

# **POWER SECTOR REFORM PROGRAM EVALUATION**

## **Final Report**

*Submitted to:*

U.S. Agency for International Development  
Regional Mission for Ukraine, Belarus and Moldova

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## Executive Summary

The Ukraine electricity situation suffers from the appearance of significant reform, the presence of overwhelming centralized government control, lack of genuine competition at any level, massive non-payments, and a largely non-cash barter economy. Its power sector faces government control of fuels, massive fuel debt to neighboring nations, and low production asset utilization rates. While international donors had good intentions in 1992, their lack of sustained focus and commitment has led to *diplomatic drift*. Technical Assistance for Ukraine has not achieved desired objectives within established time lines. As well, the Evaluation Team finds that the Ukraine Technical Assistance program lacks full grounding in necessary knowledge about the issues and options for competitive markets and the mechanics of privatization necessary for successful conveyance to counter parts.

The Team's primary recommendation is that USAID and donors accelerate education on the "3Rs," (market) reform, restructuring, and refinance (including privatization), through training, conferences, expert advisors, and closer relationships with counter-parties based on the assumption of continued and sustained donor activity in Ukraine's energy sector. The specific needs for Technical Assistance in electricity restructuring, the key area of focus, are: (1) an independent market settlements administrator, (2) expertise on legislative policy, (3) prototype bilateral contracts, (4) protocols for competitive market operations, (5) regulatory capabilities to assess market operations, (6) proactive regional regulatory working groups, (7) procedures for autonomy and authority by regulators, and (8) an expert group to advise the restructuring and privatization efforts.

A second primary recommendation is that USAID should take the lead role in coordinating donor efforts and continue to leverage funding of Ukraine projects through conditionality by the World Bank and others. The essential next step is wide scale privatization of electric distribution and generation companies to achieve the critical momentum necessary for wide spread reform. Ukraine will make major progress in market restructuring through strategic investors with access to necessary expertise, management skills, sufficient capital, and a bottom-line focus. IMF, EBRD, World Bank, and USAID need strong coordination and intellectual leadership to require reforms in energy asset privatization, legislative policy, wholesale electricity competition, wholesale fuels competition, and regulatory development that achieve desired objectives. The use of this leverage now seems more important than ever to arrest the ongoing decay of Ukraine's energy asset base. USAID should direct greater technical assistance into this coordinated strategy in order to stem the massive bleeding-away of Ukraine's national energy assets. The Team's impression is that the donor community is currently regrouping around the issues of privatization, wholesale market reform and closure of Chernobyl via a recently formed Task Force.

There have been important accomplishments in Ukraine's power sector during this project's evaluation period. The period extends from mid 1994 to the present. Among these are the developing and monitoring of a Financial Recovery Plan, the passing of a nation-wide electricity law, the establishing of a National Electricity Regulatory Commission, and the creating of an infrastructure for a wholesale electricity market, even if the latter really operates only in a simulation or "shadow" sense.

On this last point, the Evaluation Team was surprised to find that Ukrainian counter parts and some USAID contractors believe the operation of the Ukraine wholesale market is at a greater level of operational functionality and competition than is clearly the case to us. Infrastructure development (both physical and intangible) should not be confused with actual market success when it is not used even close to its potential level. The Team's efforts reveal, for example, that fuel for generation is

not procured competitively, wholesale market bids are not based on marginal costs, generation bids are not really voluntarily prepared by individual entities, “competitive” wholesale prices are not rationalized in retail tariffs, and the flow of funds lacks sustained credibility. The Team believes that counter parts understand a *few* of the shortcomings of the present wholesale electricity but otherwise appear somewhat satisfied with the status quo. Clearly, there is a need for Technical Assistance that is focused on relentless exposure of these shortcomings with on-going communications and feedback from counter parts which forces the discussion to root cause failures.

Focusing on accomplishments, there are a number of successes and partial successes. A national regulatory agency, “NERC” has been established. It has acted independently on many occasions and recent Ministerial and Presidential decrees and legislative proposals suggest its independence has grated on some entrenched government interests. In many ways, NERC has proven to be a tough tariff regulator. For example, they only allow for recovery of technical losses in distribution tariffs, yet commercial losses (e.g., theft) are quite large. Most regulatory authorities would allow recovery for at least some commercial losses. NERC also has its own budget, funded much in the way a western regulatory agency is funded, by a regulatory assessment paid directly to NERC. In Ukraine, separate funding is akin to independence. At present, there is some risk NERC will lose its separate funding. By design, USAID’s primary energy restructuring contractor has significantly concentrated its efforts on NERC in recent years. The Team recommends that future contractors broaden their focus to more counter parts and more actively engage high level Ukrainian energy officials in discussion and debate of relevant issues. The Team recommends less contractor effort on detailed and lengthy reports which may not be read by many counter parts and greater focus on direct interaction and feedback with counterparts in conjunction with much shorter more focused issue documents. Even though NERC has a long way to go as regards tariff setting under a mixed market and regulatory environment, overall it has been a success. At present, there is some risk of slippage of NERC successes due to Cabinet of Ministers actions.

As regards success in privatization of the established joint stock electric companies, some entities did assemble private in country investor majority owned companies. It is apparent they have increased profit incentives and operate more independently and somewhat more efficiently, albeit not anywhere to the level of strategic private investors’ operations. These private companies have been legitimately dissatisfied with the existing transit account (flow of funds) algorithm, and their overly aggressive methods (apparently refusing to deposit cash into the transit accounts) have exposed weaknesses in existing Ukrainian laws and regulatory license structure that now require shoring up. Hence, privatization results can only be considered minimally successful. The Team does conclude that there have been many hard lessons learned, hopefully, on all sides concerning privatization and, therefore, the next effort is poised to benefit from these experiences.

Much of the infrastructure of the wholesale market has been established. This includes an Energomarket, its Board, system settlements procedures and many protocols that are embodied in the existing Energomarket Members Agreement. At present, there is significant activity in Ukraine surrounding placing in legislation the details of the Energomarket. This process has solicited input from all important participants in the Energomarket via 5 working groups. However, it is unclear whether their efforts will bear forth as the GoU is poised to exert renewed central control despite a lack of consensus among participants. Hence, the Energomarket only represents a partial success. A next key step is the independence of Energomarket from the Ministry of Energy – critical to the integrity of flow of cash funds.

As regards tariff concepts, tariff increases and rate unbundling there have been some partial successes. Tariffs denominated in local currency have been increased, substantially so in light of currency devaluation. Since NERC receives a wholesale market price from the results of the Energomarket, it is forced to intellectually consider the issue of tariff unbundling although actual unbundling has not occurred. It is aware that a high generation price squeezes distribution entities under a fixed tariff and that actual unbundling is a necessary eventuality. However, it has unwisely and recently installed an hourly generation price cap as a mitigating measure. NERC, as is true of most state regulatory commissions in the United States, is political. This derives from its retail rate authority. However, NERC also has wholesale rate authority even though the Energomarket, if it functioned properly, should have market based rate authority. In the United States, FERC is a much less political entity as it only has wholesale rate authority. Thus, the Team recommends that USAID assist NERC to establish a partnership with FERC in order to more fully balance the technical with the political orientation. NERC already has a partnership established with the Ohio regulatory commission. The Team also believes a partnership between the Ukraine National Dispatch Center and a United States based Independent System Operator is appropriate.

The Institute of International Education (IIE) is under contract with USAID to provide training to the electric power sector of Ukraine. IIE has been providing short-term training courses since 1994. In 1996, Minenergo established a Sectoral Coordination Center on Personnel and Staff Procurement (the Center) for the energy sector. In September 1996, Minenergo and USAID signed an agreement whereby USAID would assist the Center in the development and implementation of management training through a Management Training Unit.

IIE reviewed the management training requirements of the Ukrainian energy sector and prepared a report issued in November 1996. The report discussed several aspects of IIE's plans to provide training. A major component of the plan was the development of a one-year academic program leading to an MBA. The program was specifically designed for energy sector personnel. This program has been a success and is now completing its second year. The Team recommends the program continue beyond the planned 3 years.

In 1992, USAID entered into a cooperative agreement with the U.S. Energy Association (USEA) to determine the scope of the U.S. Government assistance in the energy sector of the Newly-Independent States (NIS) of the former Soviet Union. To administer this task, USEA and USAID jointly developed the Energy Industry Partnership Program (EIPP) for NIS. The objective of EIPP is to establish long-term cooperative relationship between the U.S. and NIS energy enterprises that provide a mechanism for the U.S. energy industry to transfer its experience in the market-based energy production, transmission and distribution to its counterparts in NIS. Presently, EIPP has established 15 U.S./NIS industry partnerships in seven of 11 NIS countries.

Considering the outstanding success of the Partnership Program, the Team recommends that this Program be expanded to include two remaining generating companies (Zakhidenergo and Donbassenergo), the National Dispatch Center (NDC). As for the distribution companies, three have benefited from the program and efforts should be made to deepen the program in these companies so that they could become models for other distribution companies. In this context, particular attention need to be given to completing the task of introducing international accounting standards (IAS) at Lvivoblenergo, a leading distribution company which was a beneficiary of the Program in the past and which has been privatized recently. Such a task need to be completed on a priority basis at Kievenergo so that the system of modern accounting integrated with the management information

system becomes a model for other generating companies. The software developed for computerized modern accounting and management information systems for Lvivoblenergo and Kievenergo need to be made available to other power sector enterprises.

It is easy to overlook these few accomplishments and focus only on the negatives – of which there are many in Ukraine. The main body of the report presents these many negatives in significant detail and some are summarized here. Extensive discussion of the negatives is necessary for future progress and for determining what USAID should consider doing differently going forward.

A primary problem with donor efforts in the Ukraine electricity sector derives from the fact that the initial restructuring model was selected and installed in Ukraine at a time when the model itself was in an immature stage of development. As a result, Ukraine has conceptually embraced a centrally dispatched pool for which participation by generators and distributors is mandatory. Bilateral contracts, present today in virtually every other pooling situation, are not permitted. Also, the payment of *all* funds is to be administered via transit accounts – all electric utility revenues are required to be deposited into these accounts for re-distribution by state authority. Under the requirements, distribution companies are not even allowed to keep that portion of their revenue that represents charges for their own services. This is a serious problem that is leading to even worse concepts in the government in order to make the transit account work. As a result of the mandatory buying *anonymously* from the pool (which gives rise to the need for transit account requirements in order to pay specific generators), Ukraine has many independent brokers eager to facilitate payment in barter among buyers and specific sellers so that participants can settle some of their debts. Thus, a type of after the fact debt settlement bilateral contract has arisen and is recognized as mostly legitimate in Ukraine, but it is clearly sub-par from a competitive market orientation.

The combination of a mandatory pool and transit account is a major shortcoming in the eyes of strategic investors that are used to being in control of their revenue stream and paying their bills to suppliers on time. For this reason, we recommend that Ukraine allow bilateral contracts, at least for strategic investor owned companies meeting metering infrastructure requirements, so that they are permitted to make arrangements (including payment) for generation services outside of both the pool and the transit account.

It is desirable for retail rates to directly pass through the wholesale market price, once it is based on market outcomes and prices reflect scarcity. However, the Team acknowledges that customers facing a generation price that varies by hour, should have opportunity to curtail usage in higher priced hours. However, the lack of hourly metering at either the customer or distribution level makes this very difficult at present to properly measure reduced consumption in high priced hours. Certainly, load profiling can be used, as it is the method of choice in use elsewhere, but any curtailment is spread throughout the month on the basis of the profile rather than on the basis of the specific hour of reduced consumption. Perhaps, hourly metering can be installed at the distribution level initially, so that steps to reduce load are measurable at that level. It could be that case that Ukraine has adequate time to address this issue as it is presently in such a state of under utilized capacity that it is difficult to imagine the price rising very high in more than a few hours. Hence, the pass through of the wholesale market price into retail rates should occur now. It is the Team's understanding that the GoU remains interested in that component of the earlier World Bank loan that would have provided metering and communications information. The Team recommends efforts be applied in this direction.

The ancillary services (e.g., capacity) determination is also immature and depends on administrative paradigms, when market alternatives are readily available. Hence, there are no real pricing signals to guide investment in new generation. On a related point, the Team recommends that the price caps on nuclear and hydro generation be removed from the “uplift” charge in the wholesale market. These price caps, if they continue, can be handled as explicit reductions in retail rate design. The current method results in negative uplift charges, again distorting the wholesale market price. As USAID’s contractor correctly indicates, the ability to contract bilaterally would also be enhanced by handling the nuclear and hydro price caps on a retail and not wholesale basis.

The Team has found other major reasons to be concerned about the Ukrainian electricity market. The first involves limitations on the dispatch of generation blocks. Second, government imposes inappropriate limitations on the submission of bids by generators. Third, there is direct intervention by government in plant dispatch and fuel allocation. Fourth, there is direct government manipulation of prices and bundling of wholesale and retail prices. Fifth, most experts in Ukraine lack knowledge about how competitive market conditions should be created. Sixth, Ukraine experts do not know how competition provides major benefits to the market. And seventh, Ukraine experts, including regulatory staff, do not understand how regulation and government intervention limits competition.

At some point, one must stop and ask, what should USAID do differently go forward? By this, it is meant, what should USAID do differently with its programs that span the categories covered in this evaluation study. The most difficult and critical element for near term success is the electricity restructuring efforts. Focusing on electricity restructuring, it is first necessary for privatization advisors to be strategically placed in residence with the GoU as part of its commitment to proceed with privatization of the LEC’s. Second, it is important to have additional capability for Technical Assistance during the privatization process. This may need to take the form of restatement of financial reports to international standards, plant and equipment inventorying and assessment, assisting with due diligence, and even tax policy matters. Third, in order to further Energomarket reforms, additional skills and experience are necessary to take discussions to a much greater depth of understanding. Fourth, legal resources need expanding to address the many significant (legislation) and lesser (contracts, protocols) activities requiring legal capabilities. Fifth, a presence must be maintained at NERC, albeit reduced from prior levels. This presence should be more willing to point out to NERC when they are about to make mistakes (e.g., price caps). Sixth, USAID must increase day-to-day management of these discrete components of technical assistance and devote more efforts on donor coordination. Seventh, advisors and consultants must be less focused on report writing and more interactive with counter parts in order for points of resistance to be identified and successfully addressed. Given Ukraine’s culture, these counter parts need to be at the highest levels of government. The Team notes that USAID’s primary contractor has staff with these contacts. Eighth, technical assistance is necessary to further prepare the distribution companies for privatization. Ninth, there needs to be opportunities (conferences, seminars, round tables) created for educating top GoU officials on electricity markets. Tenth, efforts should be more focused on obtaining independence for the Energomarket from the Ministry of Energy as soon as possible.

## I. INTRODUCTION

This independent Evaluation Team (Team)<sup>1</sup> report examines USAID and contractor performance with Technical Assistance to Ukraine on electricity reform and market restructuring. The primary aim is to provide recommendations for the future. The *ex post* component covers activities from mid-1994 to the present. Future recommendations are on Technical Assistance for the next two years. Chapters of the report are, in order, as follows: Ukraine context, privatization, wholesale market development, local distribution companies, regulatory environment, intervention and institution building, financial recovery plan, Ukraine evaluation, and summary of recommendations.

Ukraine presents the appearance of reform and restructuring, but imposes an overwhelming government role on its electricity industry as pervasive as that of a vertical monopoly. Actual unbundling of prices and services - substantive tariff reform - has not been accomplished.<sup>2</sup> Instead, retail and wholesale prices and services are combined. As a result, Ukraine's electricity restructuring has created a more direct, centralized role for Government. Many, including World Bank, EBRD, UK Know How Fund, and USAID desire the opposite outcome for Ukraine's energy reform, not highly centralized government control, but independent operating units which are fully privately corporatized.

While Ukraine has developed the infrastructure for a competitive wholesale market, so-called actual "market" operations are anything but competitive. Competition does not exist in Ukraine at the generation level, the fuel procurement level, the power procurement level, or the consumer choice level. More specifically, Minenergo's dominant role cuts across all levels, as it houses the energy ministry, owns virtually all power plants, owns the power grid, owns the dispatch center, seeks to collect all cash and payments in a centralized transit account, and owns controlling interest in 21 of 27 local electric companies (LECs).

The Government of Ukraine (GoU) uses the energy sector to collect funds and distribute subsidies. Specifically, it uses the energy sector to substitute for a social safety net and as an instrument of industrial and agricultural policy. As the energy sector arm of the GoU, Minenergo justifies its continued *control from the center* and desire to maintain this control for at least two more years, with claims that it must first resolve the customer non-payment and cash collections problems. However, customers and other entities seem less and less willing to make payments, in part perhaps, because of government's central role in redistributing the payments received. The Team believes that Minenergo, therefore, is the source of many of the problems with non-payments and cash collections.

We conclude that without major privatization, including strategic investor privatization, Ukraine's electricity assets will continue to be bled away on a massive scale. Ukraine's dependency on Russia for natural gas, oil, and nuclear fuel further exacerbate its economic woes. More importantly, Ukraine's weak electricity sector delays its economic recovery and even threatens to initiate an economic collapse.

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<sup>1</sup> It consists of Team Leader Eric C. Woychik, Yermal T. Shetty, and Linda Kalver. In general, Mr. Woychik is responsible for the chapters on Ukraine context, regulatory environment, wholesale market development, and Ukraine evaluation. Mr. Shetty is responsible for chapters on local distribution companies and the financial recovery plan. And Ms. Kalver is responsible for the chapter on privatization.

<sup>2</sup> Substantive tariff reform is, in this report, viewed as functional unbundling of prices and services. This departs from "tariff reform," classically discussed by World Bank, which is aimed only at increasing the level of tariffs that consumers pay (i.e., does not necessarily achieve meaningful functional unbundling).

