 98		AP/EH

4	<i>Attendees</i>			
4 1	Develop list of potential attendees	01 05 98		IES (AP to coordinate)
4 2	Develop advance notification (Save the date postcard)	01 05 98		IES (AP to coordinate)
4 3	Mail advanced notification	08 05 98		IES (AP to coordinate)
4 4	Develop formal invitation	15 05 98		IES (AP to coordinate)
4 5	Mail formal invitation	29 05 98		IES (AP to coordinate)
4 6	RSVP due	16 06 98		IES (AP to coordinate)
5	<i>Site Planning</i>			
5 1	Discuss use of facilities at Energy Management Institute, Kiev Polytechnic Institute	22 04 98	X	EH/AP
5 2	Develop site needs (location, size, rooms, food, etc)	15 05 98		AP (Coordinate with Prof Prakhovnik
5 3	Finalize Location, layout, display tables, and electrical equipment for vendor displays Location, receptions, meals and breaks Seminar space and set-up Audiovisual equipment	26 05 96		AP (Coordinate with Prof Prakhovnik
5 4	Select menu for breaks, lunch, etc	08 05 98		EH/AP
5 5	Send letter to Prof Prakhovnik confirming Details of exhibition space Space for receptions, meals and breaks Seminar space and set-up Audio-visual equipment Menu and cost for receptions, meals and breaks	01 05 98 02 06 98 02 06 98 02 06 98 02 06 86		EH/AP EH/AP EH/AP EH/AP EH/AP
6	<i>Seminar Materials</i>			
6 1	Compile speakers materials	Complete by 15 06 98		AP or YZ
6 2	Reproduce speakers materials	Complete by 22 06 98		AP or YZ
6 3	Develop list of other needed materials	08 06 98		AP or YZ
6 4	Purchase and store as needed	Complete by 22 06 98		AP or YZ
7	<i>Budget</i>			
7 1	Develop draft budget costs (site costs, travel, food, transportation, seminar materials, miscellaneous) and revenues			EH/PH/LKG
7 2	Review and finalize budget	15 05 98		LKG/EH
8	<i>Evaluation</i>			
8 1	Develop feedback survey	0 -06 98		LKG
8 2	Administer survey at seminar	01 07 98		YZ
8 3	Compile results and develop summary	20 07 98		LKG

(Letterhead of the Association of IESs)

Dear Sir,

The Association of Independent Energy Suppliers (IES) jointly with the American consulting company Hagler Bailly, Inc , a contractor of the U S Agency for International Development (USAID), intends to conduct a Seminar on business opportunities of employment of energy saving technologies by IESs, as well as legal and financial aspects of the Energomarket

Energy saving technologies, legal aspects of Electricity Law as well as Energomarket Agreement and Market Funds Procedure would be assessed in the course of the Seminar. Additionally, leading manufacturers of metering equipment operating in the Ukrainian market will demonstrate their products to the participants

The Seminar for IESs will be conducted at the Training Center for Energy Management of Kiev Polytechnic Institute, on June 30 - July 1, 1998 at the following address 37, Peremohy Avenue, Building 22, Office 310, Kiev 252056, Ukraine

The Seminar is fully financed by USAID and the Association of IESs

We kindly invite you to participate in the Seminar since we strongly believe the knowledge obtained during the Seminar would contribute significantly to your business success

Please confirm your participation in the Seminar before June 19, 1998 by fax 246-4825 or 227-4635 (Attention Alexander A Petrov)

Agenda of the Seminar will be mailed to you later. On all the issues as regards the Seminar please contact Mr Alexander A Petrov, Senior Project Specialist of Hagler Bailly, Inc (phone 380 (44) 220-1036, fax 380 (44) 227-4769)

Sincerely yours,

Elena L Zolotariova,
Executive Director of the Association

DRAFT SPEAKER CONFIRMATION LETTER

DEAR

We are pleased that you have agreed to speak on (supply specific title) at the Seminar on Voluntary Demand Curtailment , Metering and Energy Efficiency to be held at the Institute of Energy Savings and Energy Management at Kiev Polytechnic Institute, (supply specifics address and location within building) on