The Team observes that basic market concepts, particularly electric restructuring and privatization issues and options have not been transferred to intermediate and high-level members of the energy industry in Ukraine. In part this appears to have resulted from “diplomatic drift,” including withdrawal by major donors. The Team also finds that USAID and its contractors have not focused sufficiently on the critical issues and options with electric market restructuring and have not been able to create strategic leadership in this area.<sup>3</sup> USAID and its contractors should not continue to ignore the primary education role with respect to market issues and solutions. Rather, the Team recommends that USAID and other donors provide additional assistance to strengthen strategic leadership on the primary market issues and options, including privatization. The Team believes that intellectual leadership in these areas is essential for Ukraine to advance its electricity reform, restructuring, and privatization efforts. Ukraine also needs a coordinated strategy and greater leverage on the part of all donors and USAID.

Thus, the Team has two major recommendations. (1) Accelerate education on the energy industry’s “3Rs,” reform, (market) restructuring, and refinance (including privatization). This can be accomplished by using training programs, conferences, expert advisors, and a closer relationship between USAID/donors and Ukrainian decision-makers. However, the Team recommends that this effort be more focused on senior officials in order for them to have the tools to develop the political will to undertake administrative reform, including abolishing the pervasive control of Minenergo. (2) USAID and other donors should take a more proactive role to create strategic leadership in Ukraine on the critical market issues and options, particularly competitive market structure and privatization.<sup>4</sup> We believe that additional privatization is essential to reduce political interference in market operations, to achieve needed reforms, and to cure the non-payments and cash collections problems. In each chapter, we provide more specific recommendations for USAID and donors to provide Technical Assistance to Ukraine on energy market structure, privatization, energy institutions, legal framework, and regulatory structure. We suggest that donors and USAID develop a coordinated strategy to implement these recommendations and to exert the necessary leverage.

## **A. Overview**

Ukraine, second only to Russia in size among European countries has about 55 gega-watts of installed generation capacity and about 50 million people, but faces a serious and growing economic and energy crisis. Since its independence in 1991, Ukraine’s two main economic drivers, industry and agricultural, have declined dramatically. During the intervening years, inflation increased dramatically and then leveled off, budget deficits continue, energy intensity has increased, and coal production has decreased.

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<sup>3</sup> Some of these critical issues include conditions for workable competition, the need for functional unbundling, the need for actual corporatization, the role of bilateral contracts, the role of pool pricing to condition bilateral contracts, governance of the competitive market, the role of regulation, the role of distribution companies in the purchase of power, the need for ancillary services and balancing markets, the need for nondiscriminatory grid access policies, and the problems with single-buyer models, especially when only mandatory pool transactions are officially allowed.

<sup>4</sup> We recognize that a Task Force seems to have been formed, linking EBRD, IMF, World Bank, and USAID to coordinate donor efforts and leverage restructuring and privatization. In one of these efforts, the proposal to fund completion of nuclear plants (K2 and R4), EBRD may require privatization of a number of Local Electric Companies in Ukraine, and require specific market restructuring.

Energy utilities have not been able to recover their costs, quality of service has deteriorated, and thermal and hydro plants badly need refurbishing. The average retail electricity price tripled from 1994 to 1996, reaching \$39/MWh, which is close to its economic costs. Still, non-payment of electricity bills and lack of cash-collections for electricity delivered pose serious problems. Barter and other non-cash payment modes (e.g., promissory notes, exchanges, and tax write-offs) have been complicated by the imposition of a mandatory transit account to collect electric revenues and redistribute them. Ukraine's increase in non-cash trade and lack of monetary liquidity has made in-country exchange, including barter for electricity, more localized within regions of the country, thereby creating pressures for a "balkanized" electricity grid. Real per-capita income has declined as well.

Electricity cost per capita has increased dramatically, and the percentage of utility income received in cash has declined. Two results of this are political pressure to keep prices artificially low and an enormous non-payment problem. The non-payment problem is exacerbated by special government sanctions that remove the obligation to pay electricity bills for a broad host of groups.<sup>5</sup> The non-payments problem is joined by a cash-collections problem that requires barter to provide compensation for electricity and fuel. Because of the economic crises, many workers have not been paid for months, which exacerbates the non-payment and cash-collections problems. Energy companies (energos) then have problems procuring fuel, especially from foreign sources.

Ukraine's high-energy intensity and low end-use efficiency make it highly dependent on electricity production. The current electricity economy relies heavily on nuclear power (50%), imported oil and gas from Russia and Turkmenistan, and low quality domestic coal. Its thermal power plants, including combined heat and power units, have an average efficiency of approximately 10,355 Btu/kWh. Thermal plants have insufficient funds to procure fuel, have low average utilization rates (30-35% capacity factors), and Minenergo controls daily plant dispatch.

Most of these plants lack controls and cannot follow load, which contributes to frequency fluctuations and use of load curtailment to reduce low frequency excursions. Electricity exports are limited (to Poland, Moldova, and Russia), largely because the Ukraine grid cannot maintain frequency (50 cycles) within acceptable limits (+/- .025 cycles). This limits Ukraine's ability to benefit from electricity trade and interconnection for reliability and ancillary services.<sup>6</sup> The Team has not been able to find out why Ukraine does not contract with Russia or another entity to provide frequency control. This would vastly enhance Ukraine's position in electricity trading and this seems likely to lower its costs to maintain reliability. Plant upgrades targeted to increase Ukraine's plant flexibility (e.g., to provide frequency control) were to be funded by the World Bank, but have been suspended since the end of July 1997.

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<sup>5</sup> This includes 17 categories: war veterans, persons disabled in war actions, persons who belong to war participant category, persons who are subject to the law on social protection guarantees for war veterans, persons with outstanding merits before the Motherhood (heroes of the Soviet Union), holders of the Slava order, and parents and family members of serviceman, veterans of military service, heroes of socialist labor, persons of outstanding labor merits before the Motherhood, servicemen of the security service of Ukraine, Policeman, District Attorney detectives, Judges, Fire fighters, rural residents and workers in agricultural complexes in villages, veterinary doctors in rural areas, citizens who suffered from the Chernobyl catastrophe, persons participating in Chernobyl who worked in the estrangement zone, people who live within 30 km of Chernobyl Nuclear Plant, rehabilitated persons who became retired or handicapped because of repression, citizens who work and reside in the territory of a town with a mountainous status.

<sup>6</sup> Ancillary services are in this case for grid operating reserve, frequency control, voltage control, and balancing energy.

The political context is one where key decision-makers lack the will to implement real reforms. Any possible market forces, for example, have been muted completely by centralized control or routine government intervention. In short, energy policy lacks certainty and the necessary legal institutions and laws to reduce government intervention.

## **B. History and Context of Technical Assistance in Power**

This evaluation targets the period 1994-1999, although technical assistance in Ukraine began with the Chernobyl crises. In 1994, it was agreed that (1) an Energomarket would be formed to operate the wholesale market, (2) at least 4 generation groups would be formed, (3) a National Electricity Company for high voltage transmission would be formed, (4) Local Electricity Companies (LECs) would be separately formed, and (5) a national regulatory body would be formed. Along with assistance on technical issues, an agreement was developed to ensure Ukraine had sufficient electric power. Ukraine expected that the West would finance the completion of two nuclear plants (K2 and R4) that were under construction before the Chernobyl crises occurred. Although a major study was performed to assess the economics of these two nuclear plants, the financing has yet to be finalized.

In 1994, a scheme for multilateral technical assistance was defined. The World Bank appropriately stated that “a broader, deeper assistance effort is required for full and timely implementation of a market structure.”<sup>7</sup> Project coordinator, the World Bank, retained Putnam Hayes & Bartlett (PHB) to act as its Ukraine coordination advisor.<sup>8</sup> Ten donor-team elements were identified and matched with eight general Ukrainian clients. USAID was to provide technical assistance to Minenergo, fossil generators, the regulator, and LECs. A system was established for scheduling, reporting, and overall project coordination.<sup>9</sup>

In 1997, the World Bank withdrew its loan proposal because of Ukraine’s failure to fulfill loan conditions. This was accompanied by diminished involvement of other multilateral donors.<sup>10</sup> Support was also withdrawn from the British Know-How-Fund. By mid-1998, this largely left USAID and its major contractor<sup>11</sup>, to fill the void left by the previous donors and participants.<sup>12</sup>

Circumstances in the current context seem likely to change significantly. The World Bank is examining retail electric prices and non-payments and cash-collections as regards meeting conditions for load resumption. The EBRD and the G7 more broadly are considering a loan for the two nuclear plants if the electric market reform and electric industry privatization are achieved. The World Bank may withdraw its suspension of the previous loan. In addition, as previously mentioned, a Task Force has been formed to coordinate EBRD, IMF, the World Bank, and USAID efforts related to privatization and market reform of the Ukraine electric sector resulting possibly in the aforementioned G7 loan. IMF, in coordination with the Task Force, has suggested that it may

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<sup>7</sup> Implementation Guide: Ukraine Electricity Reform, World Bank, Draft, 1 September 1994. Certainly, while this was initially contemplated, it has not achieved as of this writing.

<sup>8</sup> This was funded by the British Know-How-Fund.

<sup>9</sup> One intent was to “produce, maintain and distribute high-level organizational charts identifying key industry personnel, and [to] assist as requested in arranging meetings with such persons.”

<sup>10</sup> Ukraine Completion of Khmelnytsky 3 and Rovno 4 Nuclear Power Generators: Economic Due Diligence, Stone & Webster, May 1998.

<sup>11</sup> Major contractor in most of this report refers to Hagler Bailly.

<sup>12</sup> Hagler Bailly also continued a role to report to World Bank on Ukraine’s progress on certain matters.

condition its outlay of funds (trenches) on privatization of a number of LECs (Oblenergos), as would EBRD and the World Bank.

A major part of the Team's task was to historically assess USAID's Technical Assistance, in order to recommend the direction and focus for the next two years. This includes review of the work orders provided to Hagler Bailly, the International Institute for Education (IIE), and the U.S. Energy Agency (USEA). The USAID/Ukraine Mission was responsible for the work of these three entities, while the contracting itself was done by USAID in Washington D.C. This report will address questions about the Technical Assistance to date, what has worked and what has not, and the direction and focus of Technical Assistance for the next two years.

### **C. Political Context for Reform, Restructuring, and Privatization**

The near-term question has been whether Ukraine has the political will to embrace and implement reforms, especially electricity restructuring and privatization. The current political environment for reform has changed largely as a result of Ukraine's financial crises. In 1994, the current President was elected and subsequently called for a radical break from past economic policies.<sup>13</sup> Ukraine has experienced numerous economic setbacks, declining output production, a predominantly non-cash economy, and rapidly rising debt burden to Russia and Turkmenistan for energy imports.

Virtually all energy companies now have difficulty with customer non-payment and with cash-collections.<sup>14</sup> Ukraine's government energy officials argue that the deleterious effects of non-payment and cash-collections continue to undermine the ability to rely on market forces. Energy officials view these problems as undermining the value of privatization. Privatization efforts are also viewed as "giving away" the national assets for very little in return. Adding to these problems, most of the seven newly privatized LECs have resisted paying into the government central transit account. Strategic investors have not acquired Ukraine energy assets to date, in part because they have been restricted from acquiring controlling (51%) interest in any of the facilities.

Ukraine's problems stem from 70 years of socialism. It faces the barriers developed under the old socialist system of central planning, which are largely political and ideological.<sup>15</sup> As a result, there are serious contradictions in energy policy development and implementation. These contradictions portend instability and the loss of prior gains. A noted expert provides this summary:

*More generally, historically ingrained attitudes and reflexes are more difficult to change than the written "rules of the game." The re-emergence of old behavioral patterns during the political, macroeconomic or sectional crises can threaten the sustainability of gains made earlier. The long time needed to achieve deep and irreversible changes places a high*

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<sup>13</sup> Staff Appraisal Report: Ukraine Electricity Market Development Project, World Bank, 16 September 1996. Compare, Ukraine Energy Sector Review Report No. 11646-UA, Country Department IV Europe and Central Asia Region, World Bank, 1 July 1993 (Hereafter, *Ukraine Energy Sector Review*).

<sup>14</sup> Emergency conditions have been declared with electricity resources, which allows the Energomarket to disperse funds according to "perceived need" and to ignore the algorithm for the disbursement of funds that has been approved by the National Energy Regulatory Commission and other market participants.

<sup>15</sup> See, P. Hare, M. Ishaq, and S. Estrin, The Legacies of Central Planning and the Transition to a Market Economy? Ukrainian Contradictions, Centre for Economic Reform and Transformation, October 1996. (Hereafter, *Ukrainian Contradictions*.)

*premium on stamina and patience for those supporting sector reforms in the Ukraine and elsewhere in the FSU.*<sup>16</sup>

Many of these problems seem to be at the top ministerial and Parliamentary levels, where an inconsistent range of ideas reside, from central planning to naïve views of the market and economic nationalism. Many believe that President Kuchma faces potential loss in the up coming October 1999 election if he forces new reforms or if electricity prices increase further without broad support. The Parliament's communist/socialist members resist the use of real markets and privatization for electricity sector restructuring. Hence, the current problems seem to galvanize support for further muting of the electricity market, with social subsidies and central control of electricity.

These political conditions, including the non-conforming behavior of newly privatized LECS, create a difficult environment for any reform effort. The basic results are that Ukraine's energy policy-making is unpredictable, highly complex, very bureaucratic, and confounding, making advances uncertain at best. These conditions pose obvious constraints to meaningful reforms of laws, regulatory, and market structure. Most obvious are (1) the need for legal institutions and laws that provide certainty in the energy policy environment, (2) a market implementation structure which enables competition to result, and (3) proper administration of restructuring and privatization efforts such that new LECs and generators are able to act with autonomy within the law.

#### **D. Ukraine's Electricity Market Concept Compared to the UK Model**

In 1994, after two years of development and debate, the Ukrainian government committed to implementing a centralized competitive electric generation market - a power pool - similar to the market adopted in England and Wales (UK).<sup>17</sup> A major difference is that the Ukrainian model does not use contracts-for-differences (CFDs), while the UK model does. CFDs allow for negotiated prices and price certainty even as competitive power pool prices vary.<sup>18</sup>

In 1996, multi-lateral donors provided a framework for the Ukraine wholesale electricity market.<sup>19</sup> A National Electricity Regulatory Commission (NERC) was also contemplated. A sub-set of the principles described therein is as follows:<sup>20</sup>

- Dispatch of generating blocks based on an economic merit order.
- All buyers and sellers are charged and all sellers are paid at the same rates for trades in any one hour.
- The price paid for electricity varies hour by hour according to the costs for trades in any one hour.
- The market price is dependent on the balance of the demand and the supply of electricity.

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<sup>16</sup> L. Lovei, *Energy Sector Reform in the Ukraine*, International Association of Energy Economists, Newsletter, Second Quarter, 1999.

<sup>17</sup> Presidential Decree No. 224/94, May 1994. See also, Annex 2, *The World Bank and Ukraine's Power Sector: A Strong Development Partnership*, World Bank, 1996.

<sup>18</sup> A CFD is a financial bilateral contract that allows the buyer to pay the difference when the pool price is less than the negotiated price (e.g., 5 cents/kWH) and allows the seller to pay the difference when the pool price is greater than the negotiated price. The generator then always gets the negotiated price and the buyer always pays the negotiated price, no more and no less. Thus, scheduled generation and load are, *per se*, subject to the pool price, but pool price variability can be limited and negotiated differences can be allowed through CFDs.

<sup>19</sup> Guide to the Wholesale Electricity Market of Ukraine, Coopers & Lybrand, November 1996.

<sup>20</sup> Ibid., at pg. 6. See also, Presidential decree 282/95, 1995.

- No market intervention by government.
- NERC exists to monitor market operations and to protect the interest of consumers.

While oversimplified, these points reflect most of the primary requirements for efficient and effective competitive market operation.<sup>21</sup>

The Team relies on these same points to evaluate Ukraine's electricity *market*. We have found major reasons to be concerned about the seven aspects of the Ukrainian electricity market. The first involves limitations on the dispatch of generation blocks. Second, government imposes inappropriate limitations on the submission of bids by generators. Third, there is direct intervention by government in plant dispatch and fuel allocation. Fourth, there is direct government manipulation of prices and bundling of wholesale and retail prices. Fifth, most *experts* in Ukraine lack knowledge about how competitive market conditions should be created. Sixth, Ukraine *experts* do not know how competition provides major benefits to the market. And seventh, Ukraine *experts*, including regulatory staff, do not understand how regulation and government intervention limits competition.<sup>22</sup> These are fundamental problems which we will elaborate on in this and later chapters.

Conceptually, the Ukraine market model is very similar to the well known UK power pool. Both rely, in principle, on day-ahead generation-only bids and a forecast of demand to set market-clearing prices.<sup>23</sup> The two models, however, have at least three major differences. (1) the UK model is designed to use CFDs (a form of bilateral contract) around the pool, but Ukraine does not formally acknowledge CFDs. (2) the UK model uses economic merit order to dispatch its plants, with very limited exceptions,<sup>24</sup> and, (3) the UK model uses a different method to adjust prices to reflect capacity value (based on scarcity).

In theory, both the UK and the Ukrainian models price energy with bid-based competitive conditions. The theory of the pool is that all generators who bid less than or equal to the price-setting generator get the market clearing price and all customers buying power through the pool pay that price. In the UK all generators in the winning bid-stack and all customers face the same market-clearing price.

In the UK situation, generators and customers, including distribution companies can negotiate bilateral contracts (BCs) and may structure contracts-for-differences around the pool price. Ukraine's government officials argue strongly against the use of bilateral contracts, and even CFDs. But in practice, barter and other negotiations provide for discounted trading around the retail price, not the pool price – differ forms of bilateral contract. Ukraine's government attempts to centralize control by requiring 100% of accrued revenues to be deposited in a transit account.

Thus, the overall Ukrainian situation creates what turns out to be *virtual BCs*.<sup>25</sup> But to make this comparable to the UK market, the government must eliminate its average cost approach to pool price

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<sup>21</sup> Compare, R. Bohn, A. Klevorick, and C. Stalon, Second Report on Market Issues in the California Power Exchange Energy Market, 9 March 1999.

<sup>22</sup> We also accept that some of these concerns may be naïve, as certain key decision-makers well understand how to limit competition and limit outside intervention by potential competitors.

<sup>23</sup> This contrasts with competitive models that allow for both supply and demand bids to determine market-clearing prices. The dual bidding approach controls generator market power if customer willingness to pay for demand conditions the desired level of supply.

<sup>24</sup> The exceptions are the constrained-on (must-run) plant and the constrained-off (redispatched) plant.

<sup>25</sup> Ukraine allows for independent power providers (brokers) to enter into what are in effect bilateral contracts with larger customers. This is the exception to the Ukraine "mandatory pool" or single buyer model. Buyers and sellers

setting, cease central control over generation dispatch and fuel allocation, and wholesale and retail rates must be reformed.

Both the UK and the Ukraine approach to setting capacity prices, (as opposed to energy prices) use administrative cost determinations, as opposed to market price determinations.<sup>26</sup> Capacity prices are determined by regulation, without a response from customers in the form of demand-bids or a measure of customer willingness-to-pay.<sup>27</sup> The UK's use of a value-of-lost-load times an loss-of-load-probability (VEE x LOLP) is at least an attempt to reflect the value of lost load to customers, albeit, artificially based on modeled results. Other market models, including California, use customer bids or customer-self-provision to provide a market measure of capacity (ancillary services) value.

Hence, the signal for Ukraine to build new plants is based on energy prices and capacity prices that fail to reflect market conditions, in part because workably competitive energy and capacity markets do not exist. In short, the current signals for energy prices, capacity expansion, and upgrade of generation are not based on market principles.

### **E. USAID's Future Strategic Objectives**

The Team recommends that USAID clearly state its future strategic objectives with respect to Ukraine. Most importantly, USAID wants Ukraine to develop a sustainable economic basis for its energy sector. This suggests that institutions must be developed and educated, competition must be developed and be workable, and government control must be removed so that market forces are allowed to work.<sup>28</sup> The Team supports such an approach.

We believe that the commercial sanctity of contracts and private arrangements must be protected. Otherwise, government intervention will undermine competition and privatization efforts, with negative rippling effects on Ukraine's economy. We support the primary USAID objective, to create workably competitive markets and an environment of commercial sanctity for business contracts.

We have gleaned from dialog with USAID that they have four major criteria to demonstrate how its primary strategic objective has been met, as follows:<sup>29</sup>

- The legal and regulatory context for energy is in place and is conducive to strategic private investors.
- The energy sector is workably competitive as defined by private investors.
- Indebtedness to outside fuel producers for gas, coal, and nuclear fuel is reduced.
- More efficient energy use is achieved.

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of energy are allowed to trade liabilities, such as promissory notes or accounts receivable. That is, Ukraine permits trading that amounts to bilateral contracting between large customers and the independent power producers. These bilateral contracts are scheduled on the grid but as bid-based schedules. About 20% of Ukraine's power is purchased under these contracts.

<sup>26</sup> It involves a production-cost model that calculates loss-of-load probability (LOLP) and multiplies this times a value of lost load (VEE) which is fixed and determined in a regulatory process.

<sup>27</sup> Mr. Juriy V. Sakva, Deputy Minister of Energy, and people at the NERC have made this point. They argue that retail choice could also integrate customer value-of-service or willingness to pay for reliability.

<sup>28</sup> These insights were obtained from through interviews with USAID, including Paul Mulligan, Bob Ichoird, Bob Archer, Andrei Parinov, and Tom Broderick.

<sup>29</sup> Ibid.

Although USAID's major objective and demonstration criteria are somewhat general, each seems entirely consistent with the context and needs which we have observed in Ukraine. The Team believes that these criteria provide a qualitative basis to measure the progress of USAID and others in the assistance efforts to Ukraine. Hence, our recommendations for future USAID involvement emphasize these same points, as well as additional detailed recommendations.

## II. ELECTRICITY SECTOR PRIVATIZATION

### A. Context for Privatization

An important objective for Ukraine's power sector restructuring is privatization. In Ukraine, privatization has been an uphill struggle. The major impediments are three: (1) power sector entities face severe financial difficulties; (2) Ukraine's energy decision-makers have attitudes that do not favor privatization; and, (3) political control of key policy and day-to-day decisions results in an environment which is very risky and therefore unattractive to investors. Many of these impediments have been documented both by institutions (Centre for Economic Reform and Transformation (CERT)<sup>30</sup> and the World Bank<sup>31</sup>), potential investors (AES<sup>32</sup>), and consultants (Hagler Bailly<sup>33</sup>). The Evaluation Team has met with many parties to discuss the privatization process in Ukraine.

The role of USAID in privatization is non-financial, although the agency deploys funds to advise, instruct, and act as a liaison among participants. This chapter outlines the progress of privatization in Ukraine, particularly in areas in where USAID plays, or can play, an important role. The chapter focuses on two sets of issues: the conduct of tenders, and legal and property rights concerns. It opens with a brief comparison between the original objectives of privatization and the present situation. Regarding the latter, the discussion includes an attempt to portray the way the various parties avoid responsibility for the effective restructuring of the industry and sale of privatized shares of stock.

This chapter also incorporates interviews with government, energy sector professionals and managers, consultants, and strategic investors (AES). From these interviews, the Team has identified areas in which USAID should offer advisers to the government and the industry. This chapter concludes with a set of twofold recommendations: (1) recommendations for activities of all parties – GOU, power sector, etc. – aimed at the continuing success of, and further promotion of, privatization in the power sector, and (2) recommendations for USAID activities to directly support and promote privatization.

A new program for privatization is being developed by the Ukraine State Property Fund (SPF), to be proposed at the presidential level. The program may be proposed next month. But if not, it will be proposed after the upcoming presidential election. Details of the program were not publicly available in time for this report.

### B. Review of 1995 to the Present

#### 1. Was Infrastructure Prepared?

Many participants in the privatization process believe that it was a mistake to begin privatizing the electric power sector before there was sufficient infrastructure in place. Chapter V provides further

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<sup>30</sup> Ukrainian Contradictions, *op sit.*

<sup>31</sup> Ukraine Energy Sector Review, *op sit.*

<sup>32</sup> AES letter of June 10, 1998 to Ambassador Steven Pifer (AES).

<sup>33</sup> "Analysis of LEC Privatization in Ukraine, Report #1, Energy IQC Task Order for Ukraine Contract No. LAG-803-98-0005-00, Task Order 803, Final Report", prepared by Hagler Bailly, November 9, 1998 (HB#1) "Power Sector Privatization in 1998, Results and Prospects, Ukraine Report #2, Energy IQC Task Order for Ukraine Contract No. LAG-1-803-98-0005-00, Task Order 803, Final Report", prepared by Hagler Bailly, December 21, 1998 (HB#2). Biweekly memoranda, "Energy Sector Privatization & Stock Market Update Report" (HB Biweekly [date]).

support for this view. The basic infrastructure that most deem necessary, based on interviews and research, includes (1) a workably competitive market structure, (2) separation between economic institutions and government control, and (3) a system of laws to stabilize the political environment and protect the rights of asset owners. A theme oft repeated is that Ukraine's existing laws are not favorable to investors, because they allow for centralized government control (intervention) and because investor rights are not protected. Certainly, the proposed SPF method of tenders recently used did not attract significant interest from strategic investors.

Most of the impediments to privatization are discussed elsewhere in this report, but are summarized here:

- Much of the physical plant is in disrepair.
- Financial valuation of plant, meeting Western standards, is nonexistent.
- Distribution companies are not paid in cash for much of their energy. Theft, barter, and nonpayments accounts for a majority of billed revenues.
- The energy sector is just beginning to adopt International Accounting Standards (IAS).
- Investment entails the assumption of the company's debt, with no mechanism for rescheduling the debt repayment. The immediate liability for debt is a deterrent to investors.
- Unless the laws are changed, investments in LECs are immediately taxable.
- Dividends trigger a highly effective tax rate.
- Current legislation on interest payments discriminates against foreign investors.
- The power pool in its present form, without bilateral contracts, is unattractive to investors.
- The transit account for pool settlements does not reward investors or management for improvement in cash collections; rather, it allows government to redistribute receipts based in perceived priorities.
- Retail tariffs are not established by an open process that is perceived as fair.
- Investors have difficulty assessing whether tariffs are adequate to cover costs in the absence of IAS.
- Discounts for protected classes of customers create severe penalties for investors, because lost revenues are not reimbursed by the government or accounted for in tariff setting.
- Retail tariffs do not relate to costs, so that investors cannot predict or control profitability.

The discussion in Chapter V explains attitudes held by government and the populace that impede quick and successful privatization, including the following:

- Socialist orientation against private ownership.
- Fear of foreign takeover.
- Fear of job loss (from replacement or downsizing).
- Government emphasis on control, rather than on effecting privatization.

Thus, the Team finds agreement with a number of others in the conclusion that the infrastructure was not prepared sufficiently to create a positive environment for privatization.

## 2. Tenders and the Sale of Shares

On April 4, 1995, the President of Ukraine issued Decree #282, creating the power sector generating and distribution companies, with the aim of privatization. In subsequent decrees issued in August and September of 1995, the Minenergo corporatized power sector enterprises and registered four State Energy Generating Companies (thermal) and 27 State Energy Distribution Companies (LECs) as joint stock companies. The initial tender offerings provided for three important distinctions. First, a substantial minority of preferential shares was to be sold to employees and other privileged individuals. Second, a majority of shares of generating companies and over 25% of the shares of distribution companies were to remain in state ownership for several years. And third, only minority shares (24-30% of generating companies and 30-45% of distribution companies) to be sold by tenders to Ukrainian or foreign investors.<sup>34</sup>

This distribution of ownership ensured that a strategic investor could not have a controlling interest in any company as a result of its tender offer, but two other possibilities existed. First, the State was able to offer the strategic investor control of the shares it owned, however, Ukrainian law permitted the State to reclaim management at any time. The second possibility was more attractive: during the period 1997-1998, many of the preferential shares, bought by employees and others, were quickly resold to traders. These traders accumulated large blocks of shares, which they resold to large Ukrainian investors. Thus, strategic investors could obtain a controlling share by combining their initial investment with secondary share purchases.

Other problems entailed the investment obligations of the investor. The first problem was the precedence of share price over total investment package in evaluating bids. In the first quarter of 1998, the SPF and Minenergo negotiated new terms for commercial tenders. Their goal was to sell every available share for the highest possible price. Minenergo recognized that this would not have the best consequences for the power sector, but SPF insisted upon it. A consequence of this was the neglect of the investment package. Strategic investors typically bid a price per share, coupled with a plan for investing in the rehabilitation, replacement, and/or expansion of plant. However, under these terms, several tenders were awarded to unknown companies that bid the highest share price, with no investment plan. Moreover, in response to these terms, the price of shares on the stock exchange soon fell.

A related problem was, and still remains, an apparent lack of commitment of the SPF to the electric power industry in Ukraine. The objectives and tasks of the SPF concern the activities required to carry out the privatization process according to the laws of Ukraine and to acquire the maximum amount of cash for the state budget. After reading published materials (including newspapers), talking with people who have worked with the SPF, and meeting with the SPF, the Team does note that the SPF is interested in strengthening the industry itself. The SPF acknowledges that the privatization of the electric industry has not been directed at strategic investors. Although the SPF favors privatization, and hopes that it will resume, it still does not seem concerned about attracting strategic investors.

By 1997, international investors were expressing interest in investing in several of the companies, while still hoping that the structure of initial share allocations might change. In April 1998, after the approval of the Financial Recovery Plan (FRP) of the Electricity Sector of Ukraine; Minenergo and the SPF drafted another revised plan for the privatization program. Finally, under this plan, larger

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<sup>34</sup> A detailed account of the offering is included in Annex 1 of HB#1.

proportions of stock would be offered under commercial tenders, and the conditions for tenders made less stringent. In particular, the requirements for investment obligations would be reduced, the grace period for repayment of the companies' debts would be lengthened, and control of management would be given to the winner of the tender.

In May 1998, the SPF began to solicit return of the privatized enterprises under the relevant ministries. It drafted a proposal to transfer the state's holdings of share to Minenergo for management. In July 1998, further privatization activity was suspended.

In February 1999, a working group under the Vice-Prime Minister drafted a Presidential Decree on privatization, which had several provisions that would attract strategic investors. It provided for "minimum dispersal of shares", meaning that larger blocks would be offered for sale. It required proven experience in the industry, and it fixed the mutual obligations of the investor and the State. However, this decree was not signed. Moreover, the Minister of Energy, Mr. Sheberstov, was dismissed. Mr. Sheberstov had been a strong supporter of privatization, particularly by strategic investors. He believed that this would bring really efficient owners to the industry and provide sources of investment for development of the power sector.<sup>35</sup> By contrast, his replacement, Mr. Ivan Plachkov, asserted that no strategic investors were needed in the power sector. He believed that the controlling stake (51% or more) of all oblenergos should be reserved in state ownership, and that only small blocks of shares should be sold on the stock exchange.<sup>36</sup>

In February 1999, the Rada (Ukraine Parliament) rejected the 1999 Privatization Program, which provided for privatization of state property using either money or privatization certificates. At the time of this writing, the privatization program appears to be at a halt. If the new presidential-level proposal on privatization is approved within the next one or two months, privatization will resume, and it is more likely to be successful. However, it is more likely to be approved after the next presidential election, and privatization is more likely to resume next year.

At the present time, nine oblenergos have been privatized, seven of them completely. The same consortium owns five of the latter. Recently, the prosecutor general has opened claims against two oblenergos, attempting to reclaim the privatized shares for the state, on the grounds that the investors have not satisfied their investment obligations. The SPF, however, told us that they did not perceive any irregularity in the investors' implementation of their investment programs and believes that the privatization of these energos should be honored.<sup>37</sup>

### **3. Proposed Presidential Decree**

At the time of this writing, the proposal that is being considered by the working group, and will be submitted to all relevant agencies for approval, and finally to the President, contains the following provisions:

- The state will continue to retain 25% of the shares of all oblenergos and 50% of the shares of all generating companies.

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<sup>35</sup> Reported in HB Biweekly February 26, 1999.

<sup>36</sup> Documented in HB Biweekly March 15, 1999. They point out that even the most attractive energy sector shares (Dniproenergo and Kyivenergy) are sold in the secondary market at only twice their asset value, while shares of all other companies trade below their assessed value.

<sup>37</sup> Communication of SPF official during a meeting.

- The state's shares will be transferred for a specified period of time (probably three years) for management.
- At the end of that time, the strategic investor will be permitted to buy the state's shares.
- The share price (to that strategic investor) will be fixed at the time of the purchase agreement.

We have been informed that strategic investors strongly favor this proposed decree. However, the Team is unclear how investments made to date would be treated should the investor not be allowed to purchase state shares. Also, such investments will increase the value of the firm, thereby possibly increasing the ultimate purchase price for state shares for the investor – a possible disincentive for investment in the initial three years.

#### **4. Fear of Foreign Investors**

In 1994, Putnam Hayes & Bartlett, Ltd. was engaged by the World Bank to advise on energy reform in Ukraine. One objective they put forth was “[o]pening of Ukraine electricity industry to new entrants who will provide innovation and capital, and who will compete with existing enterprises, making them more efficient.”<sup>38</sup> Minenergo states that since the beginning of reform in 1992, its chief objective (in contrast to SPF) has been to attract strategic investors.<sup>39</sup> However, from the outset, there has also been resistance to privatization in general and foreign investment in particular, on the grounds that it “destroys the integrity of the power supply system of Ukraine.”

From informal accounts, the political climate in Ukraine is leftist in leaning. This implies that they oppose private ownership in any form. Some of the sentiment is simply a consequence of the age of the population, which is dominated by people who grew up under Socialism and remember the security that it afforded. This situation will be remedied by time: the younger generation is more Western-oriented and willing to embrace Capitalism. Additionally, however, some of the market reforms that arose after Socialism still supported the leftist view. By contrast, Hungary and Poland have broken more completely with Socialist values.

As discussed above, the present Minister of Energy was, until recently, opposed to privatization. At the time of this writing, it is our understanding that he has spoken out in favor of privatization and has signed the current draft of the proposed presidential decree,

#### **5. Regulation and Control of the Privatization Process**

Conflicting interests and lack of accountability beset the privatization process in Ukraine. The SPF acts as if it owns all property, but Minenergo acts as though it is the steward of all energy property. SPF's mandate during the recent electricity privatization process was to transfer the maximum amount of funds to the State budget. This explains their focus on share price, rather than on long-term investment programs. Moreover, they deliver the funds obtained from privatization of the power sector directly to the budget, rather than contributing to replenishing the assets of the industry. In short, they do not seem to be committed to the electricity industry.

Moreover, SPF had only limited ability to offer particular conditions to strategic investors. For example, they could not guarantee that the privatized company will be able to postpone its repayment of debts, which are due immediately upon purchase of the company. They could not provide any

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<sup>38</sup> “Implementation Guide, Ukraine Electricity Reform”, Putnam, Hayes& Bartlett, Lts., 2 December 1994, page 3.

<sup>39</sup> Meeting with Minenergo official.

guarantees about the retail tariffs that will be mandated by NERC. By contrast, a Minenergo official said that, from the beginning of reform in 1992, Minenergo's goal has been to attract strategic investors.

A *tender commission*, who also evaluates the bids, previously prepared each tender. Each commission is specific to the property in question, including representatives of the enterprise (usually the Board Chairman or Deputy), local authority, and a local state administrator. In addition, Minenergo is always represented, and more recently NERC has been invited. The tender commission embodies a variety of interests; accordingly, its importance should be more widely recognized.<sup>40</sup>

In July 1998, the National Agency for the Management of State Corporate Rights (NAMSCR) was created to manage the state's shares rather than either SPF or Minenergo. They hold shares in numerous enterprises in various industries, and they have no expertise in energy. The formation of such an agency underscores the state's interest in maintaining control. Moreover, NAMSCR is transferring the management of some of its shares to local oblast administrators, in a non-transparent fashion, rather than auctioning the right to manage these shares to investors, on market-based principles.