June 30 and July 1 As you know, this seminar is being jointly sponsored by the Association of Independent Energy Suppliers, The Institute for Energy Efficiency at Kiev Polytechnic, Hagler, Bailley, and the Ukrainian Chapter of the Association of Energy Engineers

Your presentation is scheduled for the (specify morning, afternoon, and day of week) Please fill out the enclosed form It will allow us to list you appropriately in the Seminar brochure and to provide you with any audiovisual equipment you will require

We request that you include with the form a copy of your presentation and any other materials you wish to make available to the participants Additionally, we are requesting a copy of your biographic data, so that you may be properly introduced **PLEASE RETURN THE FORM AND ANY ACCOMPANYING MATERIALS TO US BY JUNE 1, SO THAT WE MAY ARRANGE FOR TRANSLATION AND REPRODUCTION PRIOR TO THE SEMINAR**

We hope you will be able to join us for the entire seminar However we realize that you have a busy schedule and may not be able to do so Please indicate your plans on the form, so that we may have an accurate count for the food service staff We look forward to seeing you at the Seminar

Sincerely,

Petrov

Seminar Coordinator

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SPEAKER AUDIO-VISUAL REQUIREMENTS

IES SEMINAR

The Seminar will be held at the Institute of Energy Saving and Energy Management at Kiev Polytechnic Institute

37 Peremogy Ave , Building 22, Office 310, Kiev, 252056, Ukraine

Phone +380 (44) 241-7037

PLEASE SUPPLY THE FOLLOWING INFORMATION FOR INCLUSION IN OUR SEMINAR PROGRAM:

NAME _____

Address _____

Phone _____

Fax _____

E-mail _____

Presentation Title _____

I will need the following audio visual equipment for my presentation

Overhead projector _____

Screen _____

Slide projector _____

LCD for computer presentation _____

I have enclosed a copy of my presentation for inclusion in the Seminar package to be given to attendees _____

5 I have enclosed biographic data to be included in the Seminar package to be given to attendees and to be used by the moderator for introducing me _____

I have enclosed supplemental materials for inclusion in the Seminar package to be given to attendees

Yes _____

No _____

We hope you will be able to attend all of the sessions during the seminar

However, we understand that your schedule may not permit this. Would you please indicate your current plans. Should these change, we would appreciate your calling Alexander Petrov at 220-4528

I will attend the following

Lunch on June 30 _____

Dinner on June 30 _____

Lunch on July 1 _____

Please return this form in the envelope provided no later than June 1, 1998 to

Alexander Petrov, Senior Project Specialist

Hagler Bailly

10th floor

20 Esplanadna Str

252023 Kiev, Ukraine

Phone +380 (44) 220-1036

Fax +380 (44) 227-4769

VENDOR EXHIBIT REQUIREMENTS

IES SEMINAR

The Seminar will be held at the Institute of Energy Saving and Energy Management at Kiev Polytechnic Institute

Address

Phone Number

PLEASE SUPPLY THE FOLLOWING INFORMATION FOR INCLUSION IN OUR SEMINAR PROGRAM

VENDOR NAME _____
Address _____

Phone _____

Fax _____

E-mail _____

Representative _____

We will need the following support for our exhibit

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APPENDIX E

News Articles prepared by the
Association of Independent Energy Suppliers

**Energomarket of Ukraine — Memoirs about the future,
or how to conclude the power sector reforms**

Elena ZOLOTARIOVA

*Vice-President and Executive Director of the
Association of independent electric energy suppliers (IES) of Ukraine*

Speaking about any reforms in the power sector, we first of all mean to ultimately create a competitive wholesale market of electric energy. An important step in this direction has been made by the Law "On the Power Sector in Ukraine" which has created a legitimate status for Energomarket. Electric energy is no longer merely a service, but rather it has also become a commodity. That circumstance automatically activates other market mechanisms and laws and creates a solid legislative basis for Energomarket. This market is already in operation though currently not very efficient.

However right here all dramatic peculiarities of current situation in the Power Sector are hidden. If no effective transition to new management for proper energy production based on the use of natural market stimuli for electric energy producers and suppliers free from intervention by the state executive agencies, could be found based on market stimuli, then, as well as now, features of essential Energomarket under-development will be sustained.

The Association of Independent electricity suppliers has its own view on how to solve this problem. This view is based on its own understanding of the basic tendencies and factors influencing further reforms in the Power Sector. In this field there are at least three factors the first of which is financial stabilization in the Power Sector, the second is privatization of the sector, and the third is to further development of Energomarket itself.

Financial Stabilization in the Power Sector

Financial stabilization in the Power Sector is now getting the highest priority. As we all understand, power industry and all electricity companies with no exception, both generating and marketing, are bankrupt. The absence in our country of precise mechanisms of bankruptcy does not allow the use of the procedure of indemnification of debts. However, as evidenced by certain tendencies, such mechanisms might become rather efficient in the near future. In the meantime it is necessary to consider some other financial measures which might be adequate for solution of these problems.

In the last few years large sums were invested into the sector in the form of fuel for thermal and nuclear power plants which practically were similar to credits. Debts for these credits exceed many hundreds of millions of hryvnias. However their return is unlikely until working assets of electric companies are restored.

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Bankruptcy of the power enterprises is caused by quite a number of reasons and originates from the general economic crisis and painful re-orientation of the bulk of industrial mechanism. However, there is nothing unexpected about this. The world has encountered similar problems many times in the past and has mostly solved them by observing two main principles: first - to sell some assets which would allow restoring working capital, and second - organizing management in such a manner as to evoke maximum trust in potential active and dynamic investors.

Government has a unique chance now to stabilize the financial situation in the power sector by directing financial resources obtained from privatization to satisfy needs of the sector. This means restoration of working capital to the companies. It is necessary to understand that if the sold assets are not used for the long-term objectives of financial stabilization, then the electric companies would not be able to get out of their bankrupt situation.

Now is the right time for our government to develop a concrete plan of financial stabilization in the sector. This should be based on taking out of circulation all financial substitutes (mutual offsets, so-called addressed supplies, give-and-take basis, barter, etc.) and giving back to the sector its working assets.

Privatization in the Power Sector

Many organisations are known to demonstrate great interest in privatization of both generating and distributing power companies. Our interest, i.e., the interest of non-tariff suppliers of electric energy, is based on the desire to obtain management of these companies. With efficient management their profitability might be essentially improved. Models of privatization which until now were developed by Minenergo and the State Property Fund, provide no solutions as to how efficiency and management can be enacted.

Taking into account the extreme caution of foreign investors regarding the economic policy of Ukraine, we assume that until all legislative pre-requisites for improvement of the economy are in place, privatization of the Power Sector will not attract foreign investors.

In any case, instead of rigid privatization programs available now for power (especially generating) companies, there should be organized efficient monitoring of privatization process itself. It is especially important to analyze prices proposed by investors and conditions of purchase of the companies' shares. In case if these prices will continue to be unjustifiably low, it will be an indicator for the government that necessary conditions have not yet been created.

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for investors sufficient for growth of their interest in Ukrainian Power Sector
Consequently the sale of assets should not be accelerated

An alternative way could be found for the transfer of state-owned share package into trust management of a company. The idea is to transfer control over this package to Ukrainian private companies and banks which are the parties most interested in efficient managing of the power companies

Normative mechanisms which are available now for this transfer allow for those who would possess appropriate financial resources to obtain control over these companies. However, the cost of company's assets is so high that, even with the requirement of additional deposit amounting to only 10% of the Charter Fund, it might be problematic even for a single major non-tariff electric energy supplier or a commercial bank specializing in this business. At the same time, we should take into account that the interest in the opportunity to obtain management control of the power companies is rather great. Consequently it is possible to foresee creation of a consolidated or, to be more correct, syndicated proprietor. Such proprietor would be able to provide the said deposit and to obtain the right for trust management of the state share package in the most attractive power companies