## **6. Current Conduct of Tenders**

The State Property Fund has held nine tenders in the electric power sector. This has concluded in sales of all nine oblenergos; seven of these have been completely privatized. The tenders were exclusively commercial tenders. For each tender, the tender commission specifies the terms and conditions, including the time period (at least 30 days, and sometimes 45 or 60) during which bids will be accepted. The commission prepares announcements of the tender, which appear in the SPF bulletin.

In a commercial tender, the future investment obligations are fixed and the participants compete only with regard to the initial cash bid. A commercial tender specifies short-term and long-term investment obligations. The short-term package (usually 60 days) is intended to repay debt and replenish current capital. The long-term package is associated with modernization and restructuring, fulfilling environmental requirements, and maintaining employment levels for at least six months. The long-term package does not specify the program in detail, but it defines the main directions of investment, such as restructuring of the distribution network, or the implementation of systems to control distribution.

A bid offer includes the share price together with the required documentation. Legal advisers to the commission assess whether the set of documents complies with the requirements. When all documents have been received, the commission holds a meeting, with the bidders present. They open the bids and select the preliminary winner on the basis of the share price. The bidders then prepare bids for the second round. The winner chosen in the second round receives the shares. In the electric power sector, the second round of bids has always been considerably higher than the first round.

In a non-commercial tender, the initial cash price is fixed and the participants compete only with regard to the future investment obligations and business plan. In a non-commercial tender, there is

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<sup>40</sup> A consultant to strategic investors offered the example of the tender for an oblenergo, saying that the shares were sold by an "inexperienced worker at the SPF, who did not know the particulars of the company."

greater opportunity for the commission to investigate the industry experience of the bidders to determine that they will responsibly manage the company if they win. Opponents of non-commercial tenders argue that its lack of transparency opens up the possibility that winners will be chosen based upon relationships, bribes, or similar conditions.

## 7. Objections to the Current Practice

In June 1998, the AES Corporation, a US company that has invested extensively in other countries, wrote a letter to Ambassador Steven Pifer, the United States Ambassador to Ukraine. In this letter, they set out many of the structural problems in the privatization program that prevent large international strategic investors from participating in the tenders. Their analysis, together with those in reports from Hagler Bailly and CERT, and those provided in meetings and interviews, forms the basis of this section.

One issue concerns the purchase price (per-share price) in comparison to the full investment proposed. The privatization program has focused on the share price. The original objective was to maintain the share price as high as possible. Accordingly, an investor who bid a lower share price with a valuable investment package would (and did) lose to an investor who bid a higher share price. (AES letter) Particularly in view of the condition of the existing plant, it is more important that the investor commit funds to future refurbishment and expansion. This was the way privatization was conducted in Kazakhstan (interview with AES).

The share prices in the tender offers were too high, as compared with tenders in other countries. Hagler Bailly analyzed the PDFs of various winning bids in Kazakhstan and Hungary, and they found that the shares in Ukraine were too high by factors of 10-15.<sup>41</sup>

By contrast, a consultant to strategic investors offered the opinion that the prices at which shares had been sold would be too low, on condition that the investor were offered a controlling block of shares and were given guarantees concerning tariffs. The companies that have been privatized, she said, were sold at multiples of 1.6-1.7 times their asset values, whereas they should have been 8-10 times the asset value.

AES argued against any floor price in the tender offer: "This would enable strategic investors to make an offer, which the State Property Fund would be free to accept or reject and the market, through the tender process, would thus suggest what the oblenergos ... are worth."<sup>42</sup> Concomitantly, asserts AES, the tender offer should not prescribe the investment obligation of the investor. "A real strategic investor will wish to invest in the business it purchases; however, the new management may have a very different view from the existing management as to where investment is needed. ... Investors should be allowed to decide what investments need to be made once they are in control."<sup>43</sup>

A second issue concerns commercial tenders versus non-commercial tenders. The method endorsed by AES is a non-commercial tender, which is favored by Price Waterhouse and EnCoG as well. In awarding shares by non-commercial tender, it is essential to know the qualifications of the bidders.

We agree with AES, that a true long-term investor should provide the optimal investment in plant, with respect to both the amount of investment and the deployment of investment. However, it is

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<sup>41</sup> HB#2.

<sup>42</sup> AES.

<sup>43</sup> *ibid.*

possible that a tender might be won by a firm that was inept at managing the company, or by a firm that did not intend to retain its stock in the company over the long term. The director of a fully-privatized oblenenergo said that the tender commissions favor non-commercial tenders because they are more profitable both for the ministry and for the enterprise. It is easier to find a qualified investor and easier to investigate his qualifications. He believes that, in the future, tender commissions will issue non-commercial tenders.

The director, AES, and others provided the example of the bidding on Odeoblenergo: EDF participated in a consortium that proposed \$20M for the stock and an additional \$240M of investment over the next ten years. Its competitor was an offshore company “not known to anyone”<sup>44</sup>, who bid \$20.5M and won.

A Minenergo official offered a diametrically opposite example of the drawbacks to commercial tenders. Last year, Kievenergo announced a tender offer for 40% of its plant. Both Hydroquebec and Northland Power had shown great interest in the tender. Ultimately, however, neither they nor other investors bid on the offer. This was, he felt, because the specified investment package required at least ten years before realizing a return, and many more years to reach a 15% return. Moreover, during that time, there were no guarantees of rate stability. Therefore, no strategic investors were interested.

As AES has observed, the investment package is even more important than the share price. Selling should be done in a complex of price and investment package, with all consequential calculations performed in advance. To forestall the problems that would ensue if the winning bidder were anything other than a knowledgeable firm interested in long-term investment, we think it advisable that a tender offer specify a minimum PDV for the investment package. At the same time, we think that the commission be flexible with regard to the investment package that it accepts.

A third major issue involves the timing of the process. The time between the announcement of a tender and the deadline for bids is 30-60 days. One Minenergo official described this as “selling a big company under a process more suitable to small businesses.” He thought that the time should be extended, in order for both the bidders to investigate the company and the commission to investigate the bidders.

A fourth issue is that a deposit must be provided in cash. The SPF required bids to be accompanied by bid securities in cash, although it is more common in international tenders for bid securities to be in the form of a letter of credit. With a bid security in cash, a losing bidder must wait for a refund of the deposit. Moreover, in the case of the Ukrainian tenders, the SPF has said that if a conditional bid goes beyond the published tender conditions (e.g., proposes a different investment program), and is declared the winner but does not conclude the purchase and sale agreement, the SPF could retain the tender security.

A fifth issue involves control of purchased business. Strategic investors will not be attracted to an electric power entity if they cannot control the business. In the original privatization plan, a strategic investor could not acquire a majority of the business. There was a possibility of obtaining the right to manage the state shares, which, combined with its own holdings, would give an investor a controlling interest. However, such an agreement to manage state shares could, under the Ukrainian Civil Code, be revoked unilaterally at any time by the issuer. Under the proposal now being considered, a

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<sup>44</sup> Meeting with AES.

majority of shares will be offered in the commercial tender. The Presidential decree that is now being drafted includes provisions for the successful bidder to manage the state's shares for three years and then, if the relationship is successful, to purchase them at a price determined in the original sales contract. This program would seem to require significant trust by the strategic investor.

A sixth issue is that the retail tariff is not guaranteed. The strategic investor in a distribution company buys shares in an enterprise whose retail prices are regulated. In other words, the investor may control costs but cannot control revenues. In the statutory formulation of tariffs, the rates are tied to costs, on a month-by-month basis. However, in practice, there is considerable arbitrariness in the retail rates at any given time. Accordingly, the investor faces considerable risk concerning the profitability of the enterprise.

## **8. Results from Interviews**

The Team offers a number of important recommendations that result from interviews. That is, USAID will provide substantial benefit to the privatization process if it supports advisers to government and industry in specific areas. The people we interviewed proposed many such positions to us. A Minenergo official asked USAID for legal advisers. He said that Ukraine had hydroelectric properties that were environmentally friendly and should represent a good investment, but the laws of Ukraine discouraged investment. USAID should persuade top officials of the need for a legal environment that would attract strategic investors. The director of an unprivatized energo praised the advisers his company had for tariff policies and cash collections. He said that they were better positioned to help the company than their own employees, and that the government agencies held them in high esteem. A consultant to strategic investors said that an authorized foreign adviser should assist the SPF in drafting tenders for electric power entities. The expertise of the adviser would be needed to determine the conditions of the tender that were appropriate to the particular company. For example, some companies might need an investment program directed at the modernization of their distribution lines, while others should require increased tariffs because of nonpayments. Another individual company characteristic is the proportion of privileged customers; the terms and conditions of the tender offer should reflect this financial burden.

## **9. Narrative of Successful Privatization**

The Team spoke with the director and an economic specialist of a fully privatized oblenergo. The director said that the owner provides financial support and has reduced the debt of back wages. An advantage to privatization is that, in general, the company is less dependent on government agencies. Despite some countervailing facts, cash collections have improved. For April, the figure was about 30%. The problems of late payments and nonpayments still exist.

As a result of privatization, the employees are in a contractual relationship with the management. The director has a three-year contract, and subordinates are typically contracted for one year. Jobs have not been lost. On the contrary, the firm has been hiring professionals, particularly in sales, and some retired employees have been induced to return under short-term contracts. Since the privatization process occurred over an extended period of time, the completion, in August 1998, was not a surprise to the staff.

The director had held his present position since before privatization. He said that the primary difference in the company resulting from privatization was a change in the mentality of the staff, including himself. As director of a state enterprise, he had had several specific tasks and approaches

to performing them. Now, he must satisfy shareholders with a variety of particular interests. He is very pleased with the changes that have occurred, such as,

- The new owners support new facilities.
- The new owners pay salaries on time.
- The laws have been relaxed concerning the ability of a company to shut off customers who do not pay their bills.

The economist was aware of many of the issues in the electric power industry:

- He said that the Energomarket License Agreement of 1998 is out of date, and that he had learned more about these relationships since then. Some of the rules and conditions set out in the agreement are not complied with. For example, the transit account mechanism is not as transparent as it should be.
- He acknowledged that IAS and Ukrainian accounting are different languages. He said that there is an urgent need for accounting reform, particularly with regard to transmission and supply costs. He said that the oblenargo is developing measures.
- He thought that data should be available more promptly: at the present time, they receive full data within 25 days of the end of the month, but they think that all data should be available after five days.

Since privatization, the company has focused on new activities. In 1996, a regional office of NERC was created in the Oblast. In addition to monitoring the monopolies for license compliance, they work with customer complains and the protection of consumer rights. The company, in coordination with Hagler Bailly, has increased its efforts to obtain cash collections. In addition, it has worked to improve its method of supplying non-metered electricity.

## **10. Recommendations**

In the administration and implementation of privatization, the SPF has been ineffectual. President Kuchma has stated that strategic privatization is now a top issue. Accordingly, either the President should provide a strong directive for SPF to carry out privatization or the SPF should be replaced by a presidential-level organization. In either case, privatization requires top level advisers on the electric power sector, in order to develop tender offers that are viable. USAID and other donors should provide these advisers as needed. The Team offers a number of recommendations to improve the privatization process, as follows:

- Improve conditions for investors in tender offers. Offer grace period for the repayment of company's debts by the strategic investors. Offer controlling share ( $\geq 51\%$ ) by commercial tender. Also eliminate the word "State" in the name of the company before the completion of the sale.
- Improve conditions for electricity industry in tender offers, including flexibility in investor specification of investment package, and provide longer bidding period, so that both investors and tender commission can evaluate each other.
- Provide legal advisers to assist in drafting legislation
- Provide flexibility in evaluation of investment plans, including a floor on the discounted present value of an investment plan.

- Provide advisers to each tender commission, to monitor both the technical and the legal aspects of each sale. The tenders should have different advisers to minimize the appearance of excessive involvement, unless GOU requests a permanent adviser,.
- Change tax treatment to make tenders more attractive to foreign investors, as follows: treat power sector company payments as foreign investors; revise investment tax treatment to encourage investment; make tax treatment of interest payments for foreign investors comparable to treatment for Ukrainian investors.
- Provide tax advisers at a high level in the Ministry of Finance. Concomitantly, review the curricula of the MBA Program and training seminars to ensure that these topics are covered adequately in the tax courses.
- Determine a mechanism for allowing some payments to occur outside of the Transit Account, in order to provide incentives to investors who collect cash payments.
- Legislate government subsidies to compensate distribution companies for protected classes of customers. These subsidies should be paid directly to the companies. If, instead, they are paid to the customers, the customers may fail to pay part or all of their electric bills.
- Provide advisers in the following areas: NERC, to review and possibly revise existing tariff scheme; Minenergo, to revise definitions of protected classes; and to advise in drafting legislation that (a) moves the onus of the subsidies from the company to the government and (b) compensates the companies directly.
- Provide pre-privatization support for oblenergos, including the Development of Prospectuses, Business Plan, Accounting Assistance, etc.
- Develop an “Energomarket Investor Information Center” (e.g., through NERC) for prospective international strategic investors – web site, brochure, etc. detailing the current structure and operation of the market, translation of all relevant laws, Energomarket, NERC, Minenergo, Cabinet of Ministers, etc. legal documents.

### **III. THE WHOLESALE MARKET**

#### **A. Generation Context and Market Problems**

##### **1. Background**

During 1995-96, the fourteen largest power plants were organized into four joint stock companies. Two of the joint stock companies control the 11 major hydro plants. Energoatom owns the five nuclear generation sites. The state entity Minenergo, which also is the Energy Ministry, owns the majority of shares in the thermal plants and 100 percent of all the hydroelectric and nuclear plants.

The State Company Ukrenergo, also under Minenergo, operates the high-voltage network and the National Dispatch Center (NDC). NDC operates the grid, buys electricity from the State's generators, and resells it to regulated and unregulated buyers. NDC also purchases ancillary services (operating reserves, frequency control, and voltage compensation).

The current Energomarket Members Agreement (EMA) includes market rules for technical and financial market operations. Generators are supposed to bid their incremental costs, but the Ukraine definition of incremental costs is inconsistent with competitive incremental (marginal) costs for bids in other markets (e.g., the UK or California).<sup>45</sup> Instead, Ukraine uses average cost bids, which is clearly sub-optimal for plant dispatch.

##### **2. Power Capacity and Generation**

The total installed capacity in Ukraine is 55,100 MW, of which 36,500 MW is thermal, 13,800 MW is nuclear, and 4,700 MW is hydro. Power capacity in Ukraine has to be derated to reflect the age of plants and operational problems. The newest power plant in Ukraine is about 17 years old, where the majority of the plants are 30-40 years old. In the case of thermal capacity, the majority of coal-fired plants are over 25 years old, coal quality has been poor, and maintenance has been insufficient. In addition, lack of adequate supply of natural gas and fuel oil due to lack of funds for import has limited certain plants' operation. Ukraine's chronic fuel shortages and its uncertain re-integration with the Russian power system are major constraints. Further, Ukraine expects to close its old, inefficient coal-fired units with a total capacity of 1423 MW. The two units of the Chernobyl nuclear power plant, with a total capacity of 1675 MW, are also expected to close by the year 2000. Thus the net generating capacity is expected to decrease to 48,000 MW by the year 2000. Hydroelectric plants (with a total capacity of 4,700 MW) and some coal-fired plants (with a total capacity of 23,000 MW capacity) are estimated to require rehabilitation by the year 2005. Existing nuclear plants (excluding closure of the two operating units at Chernobyl in the year 2000) are expected to be upgraded to improve safety standards. Some plants remain half completed and may be financed through EBRD or open to private strategic investors.

The total power generation was 298.8 billion Kwh in 1990. Since then, it has been declining because of the operational and financial problems as well as the economic contraction in Ukraine and the decline in exports to neighboring countries. As a result, by 1995, the production was down to 194

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<sup>45</sup> Ukraine National Electricity Regulatory Commission, Energymarket Rules Action Plan, Hagler Bailly, 10 September 1999. "Therefore the Energomarket Scheduling Program [is based on the] incorrect premise concerning the meaning of incremental cost...the program uses the wrong data to determine the optimal schedule...the resulting schedule cannot be optimal...it cannot result in the minimum total system costs." *Ibid.*, at pg. 4-2.

billion Kwh. It has further declined to 183 billion Kwh in 1996 and 178 billion Kwh in 1997. The data for 1998 (which is not yet available) could be even lower considering the continuing economic crisis. The capacity utilization as part of the total installed capacity is around 30%. This figure is misleading, as part of the capacity is old and inefficient and is to be retired soon as noted. Other problems including lack of fuel have contributed largely to the low capacity utilization.

Thermal power accounts for the largest part (67.5%) of the installed power generating capacity in the country. Ukraine has more than 40 thermal power plants with a total nameplate capacity of 36,700 MW. Of this, over 31,000 MW are in 17 major fossil-fuel-fired power plants. The availability and operation of these plants depends primarily on the availability of fossil fuels such as coal, natural gas and fuel oil. Because of the inability of plants to get coal of required quality specifications for boilers, coal-based thermal plants have been burning with coal natural gas or heavy fuel oil (10-20% of the total fuel input). This creates operational problems, affecting production. Further, with most of the thermal plants being more than 25 years old, their operation is also affected by the aging of the equipment and inadequate preventive maintenance. Further, because of the large surplus power generating capacity, the production in individual power plants is determined based on the indicative production targets given periodically by Energomarket which under Minenergo, in the light of falling demand due to national economic contraction. Because of the above factors, the capacity utilization in the thermal plants in particular, is seriously affected in the four generating companies. For example, in 1998, Centrenrgo showed a capacity utilization of 24.4%; Dniπροenergo, 20%; Donbassenergo, 24.3%; and Zakhidenergo, 31.8%.

### **3. Status and Efficiency of Thermal Power Plants**

Surrey Panel (February 1998) and Stone & Webster (May 1998) have estimated the operating capacity and full load heat rate for each of the power plants in operation (as shown in Annex-1). According to these estimates, the operating capacity in thermal power plants range from 26,385 MW to 26,872 MW, showing not much difference compared to the total installed capacity of 28,180MW to 28,506 MW. Surrey Panel and Stone & Webster have also estimated the full heat rate for each plant. As a measure of efficiency of these plants which operate under severe constraints of getting coal of the right quality in adequate quantities, forcing them to mix coal with gas and fuel oil for firing boilers, the full load heat rates in thermal plants seem to be on the high side (assuming 10,000 KJ/Kwh equivalent to 1055 BTU/Kwh) as a benchmark. According to Surrey Panel, only five thermal power stations are estimated to have a full load heat rate of less than 10,000 KJ/Kwh. However, the estimate by Stone & Webster is more optimistic. They have estimated that the heat rate is less than 10,000 KJ/Kwh in 17 plants (out of a total of 26 stations including CHP plants). Considering the wide variation in the heat rate estimates by these consultants, it is difficult to have a clear picture about the efficiency of thermal power stations, most of which have been in operation for more than 25 years. However, we feel that there is scope for improving the operation of many plants if they could get fuels of the right quality in adequate quantities.

Some thermal plants in Ukraine are combined heat and power generating plants. The county's district heating infrastructure is old and inefficient, resulting in significant losses through production, transmission, distribution and consumption. Ownership of district heating companies lies mostly with municipalities. Modernization efforts are needed both at the production and end-use sides of heat supply. There is need to calculate tariffs based on the actual heat consumption using reliable measuring equipment. There is also need to improve the accounting and financial management of heating companies as in the case of power generation companies and LECs. This will facilitate

improved billing and revenue collection, cost control and cost recovery efforts, and better customer service.

The power transmission and distribution networks within Ukraine operate at a wide range of sub-station capacity ranging from 0.4 to 750 kV. The main dispatch office is in Kiev and is connected to Ukraine's eight regional dispatch centers. The National Dispatch Center (NDC) is also connected to some of the hydro stations and to the 750 kV and 330 kV substations. The regional dispatch centers are connected to the power plants in their regions and to local networks of 27 LECs which control lines of less than 220 KV.

The Ukrainian national grid is connected to the grids in Russia, Belarus, Poland, Hungary, Slovakia, Romania, Bulgaria and Moldova. Because of its surplus capacity, Ukraine was a net exporter of power which ranged about 40 TWh annually between 1988-90. However, annual exports have declined since then because of difficulties in paying for imported fuels (e.g. coal, gas and fuel oil) and the declining power demand in Central and Eastern European countries. In 1992, for example, Ukraine exported 314 MWh to Belarus and 83 MWh to Moldova while importing about 1.5 TWh from Russia. Since then, the net power export from Ukraine has been declining. Currently there is some significant supply of power to Poland by the Burshtunskaya Thermal Power Plant against the supply of high-quality Polish coal to the power plant to meet part of its fuel needs.

Considering the large-scale surplus generating capacity in Ukraine and the existing grid connections to neighboring countries, it is recommended that a regional market study be performed for Central and Eastern European countries and Germany. The study should be based on the latest prospects for economic growth in those countries, to determine the scope for exporting power from Ukraine, and to examine constraints for exporting power from this country. This should include investments needed on the distribution and transmission system to enable Ukraine to boost its electricity exports.

#### **4. Profitability of Power Generators**

Following the Russian currency crisis, there was more than 100% devaluation of the local currency (Hryvnyas) as of September 1, 1998. Because of this, generating companies experienced huge losses. Generator debts to their fuel suppliers were calculated in US\$, while the US\$ value of Energomarket purchase of power from generating companies (which are required to submit their bids in US\$), is converted to Hry by Energomarket at the exchange rate on the day of power purchase. As a result, under the Market Funds Procedure, generating companies suffered heavy losses in this inflationary environment for two reasons: (1) lapse of time between the calculation of the purchase price in UHR by Energomarket and the actual payment to generating companies; and (2) accumulation of Energomarket debt to generating companies in UHR.

The gravity of this practice under the Market Fund Procedure could be realized by examining the financial profitability of Centrengo in 1998. The company showed a net profit of Hrv 119.8 million before foreign exchange losses. However, when the foreign exchange losses are taken into account, the net profit turned to a loss of Hry 93.2 million. Further, it is to be noted that the financial losses of the company also include a loss of Hrv 4.7 million from the sale of heat to residential consumers as the tariff for heat supply is controlled at less than the economic price for social reasons. Because of the problem of foreign exchange losses to companies from the past practices as explained above, the Government decided with effect from January 1, 1999 that all inter-company transactions would be recorded in UHR.

## **5. Outstanding Performance of Kievenergo**

Kievenergo has both power generation and distribution facilities while in all other power sector enterprises generation and distribution functions have been separated. Kievenergo is showing remarkable performance in spite of the distortions in input-output pricing and difficulties in cash collection in an economy increasingly dependent on barter and offset accounts. Because of its determined efforts to operate efficiently and make as much cash collection as possible using a special cash collection unit, Kievenergo succeeded in reaching a cash collection rate of 85% while the amount considered uncollectable (from social institutions such as hospitals, schools, etc.) is about 14%. It is noteworthy that this company is able to achieve a cash collection of 85% while other power sector enterprises are finding it difficult to achieve an average cash collection rate of hardly 20%. Kievenergo is able to show this stellar performance for a number of reasons which make it difficult to use it as an example for other companies in Ukraine to follow. It is following, in actual practice, the 1998 Presidential decree to cut off power supply to consumers who are in default. In applying this punitive action, Kievenergo is following a selective approach. It has started with industrial enterprises in default. It has already cut off power to about 100 enterprises after giving them advance notice. It has sent notices to another 700 industrial enterprises in default of payment for power supply. Unless they settle outstanding amounts, power supply to them will be cut off following the expiration of the deadline for payment. As a result of its outstanding success in cash collection as well as its efficient operation, Kievenergo was able to show a gross profit of UHR of 175.5 million (nearly US \$ 44 million) in 1998. The net profit after tax was UHR 55.5 million (US\$ 39 million). Even though the financial performance of Kievenergo is comparatively better, it has to be noted that it accounts for about 50% of the outstanding power sector debt for gas purchases.

## **6. Financial Position of Other Generating Companies**

Profitability as measured in Ukraine (i.e., “Rentabilidad”), which is defined as gross profit as a percentage of production costs) in other power companies, was also positive in 1998. This reflects that power companies were in a position to cover costs and show a reasonable rate of return on capital assuming that all receivables were received in time enabling them to settle their payables in time. There was a significant improvement in “profitability” in 1998 compared to 1997. Further, it has to be noted that nuclear and hydro plants, which have comparatively lower production costs, are continuing to show higher “profitably” than thermal power plants. Because of the lower production costs, NERC regulates the wholesale prices for nuclear and hydro power plants. Such prices for nuclear power plants is currently US\$ cents 0.3 cents/Kwh for hydro power and for nuclear, US\$ cents 1.9 cents/Kwh. These prices are significantly lower than the wholesale prices of thermal power plants that are determined by the “auction market” under the national power pool for thermal power.

Under the EU TA program, consultants have converted the financial statements of four thermal power companies to internationally acceptable standards (IAS) which show the following results:

Financial Profitability  
(in UHR Million)

	1997*	1998 (half year)**
Dniproenergo	(1.5)	6.0
Centrenergo	18.7	9.4
Zakhidenergo	(11.10)	(9.7)
Donbasenergo	(39.0)	(34.0)

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\* Net Profit

\*\* Net profit before tax

Even though Dniproenergo and Centrenergo showed positive profit before tax in the first half of 1998, they ended the year along with two other thermal power companies by showing losses after accounting for foreign exchange losses (because of sharp devaluation of UHR in September 1998) and after paying taxes. Available financial statements for Centrenergo shows that the company made a gross profit of UHR 119.8 million in 1998 but after taking into account foreign exchange losses (which amounted to UHR 213 million), the company showed an operating loss of UHR 93.2 million.

### **7. Accounting and Auditing Systems**

Under TA from USAID and others donors (especially EU Tacis), efforts have been made to familiarize a few generating companies and LECs with international accounting standards. However, these efforts have not yielded full benefits as these enterprises are pursuing it with different degrees of success. Therefore, it is recommended that USAID provide additional TA to demonstrate the full use of IAS in two enterprises – one generating company and one LEC – where significant work has already been done by consultants and make them models in the use of computerized accounting systems. These systems could be easily modified when the Government introduces the new National Standards for Accounting based on international standards. Until the new standards are introduced, the two companies selected for demonstration projects on modern accounting, could be required to produce their accounts in two formats: using the present Ukrainian standards and using IAS. These demonstration projects could be very useful in achieving the conversion to modern accounting systems in other power sector enterprises as well.

### **8. Pilot Model Projects for Modern Financial Accounting Systems**

USAID provided TA to the Lvivoblenergo, one of the largest LECs in Ukraine, serving the Lviv Oblast. The Oblast has a long history of being a major trade center in Central Europe. USAID directed the Major Contractor to assist Lvivoblenergo in carrying out a study in 1997 to recast its accounts using the International Audit Standards (IAS) to get a better understanding of actual sales, cash and cash flows that enter into the consolidated financial statements. This accounting format was

then intended for use in other Oblenergos. Lvivoblenergo has the following business units: three electric distribution companies, two central heat and power plants, and divisions working in construction, network technology, security, administration, and trading. The TA to Lvivoblenergo included: (1) the collection of basic accounting data from the company; (2) the development of a technology (and a computer model) that systematically convert the basic data collected into Western financial statements; (3) the actual implementation of the methodology and adoption of a computerized accounting system; and (4) analysis of the individual units and the conversion of the accounts of the individual units into consolidated financial statements (as mentioned by Hagler Bailly in a report dated September 10, 1998). However, this activity has not been successfully completed at Lvivoblenergo. The Team feels that this activity needs to be completed so that it becomes a model for other LECs to introduce modern computerized accounting systems.

## **B. Competitive Market Concepts and Practice**

### **1. Pool and Bilateral Markets – Concepts and Practice**

A competitive electricity pool concentrates enough buyers and sellers so that sufficient market pressure is created, resulting in economic pricing and allocation of resources. Bilateral contracts attempt to match a single buyer with a single seller, which then present the opportunity to negotiate time frame, payment terms, delivery terms, and the like. For repeated transactions such as power procurement or power sales, the pool may have benefits because it is a ready-available market with relatively low transaction costs (including low search costs). With the pool, in most periods buyers and sellers are price takers. In bilateral contracts, buyer pressure to lower prices is based on buyer-market-power. Likewise with bilateral sellers, pressure to increase power prices is based on seller-market-power. In practice, pool prices and bilateral prices will tend to equilibrate or track each other. Differences between pool and bilateral prices are more a function of time differences in contracting or differences in unlike terms (e.g., from customization of a bilateral contract).

It is simply a myth that low cost plants (e.g., nuclear) will be willing or able to sell all their power at low prices under bilateral contracts. This is illogical for at least two major reasons. First, pool prices will, in essence, regulate bilateral contracts. Why will low cost generation sell power for low prices when there is a ready-market that will pay significantly higher prices? Alternatively, why will low priced generators sign bilateral contracts with customers at prices which are substantially lower than pool prices? To restate, within a regional grid system, the pool price mechanism will regulate the prices negotiated in bilateral contracts.

In order to simplify the logic, we first ignore government intervention in the market, non-payment/cash-collections, and corruption. Pool prices serve as a benchmark for both generators and customers (e.g., Oblenergos). A generator's pool price is the opportunity cost it faces if it does not enter into a bilateral contract. A generator should be unwilling to negotiate a bilateral price which is significantly less than the pool price. As well, rational customers are unwilling to accept bilateral prices that are above pool prices. To do so, customers must ignore the lower prices set in the pool. Significant price differences between pool and bilateral contracts usually are due to contract period (e.g., day-ahead pool market versus a one-week bilateral contract), delivery costs, or transmission constraints. Thus, absent major market distortions, pool prices will regulate and largely track bilateral prices.<sup>46</sup>

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<sup>46</sup> Experience in California, which has a fully functional Power Exchange (pool) and physical bilateral contracts, shows that pool and bilateral prices track each other very closely. E.g., 19-23 April 1999 non-firm prices for the

The problems of non-payment/cash-collections, and corruption can be largely separated from the question of whether bilateral contracts will track the pool price. Non-payment and cash-collections may push more people to use virtual bilateral contracts and to apply discounts to those who provide certainty of payment, but these payments will still be for power that tracks the pool price. The problem of government intervention in the market, however, is directly related. If government intervention in the market continues, bilateral contracts will not reflect or track the pool price. Rather, a mass exodus from use of the pool to set competitive prices seems likely, in favor of bilateral contracts where competition can occur with less interference.

A baseload coal or nuclear plant must have sufficient load to avoid ramping up and down. Discrete loads vary, however, which then require a large set of diverse loads to provide sufficient demand for a base-load plant to operate. The additional loads above base load amounts must be met with plants or demand-management that can vary in response to demand, which may involve load curtailment. In short, the integration of large base-load plants requires grid scheduling, such as the National Dispatch Center (NDC) provides. Therefore, LECs or large customers must either rely on the grid and the NDC to meet its varying demands, or become completely independent of the grid and self-provide base load power, load following capabilities, and reliability needs (e.g., operating reserves and frequency control).

## **2. A Competitive Market for Power Does Not Exist in Ukraine**

We observe that the Ukraine version of the UK market model is unable to produce meaningful market prices, given its current formulation and its current government constraints. A competitive electricity market does not exist in Ukraine. Thus, the phrase Ukrainian market is inappropriate, if it is meant to say that a competitive electricity market exists. The Ukraine electric industry is so bound up by administrative rules and government constraints as to be of questionable value for pricing or for allocation of resources. Some of these problems have been documented by the Major Contractor.<sup>47</sup> The specific reasons why Ukraine cannot be considered a competitive electricity market are as follows:

- The merit order ranking for the commitment schedule is based on average costs, not on incremental or marginal costs.
- Minenergo and Energomarket in effect constrain the dispatch of plants by issuing directives on a daily basis to determine which plants operate and how they operate.
- Fuel constraints keep the lowest priced (incremental cost) units from operating and low priced units are many times unable to operate at higher output levels.
- Retail and tax implications keep the lower priced units from operating at higher levels, a problem that stems from regulatory rate setting and tax system design.<sup>48</sup>

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California PX were at off-peak 14-22.5 mills/kWh, with bilateral California-Oregon Border (COB) prices at 13-19.5 mills/kWh and Palo Verde prices at 16-20 mills/kWh. [California Energy Markets](#), 23 April 1999, at pg. 6. One minor difference is that California PX prices are for power provided within the state, as opposed to the other two bilateral prices which are for delivery to the northern and southern borders, respectively.

<sup>47</sup> [Ukraine National Electricity Regulatory Commission: Energomarket Rules Action Plan](#), Delivery Order 18, Hagler Bailly, 10 September 1998; [Bilateral Contracts and the Wholesale Market](#), Memo, Hagler Bailly, 8 February 1999.

<sup>48</sup> Plant dispatch and availability can be adjusted, before retail rates are calculated, to reflect incentives to lower taxes. Plants that are very efficient show greater profits and then must pay higher taxes, so they reduce production, which severely limits the use of the most efficient generation.

- The government rules for flexible declaration of plants limit the ability of many units to set price, creating less competition between units and artificial gaps between price setting units.
- Market protocols are unclear and are subject to change by NERC and Minenergo, which reduce the incentives to enhance generation and make it more competitive.
- “System marginal costs” are determined only when there are transmission constraints, which is seldom. This makes generation commitment largely a function of settlement (accounting) rules<sup>49</sup> (i.e., economic commitment based on marginal cost is ignored).
- Neither generators nor customers are able to use the proposed wholesale prices in electricity trading, as the wholesale prices (however erroneous) are bundled with retail tariffs, tightly controlled, and further manipulated by regulation. Thus, the wholesale prices are never used in anything like a competitive market.
- Inter-country power (and fuel) arrangements are controlled by Ukreinterenergo, who limits these arrangements and takes a percentage of each deal negotiated (e.g., with Poland or Russia).

Accordingly, we find that the Ukraine electric supply system does not constitute a competitive electricity market in any real sense.

Given this finding and our detailed evaluation, we respectfully provide the following recommendations to USAID and its contractors and donor partners:

- Reform the pool to allow for competitive price determination based in incremental/marginal generation bids.
- Eliminate government intervention in wholesale price determination, including determination of plant commitment and wholesale price setting.
- Remove the incentives for generators and customers to avoid bill payment and the use of cash (e.g., allocation of Market Transit Funds and use of other subsidies).
- Pursue tax reform to remove unnecessary penalties on the most efficient generation.
- Create incentives to enable bilateral contracts around the pool, when tariff amounts are routinely made for distribution, transmission, NDC, NERC, and Minenergo.<sup>50</sup>
- Establish explicit market protocols to ensure workable competition in electric power.<sup>51</sup>
- Allow most of the currently “inflexible” blocks of power to be considered flexible, based on a hourly ramp-rate (up and down) at different ranges of output.
- Reform the MFA for bundled (tariff) and bilateral contracts customers.
- Allow Nuclear, Hydro, CHP, and export blocks to bid into the day-ahead, hour-ahead, or ancillary services markets, but require payment for balancing based on settlements.

### **3. Ukraine’s Market Rules Need to Provide for Bid-Based Dispatch**

The Ukraine market rules should be revised to (1) allow generators to bid their short-run incremental or marginal costs, and (2) dispatch the bid-based generation stack based on the demand that must be served. The current mismatch between bid-based MCPs and the Ukraine approach, using average costs, bid-caps, and daily manipulation of generation dispatch, is obviously deleterious to efficient

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<sup>49</sup> It relies on “standard cost” categories for no-load and average cost.

<sup>50</sup> This will require a tariff setting process to unbundle the generation component of these costs and to properly define each cost component.