The Association is facing a responsible and crucial task of developing its own strategy in issues related to privatization. The approach should be unified and focused on three directions

First, there should be an attempt to encourage the Association members to purchase shares of privatized enterprises. Significant success is improbable in this direction since there are insufficient resources in the organizations engaged in non-tariff delivery of electric energy which could be utilized for purposes of privatization. Also because the cost of assets in Power Sector is high, therefore, the second direction, the acceptance of significant portion of these assets into trust management, appears to be more preferable

In this case an option of creation of syndicated proprietor is possible. And, at last, the third component of strategy in the area of privatization is development of our own programme of corporate company management and financial management, which is already being conducted for attraction of qualified national and foreign experts

Energomarket And Its Place In The Power Sector Stabilization

The key question is creation of a fair and transparent system for Energomarket finance management. As we know, much has already been done in this field. However, until now the accounting system has not been created within NDC which could be subjected to independent auditing. This does not allow for registration of all transactions and the processing of liabilities before

Energomarket members, including also non-tariff suppliers of electric energy

A second but not less important question is the necessity to fix the precise status of the state enterprise "Energomarket" that should be created based on the known Decrees by the President and Decisions by the Cabinet of Ministers of Ukraine

Thus "Energomarket" enterprise should be adequately responsible before NERC as a licensee and before the Board of Energomarket Directors as its agent or financial operator. Such responsibility is practically absent now, and this makes the position of non-tariff suppliers extremely unstable as to financial obligations of Energomarket.

These and many other questions should find their reflection in a new draft of the Energomarket Members Agreement which is currently being elaborated by economists and lawyers of the Association jointly with Minenergo, NERC and other state entities, institutions and organizations.

2-nd Round Table in the Center for Strategic Policy Studies, March 1998

**Power Sector Of Ukraine After Winter:
Going Up Or Down**

Elena ZOLOTARIOVA

*Vice-president and Executive Director of the
Association of independent electric energy suppliers of Ukraine*

Now for the power sector a period of fall-and-winter is over, so it is high time to raise the question of what this winter meant for Ukrainian power sector? Was it a period of recession or a period of consecutive reforming and development? If there was a recession, is it going on now or has it stopped? Is it a short-term stop evidencing some seasonal phenomena?

Speaking about the results of winter 1997-98 for the power sector in Ukraine, we need to consider at least 1) financial situation in which the power sector has survived through the winter period, 2) change in the ability of customers to pay for consumed electricity, and 3) to evaluate the impact of normative basis for the power sector during this period. Situation and tendencies in financial, consumer and legal spheres are the ground for answering these questions.

Financial Sphere

Situation Financial results of the power sector activity in 1997 are not satisfactory. Last year the debt of electric energy consumers has increased by 435.8 million Hryvnas and has reached 3.2 billion Hryvnas. Some 18% of consumed electricity was paid for in cash. Financing of rehabilitation campaign for the whole of Minenergo was 55% of the annual plan, in particular, only 69 blocks were repaired instead of the planned 100.

Total balance profitability in the power sector was 596.1 million Hryvnas although some utilities were outside profitability margin. Partly this was caused by the growth in technological cost of electricity transportation (by 11%) and huge losses caused by lack of payment, illegal connections, drawbacks in metering systems, etc. In "Zakarpattiaoblenergo" transportation losses have reached 43.8%.

Mr. Olexij Sheberstov, Minister of the power sector, has noted at the Minenergo board meeting on 3/17/98 that financial improvement in the sector is one of the two major problems for his ministry. Obviously, just because of this the Government of Ukraine jointly with the International financial and consulting organizations has drafted the Financial Recovery Plan aimed at improving financial situation in the power sector of Ukraine. It is now being discussed in the governmental circles.