<sup>51</sup> This effort should address at least the eight problems summarized in the section above which keep Ukraine from forming a workable competitive electric market.

market operation and to appropriate revenue by generators. In other words, Ukraine needs pool prices to be based on voluntary bids. Therefore, customers need to pay and generators need to receive the hourly MCPs.

#### **4. Generation Bids Versus Revenues Receive**

The profitability of generation comes from the difference between the bid price and the market-clearing price (MCP), which assumes that bids are based on marginal or incremental costs. A generator that submits its bid based on short-run marginal or incremental costs faces only two operating conditions. Either it is accepted because the MCP is equal to or greater than the bid, or the MCP is lower than the bid and the generator does not operate.

When demand is greater or generation is more scarce (because of outages of scheduled maintenance), then the MCP may substantially exceed the generator's bid, which offers the opportunity to recover variable and fixed cost, and possibly profits above these levels. Thus, revenues received then correspond directly to incremental cost-based bids.

#### **5. Bilateral Contracts In a Pool Environment**

Bilateral contracts have a number of uses, most of which go beyond pool-based MCPs. Sellers may seek bilateral contracts if they have seller market-power, but must find willing buyers who find benefits in the contract, as compared to pool prices. Buyers with buyer-market power may attempt to do the same. Commonly, bilateral contracts extend for periods longer than pool prices which, once negotiated, reduce the uncertainty that resides in pool price variability. This certainty is also valuable for the power consumer, in part because it may reduce search costs (the costs to find other power deals).

This certainty of revenue flow is desirable for financing, such as for new plant expansion or to stabilize consumer expenses. The use of bilateral contracts for part of generation capacity can be combined with related plant capacity that is bid-in to the pool to create a portfolio effect. The obvious use for this in Ukraine is to create certainty of exchange in other currencies (e.g., fuel or services). Thus, there are significant benefits in bilateral contracts, not the least of which is to complement pool prices and allow for price or revenue certainty.

Bilateral contracts can simply be allowed outside the pool and the transit account. It may be appropriate to impose interval metering as a condition on bilateral contracts in this context. If the bidding and market pricing are reformed properly the pool price will, in essence, "regulate" the negotiation and use of bilateral contracts.

#### **6. A Base-Line Competitive Market Structure for Reference**

The Team suggests a base line or minimum market structure that includes a workably competitive spot-pool and bilateral contracting. Some kind of spot market is necessary, at least as a residual market for energy when bilateral contracting cannot be achieved (e.g., because of time) or contracting is incomplete. A pool, for "real-time" power, such as a one-hour market with *ex post* pricing, will facilitate bilateral contracting and provide a reference price for settlements when generation or load does not materialize as expected. The Ukraine approach does not provide a short-term spot market for power. Importantly, a spot-pool will economically reward or penalize generation (for over- or under-production) and load (for under- or over-consumption). This creates

the proper incentives for consumers to obtain complementary load-following pool power if they enter into bilateral contracts with base-load units.

In addition to the pool, which serves to provide for balancing (reconciliation when either generation or load does not perform as scheduled), ancillary services need to be provided – operating reserve for reliability, frequency control, and to a lesser extent voltage support (where needed). Ancillary services may be provided through competitive bidding or competitive contracting. Compared to the current Ukraine pool design, with relatively minor changes, it can provide a day-ahead pool or could be converted to a 1-hour spot-pool.

The Ukraine model, however, does not provide for markets in ancillary services, which are the capacity portion (as opposed to the energy portion) of electric power. Ukraine instead provides for an Availability Payment, like the UK, but this approach has little connection to reliability needs of the Ukrainian grid. Therefore, incentives to provide for the important ancillary services – operating reserves and frequency control – do not exist in Ukraine.<sup>52</sup>

Simple ancillary services and balancing markets could be designed for Ukraine. If this were achieving prices for frequency control would increase, given the current scarcity, in the short-term (but still be a small part of the overall price of power delivered), which would provide the incentive needed to stimulate investment in plants that provide frequency control. It may be that Russia or Poland provides some or all of this service in the short-term. Regardless, a simple and properly designed market would address the need for frequency control.

### **C. Success of Ukraine's Wholesale Market**

#### **1. Basic Evaluation of Minimum Conditions For Success in Restructuring**

With respect to efforts to reform and restructure the Energomarket, the Team's basic evaluation is straightforward and can be stated in simple terms. We consider minimum conditions for electricity reform and restructuring to be (1) unbundled prices and services into competitive components, (2) workably competitive market operation, and (3) real corporatization of energy market organizations, as opposed to vertical organization under Minenergo.<sup>53</sup> We find that none of these minimum conditions have been met in any meaningful way. In part, we attribute this to a general lack of education about reform and restructuring, including how competition should work and the proper role for regulation given competition as well as to the lack of a detail GoU program.

First, wholesale prices are bundled with retail rates through regulation (i.e., real unbundling has not occurred). NERC regulated rates insulate wholesale rates from competition and competitive conditions do not exist. Our interview with Minenergo confirmed that the government's intent is to use central control to minimize average costs, charge average costs, reduce revenues that otherwise flow back into plant and equipment, and allow the asset base to decline.<sup>54</sup>

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<sup>52</sup> Instead, the costs for these services are defined arbitrarily and rolled-in to the uplift charge.

<sup>53</sup> Very similar minimum conditions are applied in H. Ryding, Electricity Restructuring in Ukraine: Illusions of Power in the Power Industry, Centre for Economic Reform and Transformation, May, 1998 (Hereafter, *Illusions of Power*).

<sup>54</sup> The professed reason for this was to lower costs to customers so that conditions would improve, which would then reduce the non-payments and cash-collections problems.

Second, Energomarket operation fails any test of a workably competitive wholesale market. This was confirmed in interviews with Oblenergos, generators, and experts in government. Some who were interviewed insisted, however, that generation was allowed to operate based on their bids, which the Team believes to be a false premise. Generation companies interviewed explained that (1) Energomarket organizes daily meetings to define what plants are dispatched and what fuel is allocated, and (2) plants may be allowed to bid, but bids are based on average costs using fuel designated by Minenergo. Thus, as explained in the section above, there are a host of reasons why there is no actual competitive market for power in Ukraine.

Third, the organizations have not actually been corporatized. Virtually all the major generators in Energomarket are wholly controlled and owned by Minenergo, which houses the Ministry of Energy. Obenergos cannot choose generation or grid transmission. The government separation of generation and Oblenergos has produced little change, except to consolidate generation control and to rebundle revenue collection and allocation, all under Minenergo.

In contrast, actual corporatization requires a strategy, a detailed action plan, and a timetable for independent incorporation, none of which have been accomplished. Minenergo and its affiliates, Energomarket, National Dispatch Center (NDC), and Ukrinterenergo, implement centralized decision making just like a vertically integrated monopoly utility. The result is nothing like an open, competitive market.

The related question is whether the proposed UK model, as implemented in Ukraine, was guided by proper criteria, in order to produce a workably competitive market? Again, we find agreement with the same prior study:

*It is difficult not to assume that the reform has been implemented as a set of largely uncoordinated projects, without a critical path, and with only one milestone, the date at which the Energomarket began partial operation with hardly any administrative procedures or legal and tariff [unbundling] reforms in place.<sup>55</sup>*

Minenergo still centrally controls generators, the grid, and to a lesser extent Oblenergos. Separation by actual corporatization is a fiction for the most part. Generators and Oblenergos are subject to NERC tariff regulation and must use a centralized transit account. This means that because of government intervention generators cannot recover their costs for power provided and Oblenergos cannot recover the actual revenues that they collect from customers.

Neither Minenergo nor the NERC have provided criteria to assess whether the Ukraine pool was successful. The lack of stringent criteria for successful reform and restructuring, other than a market operation date, may have indeed contributed to these problems. Interviews confirm that the education and knowledge level is generally minimal among those who should know how reform and market restructuring are designed to operate.

The diplomatic drift previously discussed has created a vacuum in knowledge about the issues and options with competitive market restructuring. Donors like the World Bank, who were expected to contribute to this knowledge base, and USAID as well, did not develop essential learning on the details of market restructuring. The Team notes, however, that here have been significant developments in the world wide knowledge base since the donor community first selected a UK

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<sup>55</sup> Illusions of Power, [op cit](#), at pg. 25.

based model for Ukraine in the mid 90s. Unfortunately, the GoU is very fond of some features that are no longer desirable. For example, a mandatory pool without bilateral contracts capability is no longer a desirable theoretical construct. Each successive effort to restructure in a country or state can rely, if it so chooses, on the lessons learned elsewhere.

In this section, we have applied the minimum conditions presented above and conclude that Ukraine has not seriously embarked on electricity reform or market restructuring. Since Ukraine started its commitment to reform and restructuring in 1994, little has actually happened. Its electric industry is so bound up by administrative rules and government constraints as to be of questionable value for pricing or for the allocation of resources. Furthermore, we find that the Oblenergos lack an enforceable electricity law and have only corporatized “on paper.” A deeper level of expertise is necessary in Ukraine to direct strategy on the issues and options for electric market restructuring and privatization. In this environment, USAID and donors may find it difficult to define a coordinated strategy to achieve their primary objective for Ukraine.

## **2. Lack of Guiding Expertise in Competitive Market Restructuring?**

We must evaluate whether USAID, in the context of TA, has provided effective strategy and implementation; ensured profitability of the power sector; and/or created efficient and effective market operation. In this context, we ask whether there was sufficient expertise to guide or advise participants in the competitive market restructuring process? If there is a vacuum in expertise on competitive markets, then it seems obvious that the necessary knowledge on this subject could not be conveyed.

Expertise is necessary to convey knowledge and to educate participants on the key issues and options. With respect to the knowledge level on the issues and options with electricity reform and market restructuring, the Team found that few really understand these subjects, including key Major Contractor participants in working groups and in legislation on market restructuring. Most of those we interviewed, in positions of responsibility to know how competitive electric markets should work, did not seem to understand the basic fundamentals of electric markets. This was most revealing when we asked about the details of the market and whether electric power competition exists in Ukraine? Most revealing was the claim by the Major Contractor that a competitive market exists in Ukraine, that the pool works to allocate generators based on competitive bids, and that the pool is all that is needed (i.e., bilateral contracts or CFDs are not needed).

Most disturbing was the general lack of knowledge about how competitive electric markets work and whether wholesale competition exists in Ukraine.<sup>56</sup> Many believed that because Independent Energy Suppliers could acquire customers from Oblenergos that this means that competition exists, but it's merely an artifact of Ukraine's current system. When asked if competition exists in the wholesale market most said yes. When asked if bidding was based on incremental or marginal costs most said yes. And on whether bundled retail-wholesale tariffs imposed a constraint on wholesale competition most said no.

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<sup>56</sup> Those who were **not** knowledgeable include most of Hagler Bailly's management, lawyers, and staff, NERC staff, Energomarket and NDC management and staff, Minenergo management, and Khmelnitskyoblenergo management and staff. In contrast, Lvivoblenergo's management and staff and Zakhidenergo's management and staff did understand the fundamental workings of the competitive electric market, the former with significant sophistication.

USAID relies on the Major Contractor for critical tasks related to working groups for (1) negotiation of the Energomarket Agreement, (2) national legislation, and (3) privatization. As regards the first two items, but those involved lack basic knowledge about important features of the competitive market and have not developed a coherent strategy to achieve desired outcomes.<sup>57</sup> Without this knowledge, it seems difficult to know what the key issues are, to evaluate the legislative options, to develop agreement around acceptable options, or to affect the outcome of dialog or debate on related issues. This suggests a position of weakness and basic inability to craft effective strategy or implementation.

From the Team's view, a significant Major Contractor report on Energomarket Rules<sup>58</sup> focused inordinately on minor issues that have been resolved some years ago (e.g., start-up/no-load and nonlinear network losses)<sup>59</sup> and glossed over the larger issue of capacity pricing (endorsing the UK approach) and bilateral contracts.

The report stated: "Under optimal operations a thermal unit will operate at a loading point (MW) where its marginal operating cost is equal to the market price for energy. This is the point of maximum profit (here marginal costs equals marginal revenue)." <sup>60</sup> This is not only incorrect, it mixes concepts of competitive market operation with monopolist incentives under regulation. It is incorrect because if a generator is paid at a price that equals its marginal operating costs, it receives no profit (producer surplus) whatsoever, as it only recovers its variable costs. If the generator bids its marginal operating costs and is accepted to run, but the market clearing price is higher than the bid price, then profits and recovery of some fixed costs are possible. The confusion is that in a regulated environment, if the generator can set its price such that its marginal cost is equal to its marginal revenue, scarcity is created and consumer surplus is transferred to producer surplus, which allows profits to be maximized. A competitive market-clearing price, however, will prevent monopoly price setting from happening, and most importantly, with competitive bidding the objective function of the generator changes completely.<sup>61</sup> The report presented other errors, but properly pointed to the problem where bids are based on average costs. Yet the report, in its review of Energomarket scheduling, presented a very incomplete list of the problems that prohibit competition in Ukraine.<sup>62</sup>

In interviews, the Major Contractor presented a distinct bias toward a pool-only based market, like what exists in Ukraine, and against bilateral contracts.<sup>63</sup> They specifically stated a "let's not go there" attitude with respect to bilateral contracts. This is contrary even to those who are the strongest advocates of pool markets (e.g., William Hogan of Harvard), because bilateral contracts are

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<sup>57</sup> This was revealed in interviews about legislation pending on market structure and the conditions necessary for privatization.

<sup>58</sup> Ukraine National Electricity Regulatory Commission: Energomarket Rules Action Plan, Delivery Order 18, Hagler Bailly, 10 September 1998. This was developed under work order #18 and Statement of Work I. B. (7). The report refers to meetings and interviews with a number of key Ukrainian energy people.

<sup>59</sup> See, Ibid, at pp. 4-1 to 4-3 and 6-1 to 6-3.

<sup>60</sup> Ibid, at pg. 7-1.

<sup>61</sup> See, Brown and Sibley, The Theory of Monopoly Pricing, Cambridge University Press, 1983; P. Joskow, R. Schmalensee, Markets for Power, MIT Press, 1983.

<sup>62</sup> Compare our list of reasons why Ukraine's market is not competitive in this chapter.

<sup>63</sup> One Team member has extensive experience in the debates and dialog on the details of competitive electric market restructuring, and finds the conclusions of Hagler Bailly on these matters simply inaccurate and uninformed.

necessary to facilitate competition and “an efficient bilateral market needs a pool.”<sup>64</sup> An alternative way to say this is that a pool facilitates the use of extensive bilateral contracting.

Based on formal reports and on interviews, the Team finds that the Major Contractor lacks the necessary expertise to properly guide donors and other counterparts on the issues and options with competitive electric market restructuring, including pools and bilateral markets.

The Major Contractor suggests that its market restructuring suffered because of a lack of a consistent focus in its Kiev office, lack of the Major Contractor experts in these areas, contracting problems with USAID (providing short-term contracts), and changing USAID objectives, particularly in the last two years or so. USAID agreed in part that contracting was difficult recently and explained that staffing to assist with restructuring had not been filled. The Major Contractor also suggested that to avoid such problems in the future, USAID should maintain closer relationships with its counter-parts, with which we agree.

Based on our assessment of what has occurred and whether knowledge about markets has been disseminated, and accepting the adverse circumstances, we nonetheless find agreement with a study completed one year ago:

*Although the restructuring has begun, it cannot be said that each of the new organizations fully understands its new role and has a strategy to implement corporatization, and to manage its role in the operation of the Energomarket.*<sup>65</sup>

We believe that there has been a fundamental lack of education on the technical basis for electricity reform and on the issues and options with market restructuring. Accordingly, we see that a consistent strategy to implement reform and restructuring is absent. Few in Ukraine understand how the market can be implemented to achieve greater economic efficiency. Without competitive market operations, limited privatization can be expected, which portends to limit resolve of the non-payment and cash-collections problems.

Thus, in this case the TA failed to provide the expertise needed to develop the knowledge base and to educate participants about the issues and options in electric industry restructuring. This suggests that the TA did not fulfill a number of the Team’s evaluation criteria. In particular, the TA did not provide effective strategy or implementation, it did not ensure profitability of the power sector, and it did not create efficient and effective market operation. A major outcome is that the TA did not create efficient and effective financial operation.

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<sup>64</sup> W. Hogan, An Efficient Bilateral Market Needs a Pool, California Public Utilities Commission Hearings, 4 August 1994, San Francisco, California.

<sup>65</sup> Illusions of Power, op sit, at pg. 19.

## **IV. LOCAL ELECTRIC DISTRIBUTION COMPANIES**

### **A. Background**

In May of 1994, Presidential Decree (No.244) was signed “On the Market Transformation of the Power Sector of Ukraine” to carry out a broad restructuring of the power industry by: (1) separating generation, transmission, and distribution functions; (2) corporatizing and privatizing the generating and distribution companies; (3) setting up a competitive wholesale market for electricity; and (4) establishing an independent agency to regulate the industry.

Subsequently, the following market structure was put in place: (1) the 24 State-owned thermal power plants were consolidated into four joint stock generation companies (Centrenergo, Dniproenergo, Donbassenergo, and Zakidnergo under the Ministry of Power and Electrification (Minenergo); (2) hydro power generation was consolidated into two joint stock companies (Dnestrgidroenergo and Dneprogid-roenergo) under Minenergo; (3) nuclear power generation was put under the operational control of Goskomatom (the State Committee for Nuclear Energy); (4) the distribution function of the generating companies were separated and 27 Local Distribution Companies (LECs, also called Oblenergoes) were created as joint stock companies to carry out power distribution in the country on the basis of regulated retail tariff; (5) several independent (privately-owned) non-regulated tariff suppliers (distributors) were licensed to purchase power from the Wholesale Electricity Market (i.e., the National Power Pool) and resell it to large customers (e.g. industrial enterprises); (6) the National Electricity Regulatory Commission (NERC) was created to regulate the power sector by issuing and monitoring licenses for power generation and transmission, and regulate retail power prices for LECs on the basis of a market-based formula; and (7) the Energomarket was created as a Division of the Ukrenergo, a State-owned company which owns and operates the power transmission grid and the National Dispatch Center (NDC), with the responsibility for operating and administering the Wholesale Electricity Market.