The draft plan does not provide for special administrative ways of stabilization of financial situation in the power sector, on the contrary, it allocates the primary role to financial methods.

Experience of the previous work has evidenced inefficiency of administrative methods of forced reforms in the sector. These methods are employed, as a rule, without consideration of economic situation. Besides while conducting the power sector reforms, as well as in any other sector of economy, administrative methods provide vast opportunities for exceptions from the new rules, and so forth.

C:\Common\S Golovaty\Articles\Zolotareva Winter.doc\April 1998

An important tool of financial stabilization in the power sector is association of the questions of financial recovery of the sector and its privatization. In Ukraine privatization in the power sector becomes a reality. There is also a possibility that revenues from privatization would not go completely for repayment of budget needs in other spheres, but would be used for financial stabilization and improvement in the power sector. This possibility is evidenced by recent actions by the government on repayment of debts of budget organizations for consumed electric energy. If the government will properly allocate finance obtained from privatization, an opportunity will emerge to increase the working capital of utilities. Then it will be possible to gradually go away from barter and to restore normal work of financial system in the power sector.

Speaking about financial tools of stabilization, it is necessary at once to note that for some entities they would become unacceptable. Not all will be happy with that barter has gradually to go into the sphere of bilateral contracts. Barter transactions are approximately 25-30% more expensive than contracts with cash settlements. While supplying fuel, this is identical to granting more expensive credits. Not all will be satisfied also with the new approach to offsets which is now being developed by the Finance Ministry, Minenergo and the National bank. This approach envisages offset continuation for a certain period of time, but also provides their transformation into a form of banking operations with all consequences as regards taxation of these transactions. However those participants of the Wholesale market, who see themselves in the power sector as long runners, understand that the government has no alternative to putting all financial procedures in the power sector to order, so the participants have to support this direction. Especially it concerns independent electricity suppliers. Obviously if financial improvement in the power sector will come to life, then debtors would be able to start paying to the independent suppliers. To speed up this process, it is possible to restructure the present debts and to use for compensation of debts the procedure of extra charges to the wholesale price of the Wholesale market, that would be rigidly supervised by NERC.

Remarks The forecast of either success or failure of financial stabilization is practically completely dependant on introduction of effective mechanism of cash collection for electricity. The efficiency of mechanism of cash collection depends first of all on the two conditions based on which stabilization could be enacted: on payment discipline of consumers and on improvement in financial position of electricity consumers themselves.

Condition of Consumers

Situation In 1997 the portion of electricity that was supplied to consumers free-of-charge, has

made 20% of useful deliveries. Practically there were no disconnections of more than 20 thousand consumers - debtors. In 1997 the power sector was one of the greatest creditors of the state and other consumers of electricity. Further prolongation of this situation will result in complete failure of financial stabilization in the power sector. Privileged customers and non-payers would "eat up" quickly even that money which would enter the power sector as a result of its privatization. Frequently even utilities themselves are insufficiently active in cash collection for supplied electricity.

Increase in payment discipline of the electricity consumers is foreseen by the financial recovery Plan in the power sector. The Plan provides prohibition for Electricity Suppliers to provide electric power to customers right after occurrence of debts for consumed electric energy, except in cases stipulated by the legislation, and also refers to the responsibility of local administrations for their possible intervention in this process. Also it is required to make restrictions of electricity delivery to budget consumers within the framework of means stipulated for this purpose by the budget. The plan provides a number of other measures as well.

Remarks

Some very important questions remain with no answer. E.g., it is not obvious what particular sanctions would be enacted against consumers for non-payment for electricity. In conditions of true market relations customers should be made responsible for their debts with their own property. However for some industrial consumers an interdiction on their privatization is in force. It is not obvious at all that simultaneously with the beginning of realization of the Financial Recovery Plan there will be introduced preventive maintenance and rigid responsibility for officials making intervention into the process of legal debt collection by electricity suppliers from debtors.

For electricity there has run into debt the majority of consumers, but special technological hindrances do not allow to completely disconnect from power supply approximately over 30% of consumers. Besides the disconnection procedure itself requires significant expenses, so a source for these expenses should be provided.

Total debts of many consumers are known to exceed even their fixed capital. However in Ukraine the procedure of bankruptcy practically is not applied through which in such cases there goes a transition of debtor's property into the property of creditor.

Disconnection and automatic cancelling of operation of insolvent industrial customers would throw thousand of new unemployed out on the street. We do not deny the necessity of such steps, but it is obvious, that any of these steps should be accompanied with real finance by some programs of social support, creation of new workplaces, manpower transition and so forth. Financing of these programs could be done by International financial organizations. Otherwise in each particular case the government will retreat, not being able to answer a question of what to do with the people? It is necessary to realize, that now a refusal by the state to close down unprofitable and insolvent enterprises creates a huge social problem. Reform in the power sector can not be considered separately from reforms in social and in other sectors. It is obvious that any steps toward the increase of electricity payments would not result in radical change in financial

position of the power sector until radical transformation in economy of Ukraine as a whole will not be carried out

Conclusion Elevation of payment discipline on behalf of consumers, introduction of effective mechanisms of cash collection and financial improvement of the sector's consumers requires immediate acceptance of many measures that do not concern at all the power sector directly. The majority of these and other measures directed toward maintenance of complete cash collections require support in the sphere of normative regulation and observance of working rules of normative acts, which are frequently outside the power sector's scope

Normative regulation.

Situation Last year the Supreme Rada of Ukraine has adopted the Electricity Law

What seems especially important for us is that this act has given to electric energy the status of commodity and has divided power between agencies of state management and regulation in the power sector

Remarks But while recalling all the above-mentioned circumstances, we note the unsatisfactory velocity of change in the attitude of consumers and state authorities to electricity. Transition from its perception as a service which everyone can be provided with free-of-charge to its perception as a commodity which could not be acquired without payment for it, is going on too slowly

Reforms in the power sector depend on reforms in other sectors of national economy, success of realization of laws in the power sector depends on enactment of legislative basis in other sectors. First of all we mean some general economic laws such as taxation laws and the Civil code. It is necessary to note that legislative problem is in prohibition of privatization of hundreds of industrial enterprises that are the major consumers of electricity and the biggest debtors for it. Being insured against any sanctions, these enterprises do not pay for electricity even if they have finance necessary for this purpose

Normative basis contains no material liability of the population for non-payment for electricity, for example - in the form of penalty. There is no normative responsibility of the state for the budget debts. Now these debts are not processed in any way

Privatization in the power sector has already started, but up till now the Law on peculiarities of privatization in fuel and energy complex has not been adopted. This Law is to define Rules of privatization, duly considering the interests of the state as regards power safety, ecological safety and so forth. In this situation privatization will be regulated by the usual administrative decisions, without any uniform rules obligatory for all, rules with all the outgoing consequences

Conclusion Such important process for reforms in the power sector as privatization can have a mass start-up without legislative regulation and without control on behalf of the parliament. Also it is obvious that even complete normative settlement of relations in the power sector does not

eliminate the problem of lack of legislative regulation of the already concluded reforms in the power sector as well as execution and performance of the already executed acts Rada of Ukraine will hardly start solving these problems earlier than during fall this year

General Conclusions During winter peaks in 1997-98 the power sector of Ukraine has experienced and continues to experience technical and financial recession In the first half of 1998 deficiency of coal equal to 3.5 million ton is being expected Minenergo is planning to apply extreme measures for disconnection of consumers and power blocks in order to create minimum reserves of fuel before July 1 A complex plan of measures to stop further recession and to create conditions for the rise of Ukrainian power sector and its stabilization should have a rigid and realistic schedule As first steps in this direction, there have to be strict differentiation of responsibilities of the state and market institutes, realization of tenders on transfer of state packages of utilities' shares into management of private companies, fixing and restructuring of all current debts in the power sector and also mass application of bankruptcy procedure to the customers