All power generators sell power, purportedly, on the basis of hourly bids to the Energomarket. The LECs purchase power from the Energomarket to distribute it through NDC, which is responsible for transmission of all electricity from power generators.

### **B. Effectiveness in Operation**

LECs, the so-called tariff-regulated suppliers, today account for about 80% of power distribution in Ukraine while the non-tariff-regulated suppliers (independent energy suppliers) account for the remaining 20%. LECs deal with the Energomarket which theoretically purchases all power from power generators at wholesale market prices and makes power available at a weighted average wholesale market price (determined every month by NERC). LECs sell power to customers on the basis of a pricing formula developed by NERC (Annex I). Many LECs find it difficult to operate profitably under this pricing formula as the formula takes into consideration only technical losses, ignoring the commercial losses which account for 20-40% in different “Oblasts.”

The main factors adversely affecting the performance of LECs are: (1) heavy losses in transmission due mainly to thefts and partly due to system deficiencies; (2) lack of flexibility for them in setting retail prices on a market-based system; (3) need for investment on metering and communication equipment, and maintaining and modernizing their local transmission system; (4) nationwide billing and collection problem; and (5) lack of institution-building (both NERC and Energomarket need training to analyze and refine their procedures for payments to LECs under a market-based system.)

In spite of a recent increase in fees for transmission and supply to LECs (along with substantial increases in retail power prices to consumers), the operation of LECs is still not profitable. This is partly because of high commercial losses and partly because of the requirement to supply power to some population groups (such as veterans) for free. For doing this, LECs receive subsidy certificates from the Government, which takes a long time to cash. Further, cash collection in general is now running at the rate of only about 14.5%.

### **C. Structure of Retail Pricing**

The retail pricing formula is based on assumed technical losses of 3-7% for supply to first voltage class of consumers (i.e. 15 kv-35 kv) and 6-13% for supply to the second voltage class (0.4kv- 10 kv) of consumers. However, the actual losses are reported to be 3-9% for the first voltage class and 9-50% for the second voltage class. The actual losses are substantially higher especially for the second voltage class mainly because of power thefts from transmission lines, and partly because of lack of modernization of the metering and transmission system. As a result of these substantially higher total losses (including both technical and commercial losses), many LECs are finding their operation unprofitable under the current pricing formula. They try to negotiate a higher provision for total power losses, which NERC is now approving, on an ad hoc basis (based on action plans by LECs to reduce the total losses.) These adjustments are done on the basis of subsidy certificates to LECs. The retail pricing formula does not include provision for investment costs to modernize the metering and transmission system. Further the practice of NERC providing, monthly the average weighted average wholesale market price (based on Energomarket data) for incorporation in the retail pricing formula to be used by LECs seems to be uncalled for. Under the market-based approach, LECs should have flexibility to decide on the market-based retail prices. Therefore, the entire approach to retail pricing needs review to make it a market-based system.

### **D. Payment Issues and Cash Collections**

The operation of LECs is constrained by the current system of settlements and market fund administration by Energomarket which has the responsibility to operate the Wholesale Power Market and deal with LECs for distribution. To facilitate collection and settlements, Energomarket has a Transit Account which is handled by a Market Fund Administrator and a Systems Settlements Administrator.

The operation of the Transit Account has become very complicated as most of the sales take place on the basis of barter and offsets. Hardly 10% of sales take place on the basis of cash and about 15-20% of the sales are non-collectable from certain social institutions (e.g., hospitals, schools, etc.) and tariff-exempt privileged classes (e. g. veterans). Many individual consumers also do not pay because they are slow to receive salaries from government institutions and agencies.

In this cash-short environment, the operation of the Transit Account poses a serious problem. In this context, selected staff of Energomarket and NERC need training to enable them analyze and refine the existing system settlement and market funds administration procedures taking into account the hidden subsidies, and deficiencies in the present system. Any budget transfers needed to cover the hidden subsidies because of social and other reasons need to be made transparent and need to be adequately covered by provisions in the national budget.

Efforts are underway to increase cash collection following the Financial Recovery Plan (as detailed in Chapter VII) which was developed with the help of the World Bank and was adopted by a decree of the Cabinet of Ministers on April 18, 1998, with the objective of increasing collections. However, the progress of collection (including cash, barter and offsets) under this Plan has been uneven. The total collection, which peaked to a level of 84% in February 1999, is showing decline mainly because of recent restrictions on the use of promissory notes by bulk consumers to cover the debts to the Energomarket. However, the cash collection has been increasing, reaching a level of 14.4% as of April 30, 1999 – the highest level reached since July 1998 – helping improve the cash flow of power generators as well as distribution and transmission enterprises. This has happened because of pressure on LECs to increase cash collections in particular.

The large government-owned LECs (such as Dnipro, Donetko and Kyiv) have contributed to the bulk of the increase in cash collections. There has also been an increasing trend in cash collections among LECs in Oblasts serving mostly rural areas. Two LECs (Odessa and Kherson) out of seven which have been privatized, have shown significant increases in cash collection. However, the five LECs which have been privatized recently (Chernihiv, Lviv, Prykarpattia, Sumy and Poltava) are providing extremely little cash to the Energomarket as they are trying to operate outside the purview of the Clearing Account of the Energomarket. This has created a serious political issue with the special investigative committee of GOU, recommending that the privatization of the LECs defaulting on their obligations work under the Clearing Account of the Energomarket, be invalidated. Considering this serious issue, GOU needs to consider allowing privatized LECs the option of operating outside the Clearing Account of the Energomarket, if they pay to the Energomarket for the services of NDC (e.g. transmission) in cash within established time frames, following commercial practices. If they are in default to NDC for three months continuously, they could be brought under the Clearing Account of the Energomarket until they clear their outstanding debt. This option would entail the LEC directly arranging payment for electricity to a generator(s) owed under the energomarket calculation via an independent supplier or other accepted legal method.

According to the March 24, 1999 Resolution of the Cabinet of Ministers, all consumers have to pay in full or come to an agreement with the LEC concerned regarding a debt rescheduling schedule. This Resolution also empowers LECs (together with the local Oblast administrations) to terminate electricity and heat supply to consumers not complying with the agreement reached with LECs. If this approach is followed, prospects would improve for increased collection from consumers. However, it appears that the local administration authorities in many Oblasts are opposing the termination of power and heat by LECs to local consumers in default. The federal government needs to monitor this situation and enable LECs to follow the provisions of the recent COM Resolution.

As noted, the total collection (including barter and offsets) has gone down since February 1999 because of the provision in the COM Resolution of March 1999, which directs the Energomarket to take an inventory of the promissory notes issued by power and heat generators and consumers and limit their future use. Following up on this, another COM Resolution (of April 19, 1999) has stipulated that in the future only promissory notes issued by the State Treasury and the local Oblast administrations (including Crimea, Sevastopol, and Kyiv) could be used to make settlements purchased from the Wholesale Electricity market. This is an important positive step even though, in the short term, it is going to affect the collection under barter and offsets. In this context, GOU is also planning to create a secondary market for promissory notes in the local capital market, allowing them to be used for buying shares of state-owned enterprises in Ukraine. This aspect needs more attention. The proposed Privatization Advisor under the USAID's TA program can help develop the

secondary market for promissory notes issued by the federal and local administrations, after GOU's commitment to allow the use of such promissory note to buy shares in state enterprises.

The Electricity Law was passed in 1998 after considerable delay. GOU feels that this Law, which is patterned after the ones in some developed countries, has not been adequately adapted to the local conditions. Therefore, GOU has prepared a Draft Wholesale Electricity Market Law. When this new Law is passed, it would help adapt the Electricity Law to the special conditions of Ukraine. Meanwhile, there are serious differences of opinion among top state officials on the respective functions and responsibilities of the newly created organization such as NERC and the Energomarket. This has led to the appointment of a Special Investigation Committee to investigate the functions, responsibilities and operating results of the Energomarket in particular. It appears that largely as a result of this investigation, the heads of Ukrenego, the Energomarket and NERC, and two deputy ministers under the Ministry of Energy have been relieved of their duties. This has adversely affected the operation of Energomarket and NERC. Even though these positions are expected to be filled soon, conflicts and tensions between the Ministry of Energy, NERC and the Energomarket are expected to continue. Therefore, the continuation of USAID technical advisory services to NERC and the Energomarket need to continue for at least the next two years.

It is reported that a special investigative committee was appointed when NERC and the Ministry of Energy intervened frequently in the operation of the Energomarket to adjust the Market Funds Procedures (Annex-2). As a result, there was "state of emergency" in the Energomarket during March 9-22, 1999, when only five LECs received cash for their electricity supply. The rest of the money was allotted to meet the serious wage arrears problems in some power generating companies. Further, NERC decided on March 23, 1999, to increase the debt ratio for generators in the Market Fund Procedure, indirectly helping to increase cash payments to them at the expense of other LECs and interconnected operators (who import power for distribution in Ukraine).

This led to the GOU announcement on April 5, 1999, of another "state of emergency" in the electricity market that suspended cash allocation to the Minenergo Fund (for dealing with emergencies). This state of emergency, after two extensions, is still in operation and the investigation is on-going. Meanwhile, the collection incentive mechanism for LECs was amended by a joint Minenergo/NERC resolution of March 26, 1999 which reduced the grouping of LECs from four to two in the light of their outstanding performance in cash collection – the first group consisting of LECs in the cash collection band of 25-50% and the second group consisting of LECs in the 15-25% cash collection band. LECs which met the criteria under those two cash collection bands got a comparatively higher allocation in the form of "bonus cash." However, this system of "bonus cash" has been removed from the incentive mechanism since April 5, 1999, as the cash collection started to improve with the pressure exerted on LECs by the Special Investigation Committee. The above developments underscore the need to make the Market Fund Procedures transparent and stable.

Further, based on the recommendation of the Special Investigation Commission, President Kuchuma has ordered the Cabinet of Ministers to terminate the contracts between the State Property Fund (SPF) and the Ukrainian Credit Bank for the management of government shares in three LECs – Ternopil, Kirovograd and Kherson. The Commission has also recommended the cancellation of the SPF preferential sale of government shares in some LECs ( i.e. in Sumy and some others) to private investors because the Commission feels that those sales were made in violation of the Ukrainian laws. However, the Verkhovna Rada Commission on Privatization has subsequently ruled that there was no violation of local laws and no failure to fulfill obligations on the part of new investors in those LECs. These developments in the privatization of LECs gives the impression that GOU is not

clear in its approach to privatization and there is a lack transparency and stability in the process. This is bound to discourage potential strategic investors from showing keen interest in the privatization of enterprises in Ukraine. Therefore, there is an urgent need to hire a Privatization Advisor, possibly with funding from USAID.

### **E. LEC Financial Situation**

Fourteen out of 27 Obloenergos (LECs) which distribute power in their designated Oblasts, as tariff-regulated licensees, showed positive “Rentabilidad” in 1998. This “Rentabilidad” is calculated under the Ukrainian accounting standards by dividing the sales revenue by the so-called “Prime Costs” which include all direct and indirect costs, excluding the costs of advertisement, public relations, insurance, etc, which were not necessary under the Communist Regime. The “Prime Costs” also exclude the corporate tax and other taxes payable to the State. Therefore, when all costs are taken into account, there may be only one LEC (i. e. Kievenergo) which would show net profit under the international accounting standards (IAS). As a matter of fact, Kievenergo publishes its accounts using some international accounting standards. Its audit report shows that the company made a profit of UHS 155.5 million (nearly US\$39 million) in 1998.

According to a report by Hagler Bailly, converting the 1997 LEC accounts into ISA, we find that 10 of the 27 LECs showed what Ukrainian’s consider to be *net profit*. However, the net profit in four of them was marginal. Only in the case of six LECs (Kiev, Dnipro, Paltaver, Sevastopal, Pricazpatic and Zaporific) did we find that they showed significant net profits above US\$ 1 million equivalent. (Kiev net profit was, UHR 99.44 million while that of Dnipro was UHR 18.41 million; Paltaver, UHS 12.89 million; Sevastopal, UHS 7.08 million; Pricazpatic, 3.40 million; and Zaporific, 2.62 million).

Currently, LECs face some competition from the non-tariff regulated private distributors (which account for about 20% of the total power marketed in Ukraine). LECs largely serve as regional monopolies in power distribution. This system needs to be liberalized. As the next step, the Ministry of Energy needs to allow LECs to have an additional license (in addition to the one they have now to distribute power as a tariff-regulated supplier in a specified Oblast). This will give them the option to serve as a non-tariff regulated supplier in any Oblast they choose (as is currently allowed in the case of independent electricity suppliers). This would create competition among LECs, reducing their virtual monopoly for power distribution in the Oblasts assigned to them. This approach deserves GOU attention to energize the seven LECs which have already been privatized. The Team would also make the functioning of the remaining 20 LECs which are to be privatized more efficient in a competitive environment, reducing non-technical losses in transmission, cutting costs, increasing productivity, and improving profitability. Without this competitive environment, LECs have little incentive to cut costs, improve operational efficiency, collect bills on time, and improve financial position.

### **F. Accounting and Financial Management in LECs**

Annex-3 describes the serious problems in the Ukrainian accounting systems and the need to adapt them to international accounting standards. Some TA was provided to 10 LECs by USAID using Hagler Bailly to analyze their financial statements. Some other lenders provided some TA to the remaining 17 LECs. However, the scope of the TA did not cover conversion from Ukrainian to Western accounting standards, and improvement in financial management by using information systems. This has become very important to prepare the LECs for privatization. Therefore, it is

recommended that such systems which have been successfully implemented to some extent at Kievenergy be completed and be made as a model for introduction at other distribution companies. Further, it is recommended that USAID sponsor a Workshop in Kiev to review the systems introduced at Kievenergy as a first step in the direction of introducing such systems in all LECs as a priority task. Computerized accounting and finance software introduced at Kievenergy could be made available to other LECs after refining it further. In this context, USAID can consider providing some TA funds for logistical support to realize the objectives under this program.

### **G. Dealing with Problem of Micronets**

Many captive power generators in industrial enterprises have surplus for supply to other customers through micronets. The supply of electricity to outside customers is their supplementary field of activity. These micronets operated in the past outside the control of Minenergo. When LECs under the control of Minenergo were separated into 27 distribution companies, they received licenses (LVNO and RTS licenses). However, very few micronets have received such licenses. Their size varies from a hundred meters of line, serving only a few residential customers, to large networks with a volume of supply exceeding that of some LECs. It is estimated that there are a thousand micronets. About 150 have a monthly supply volume greater than 10,000 MWh. Under the old Soviet strategy of energy sector development, local electricity networks were built around large factories and, as a result, numerous micronets had been developed in Ukraine. These micronets do not have connections to the HV grid. Moreover, metering at interconnections is inadequate. The operators of micronets do not have the funds to improve the metering.

For the new power tariff system to be implemented properly in Ukraine, micronets should have some guidelines on how to set tariffs for their customers, how their transmission costs are to be covered, and how subsidies to privileged residential customers could be compensated. Conflicts between micronets, and between micronets and LECs, have started to develop, and NERC is concerned about how to deal with micronets. A year ago, NERC decided not to issue transmission licenses for another year to owners of transmission networks whose transmission is below a certain limit. Now, with the forthcoming expiry of the time period, NERC has to develop some strategy to deal with the issue of micronets. The most attractive option seems to be for micronets to be transferred to LECs with fair compensation. Here NERC needs to distinguish between micronets that can be transferred to LEC ownership and those that cannot be. For those that cannot be transferred, NERC can allow their operation be regulated by the Electricity Usage Code (as is done now) without NERC licensing but with NERC-issued guidelines. TA is needed for NERC to study and resolve the problem of dealing with the numerous micronets in the country.

### **H. Recommendations**

According to the Cabinet of Ministers (COM) Resolution of March 24, 1999 (No. 441), all customer are required to pay in full for electricity or come to an agreement with the LEC concerned regarding a debt repayment schedule. It also empowers LECs to terminate electricity and heat supply to customers not complying with the terms of payment. In this context, LECs should give priority to the following measures:

- Reschedule uncollected debts from industrial enterprises (beginning with large and medium enterprises) and reach agreement on a payment schedule. Terminate power supply to enterprises that do not pay according to the agreed schedule under debt rescheduling.

- Finalize the Wholesale Electricity Market Law and amend the Electricity Law to make them consistent, possibly with TA from legal experts financed by USAID.
- Adopt a procedure of terminating power supply initially to industrial enterprises which are in default for more than two months, after giving them a 15-day notice. Also apply this procedure to individual customers who are receiving salaries regularly. (Those working in private enterprises).
- Start implementing provisions under the March 1999 COM resolution authorizing LECs to sue local administrations if they try to interfere with the process of promptly terminating service to all defaulters except as provided under the Law of Ukraine.
- Get GOU agreement to make Energomarket a semi-autonomous state enterprise outside the Ukrenergomarket, with adequate trained staff and build institutional capacity to develop a market-based electricity production, transmission and distribution system with TA possibly from USAID.
- Reach agreement with NERC to refine the retail pricing system taking into the current deficiencies. In this context, NERC should consider allowing the flexibility to LECs to set retail prices on a market-based system following NERC guidelines.
- Reach agreement with the Energomarket to examine the current system of settlement and market fund administration with a view to making the procedures transparent. In this context, subsidies should be made transparent and GOU needs to make provisions in the budget to cover such subsidies with cash payments. (Now subsidy certificates are issued on an ad hoc basis to cover such subsidies).
- Expedite proposed privatization of LECs by auctioning large blocks` of shares to strategic investors. (Privatization of LECs is the key to their commercial viability).
- Reach agreement with Minenergo/Energomarket to exempt LECs which pay for NDC services in time continuously over a three-month period, from the Clearing (Transit) Account. Such LECs should be permitted to make arrangements directly to pay for generation as calculation per the WMP.
- Find a solution to the serious problem of dealing with numerous micronets under the current regulatory set-up, possibly with technical assistance from USAID.

## V. REGULATORY DEVELOPMENT

### A. Ukraine Energy Regulation

#### 1. Regulation and Legal Framework

The Electricity Act of Ukraine (EAU) was enacted in October of 1997, establishing responsibilities of the NERC and the features of the Wholesale Electricity Market.<sup>66</sup> The Act appears to have made NERC independent of Minenergo, which is evidenced by the tension that is expressed between these parties about each other. NERC has exhibited some autonomy, but as we explain later, it is still subject to huge political pressure from Minenergo and the Cabinet of Ministers and even the President. Notable in this regard is the Presidential Decree of 1 December 1997, which assigns a number of responsibilities to Minenergo to manage the power industry, promote establishment of the market, and a host of other matters.<sup>67</sup>

NERC established local (regional) offices under its Article 10, but the EAU allowed for “local executive power” and “local self-governing bodies” (e.g., Oblast governance) outside of NERC’s authority.<sup>68</sup> Article 11 gives NERC authority over “state regulation of the activity of the electric sector,” including regulation of natural monopolies, promotion of competition, implementation of tariff and pricing policy, electricity “utilization” rules, the issuance of licenses and control of licensees. Articles 12, 13, 14, 15, and 17 define NERC’s authority to issue licenses and set tariffs for electric generation, transmission, and supply.

While Article 17 implies that NERC sets tariffs according to conditions set in supplier licenses, this and other aspects of NERC authority are not very clear, particularly with respect to the Energomarket Agreement (EMA).<sup>69</sup> The Energomarket Board (EMB) has a supervisory role over wholesale market operations, while “the NERC is a party to the findings of any supervisory procedures, audits, and tests.”<sup>70</sup> This is one example of many where the NERC authority and responsibility are unclear. This is a result of a lack of a system of laws and a lack of a more definite electricity act for Ukraine.

The NERC’s uncertain status, as a result of unclear drafting of the EAU and lack of a system of laws, was evidenced many times. The EMB ignored the NERC initially and appeared to react only to Minenergo and the Cabinet of Ministers.<sup>71</sup> Interviews with NERC, AES, and Minenergo reflect that Minenergo, the Cabinet of Ministers, and the President exert very strong pressures on NERC.

It was also explained that NERC is directly pressured by Minenergo and the Cabinet of Ministers to violate its own directives and to favor certain energy market participants (i.e., to ignore its

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<sup>66</sup> Reports by Hagler Bailly explain some of these problems. What is confusing to the Team is the approach used in these reports to explain the NERC authority and responsibility. Other nation-states and regions usually define the functions for regulation (e.g., retail rate (tariff) setting, retail services, wholesale market operations, wholesale regulation). See, Ukraine National Electricity Regulatory Commission, NERC Oversight of Energomarket, Hagler Bailly, 10 September 1999.

<sup>67</sup> Ibid., at pp. 4-2- to 4-4.

<sup>68</sup> Local governments can participate in plant siting, planning, emergency situations, and even “regulation of tariffs of thermal power in compliance with the Act.” Ibid., at pg. 2-2.

<sup>69</sup> Ibid., at pp. 2-2 to 3-6.

<sup>70</sup> Ibid., at pg. 3-1.

<sup>71</sup> See generally, Ukraine National Electricity Regulatory Commission, Legal Assessment of the NERC Authority, Hagler Bailly, 25 September 1999.

autonomous role as the national regulator). Remarkably, the well respected Chairman of NERC, Mr. Butsio was recently dismissed from his post. Most interviewed on this subject believe that the dismissals occurred because the NERC was not responsive to outside political pressures. Subsequently, Ukraine's national tax auditing administration has threatened to require NERC to pay taxes, as a "for-profit" entity, which are equal to NERC's yearly budget. This would completely sideline NERC's activities in regulation.

The root cause of these problems has been repeated in many interviews: "Ukraine's energy sector lacks a viable system of laws." The Major Contractor's reports on NERC authority and responsibilities, and interviews with the Major Contractor's management and staff, also repeat this theme. Therefore, the Team finds that NERC's regulatory and legal status must be considered uncertain at best and subject to significant political manipulation. Without an objective, autonomous regulatory body like NERC, the Team expects that investment in the electric sector will be quelled, as will privatization.

## **2. Role of Minenergo (Ministry of Energy and Electrification)**

Minenergo's role has been fundamentally transformed after the GOU launched a power sector reform plan in November 1994 following the approval by the Ukrainian Parliament of the May 1994 Presidential "Decree on Market Transformation Measures in the Electricity Sector of Ukraine" (224/94). One of the objectives was de-monopolization and decentralization, in order to remove Minenergo from day-to-day operations of the power industry. Minenergo was to have the responsibility to handle oversight issues such as overall policy, technology supervision, environmental issues, regulatory performance of the regulatory body, sector development issues, and power legislation.

Under the power sector reform plan, power generation, distribution and transmission companies were to function as autonomous enterprises. However, because of numerous problems in the power sector beyond the control of individual companies, those enterprises are not able to operate as autonomous companies. They have to depend on Minenergo to resolve their operational problems caused by external factors that include:

- (1) Inability of power generation companies to secure enough supplies of oil from Russia and gas (which is mostly imported from Russia and partly from Turkmenistan) and coal (which is largely produced in Ukraine) because of liquidity problems; local coal supply shortages especially during winter months constrains the operation of power plants: inability of coal companies to supply quality coal that meets the required specifications for efficient operation of power plants; the local coal has now a calorific value of less than 3700 kcal/kg (compared to 4,160 kcal/kg in 1996) while the plants are designed for coal of above 5630 kcal; and the ash content of the local coal is 30-40% while the plants are designed for coal of less than 15% ash content; the local coal also has rock particles in it, causing operational problems in power plants; coal companies have enough coal washing capacity but they generally do not supply washed coal because of cash constraints; further, gas is now being sold on an auction basis for major users like the power plants which have to pay a significant part of purchase cost in cash, but those plants are not in a position to do so because of meager cash inflow to them under the current system.

- (2) As the country has surplus power capacity, the individual power generating companies do not operate at attainable capacity; they depend on the Energomarket (which is under the Minenergo) to give them the production targets; and there is constant consultation on this matter between the Energomarket and individual power plants, with the Energomarket micromanaging power generation in individual plants;
- (3) Enterprises in the power sector, as is the case with most enterprises in Ukraine, are not able to collect their accounts receivable and settle payables in time because of the cash crunch in the economy. This has given rise to widespread use of barter transactions and offset mechanisms to deal with the non-payment problem;
- (4) As cash inflow is low at 5-10%, enterprises in the power sector, as in other sectors, are not able to pay salaries to employees in time; there are cases of enterprises which have not paid employees for months;
- (5) As employees are not paid in time, especially in government enterprises and agencies, they do not pay their electricity bills, thus adversely affecting the cash collection efforts of power sector enterprises. Recently Government mandates have been developed requiring 50% of the value of coal to be paid in cash. However, the cash payments for electricity are less than 15%. The cash, which is received by generating companies (GENCOs), is first used to pay wages and taxes before paying for coal and other inputs. As a result, cash payment for coal by the power sector for domestic coal is less than 5%. Because of this problem, coal companies are not in a position to develop the capacity to sample and analyze coal deliveries under international standards, making effective use of the existing coal washing facilities. However, the price for the coal supplied, based on the import parity price, as estimated by consultants (Hagler Bailly) in early 1998 at about US\$ 2.1/million BTU (UHR 8.14/million BTU) which works out to about US\$34/ton of coal. This assumes that the local coal supply has a calorific value of at least 4160 kcal/kg as was the case in 1996. However, the calorific value of the coal supply in Ukraine has declined to about 3700 kcal/kg and the coal companies are now getting around US\$30/ton. Thus the coal price is not currently subsidized. Similarly, the other major inputs – gas and fuel oil – are not subsidized. Local gas is sold at auctions, and imported gas is priced at international prices; and local refineries at import parity prices supply fuel oil. While the input prices have risen to the import parity levels, retail electric prices did not cover the economic cost (which is estimated by the World Bank at about 3.5 US cents/Kwh). In October 1994, GOU started a program for energy price adjustments aimed at recovering the full cost of fuels in the average price of electricity and generating resources to finance capital investments. Based on this approach, the average retail price of electricity was 2.8 US cents/Kwh in 1995. This has risen to about US cents 3/Kwh as of April 1, 1999. In normal circumstances, this price might be adequate to meet a reasonable profit margin. However, under the current conditions of substantial commercial losses (mainly due to power thefts by tapping the power lines), this price does not seem to cover all costs and generate adequate funds for capital investments as intended under NERC's power retail pricing formula.

### **3. Residential Electricity Tariff**

One of the major pricing issues between donors and GOU was household electricity prices which remained heavily subsidized in the past. Under the IBRD loan for Energy Market Development

Project (EMDP), it was agreed to increase household prices gradually to reduce the subsidy. Significant progress was made until May 1, 1998 with the six categories of households paying US cents 3.8-5.4/ Kwh. However, with the 100% devaluation of the local currency in September 1998, the household electricity prices in US\$ terms declined sharply and GOU showed reluctance to raise those prices when the World Bank decided to suspend the EMDP loan.

Subsequently, GOU decided to increase household electricity prices in local currency terms as of April 1, 1999, with the six different categories of households paying between US cents 2.4 and 3.3/Kwh. This action by GOU was found satisfactory by the World Bank for the time being. However, it has delayed lifting the loan suspension pending review of progress in total collection by LECs enterprises during the last three months (Feb.-April, 1999).

Available data show that the monthly cash collection has improved in recent months as follows:

	Cash Collection by LECs -----as % of total monthly receivable-----	Total Collection*
1/1998	9.4	43.1
1/1999	4.8	36.8
2 /1999	5.4	84.0
3/1999	10.7	67.0
4/1999	18.8	26.7

The data for April 1999 shows that even though there was an increase in cash collections, the total collection decreased significantly because the Government has limited the issuance of promissory notes for debt settlement only to government agencies including “Oblast” administrative bodies.

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\*Including barter and offsets.

#### **4. Power Retail Tariff**

Until January 1, 1996, electricity prices for residential consumers and the average price of electricity were set by the Ministry of Economy (MOE). Minenergo set prices for non-residential consumers within the prescribed average. However, with the restructuring plan of the power sector in July 1995, the retail tariff setting responsibility was transferred from the Ministry of Economy and Minenergo to NERC. From July 1995-October 1998, NERC set retail prices on the same principles as those of MOE and Minenergo. From October 1998, NERC developed a retail power pricing formula to be used by LECs in fixing prices to industrial and commercial consumers (see Chapter V for details). As for retail prices for residential consumers, NERC periodically prescribes the prices to be charged to the six different categories of such consumers.

There is still some subsidy for the household sector and the LECs. Earlier, GOU had committed to reduce household subsidy so that full cost recovery could be reached in mid-1996. This had happened to a large extent by May 1, 1998 but with the sharp devaluation in the last quarter of 1998, the situation had changed as is further explained.

Average retail electricity prices per kWh, including all consumers, increased in US\$ terms, taking into account the high inflation and devaluation of the local currency, from hardly US cent 1 to 1.3 US cents in 1994, 3.2 US cents at the end of 1995, and 3.7 cents in the first quarter of 1996. With these increases in real terms, it appeared that the gap between the average prices and the cost of supply was largely closed. However, with the sharp devaluation (100%) in September 1998 the average electricity prices decreased in US\$ terms. According to the past agreement with the World Bank under the EMDP loan, the retail electricity prices were to be tied to the US\$ and were to be automatically adjusted for inflation. When this did not take place following the major devaluation in September 1998, the World Bank suspended the EMDP loan, as noted earlier.

Retail power tariffs in Ukraine still suffer from many distortions. The residential consumer prices are continuing to vary since March 1995, for example, between urban and rural households who are divided into six categories. There are special discounts to those who use electric stoves because the building they live in does not have gas connections, and to veterans, Chernobyl victims and those living within 30 km of the nuclear plant, and people who belong to privileged occupations (i.e., doctors, judges, etc.). Moreover, customers who have electricity and rent payments that exceed 20% of their total income are exempt from paying electricity bills and the payments due from them is covered by budget allocation. The system of cross-subsidization is continuing to cover the cost of supplying free power to special privileged occupation groups mentioned above. Under the cross-subsidization scheme, industrial consumers pay more per Kwh than residential consumers; and urban residents pay more per Kwh than rural residents. Some subsidies are covered by the Government and some others are covered by the local administrations (Oblasts). Most of the distortions in power pricing are due to subsidies that were to be eliminated with the introduction of energy market reforms. This has not happened so far. Further, most social institutions such as hospitals and schools often do not pay electricity bills. Moreover, those residents who do not receive salaries for months from government companies and agencies do not pay electricity bills.

## **5. Electricity Price Regulation**

NERC was entrusted with the responsibility for regulating power tariffs in July 1995 following a market-based approach. Consumer tariffs were to be determined taking into account the wholesale market price (based on daily bids for supply to Energomarket from generating companies plus local costs of distribution and transmission (including provision for technical losses, and provision for capital investment on modernizing such service facilities).

With the help of consultants, NERC has set up certain pricing principles and pricing formula for regulating power prices in general, leaving little flexibility to LECs in fixing prices to consumers. While the prices of LECs (who account for about 80% of the consumer market for power) are regulated, the independent electric suppliers (who buy power from available sources and supply to bulk consumers such as industrial enterprises) are free to set their prices without tariff regulation. (IECs account for about 20% of the consumer market for power). According to the NERC strategic objectives, it is supposed to allow LECs to compete in each other's territories without tariff regulation on a market-based approach. This has not happened so far.

As a result, there is no market-based pricing with respect to retail consumer pricing. LECs have to use the retail power pricing formula and stipulations provided to them for setting the retail prices to final consumers. LECs complain that under the current system they are not able to cover their full costs (including technical and commercial losses and provision for investment on modernizing distribution and transmission facilities). Part of this is because the NERC-approved Local

Transmission Tariff (LLT) and Loss Factor (LF) in NERC's power retail pricing formula are inappropriately low. The largest problem is that LF covers only technical losses, leaving commercial losses unaccounted for. LECs have submitted an action plan for reducing both technical and commercial losses. On this basis, NERC is inclined to approve special subsidies to cover the estimated financial losses of LECs. Importantly, this includes losses due to both technical efficiency and to commercial factors (e.g. theft and required subsidy to special classes). This practice, based on ad hoc decisions, is likely to result in special treatment to some of the 27 LECs now in operation.

NERC is interfering in the operation of the wholesale market as well. In the wholesale market, prices to thermal power generators (excluding hydro and nuclear power generators) are to be determined on the basis of bids which change every hour in the wholesale power market (the so-called national power pool). NERC is currently following the practice of putting a bid cap on the hourly prices. NERC should not interfere in the current pool system by prescribing a bid cap. The thermal generating companies should be allowed to bid for supply to the pool at any price they choose on a competitive basis.

With respect to pricing, NERC's role should be confined to oversight in order to avoid collusion among the four thermal power companies and to ensure that these companies and LECs are not charging more to consumers because of their inefficiencies. NERC can monitor the technical and financial performance of those companies by using some benchmark performance indicators such as capacity utilization, power exports, net profit, net profit as a percentage of total sales, rate of return, internal cash flow, current ratio, debt/equity ratio, etc.

Further, NERC needs to ensure that Energomarket uses fair, economically efficient bulk prices in its transactions with LECs, based on marginal cost at the appropriate supply voltages. It should ensure that there is close coordination of market-based pricing for both power and its inputs such as natural gas and fuel oil. (In the case of coal, the Cabinet of Ministers set the selling price). With respect to hydropower (which is currently used for peak load) and nuclear power (which is used for base load), both are low-cost producers compared to thermal power producers. Therefore, NERC is setting tariffs for power supply for them based on covering full costs and ensuring a reasonable rate of return.

## **6. The Effectiveness and Independence of Regulation**

The Team found it difficult to assess whether the regulation performed by NERC was effective and independent, in terms of its monitoring, governance, and intervention. This question can be viewed from many levels. The NERC has exercised some autonomy and resisted political intervention, which is surely positive, but how independent is it? Tariff setting was accomplished by NERC and rates to consumers were raised to levels close to the cost-of-service. Governance of the electricity sector and intervention to resolve problems appears weak at best, as Minenergo appears to exert authority over these areas which supersedes that of NERC. Regulation is less clear for newly privatized entities, and the effectiveness of such regulation is also uncertain.

Although NERC provided new tariffs, for reasons the Team still does not comprehend, the NERC combined (1) retail tariffs (for distribution wires and services) and (2) wholesale tariffs for high-voltage transmission with (3) wholesale pool prices which should not be defined by traditional tariff

policies.<sup>72</sup> The first two (retail and transmission) could be combined, particularly in the interim as competition is nascent, but the third, wholesale generation price, should not be subject to regulatory price setting or be bundled with the retail and transmission components into a single rate.

The wholesale price needs to be separate so that competing entities are allowed to compete against it (i.e., provide a price lower than the pool price). As a regulatory issue, the root of this problem may lie with the historical role of government in former Soviet Union (FSU) countries. A second root of this problem may lie in the historic regulatory role of monopoly utilities in the U.S. Few in the U.S. have actually worked with new ‘light-handed’ regulatory approaches that are necessary for competitive markets to work.

This suggests that NERC and other key entities in Ukraine have a fundamental misunderstanding about the level of “regulation” which should be used to control competitive prices. The Team did not find that the NERC had been offered options to address the need for unbundling of retail from wholesale services and the need to competitive price setting to be separate from regulatory price setting.<sup>73</sup> Instead, NERC and others adopted a centralized, mandatory, single-buyer market model, with fully bundled retail rates and competitive prices.

The Team finds two fundamental problems with NERC’s basic approach to the market and its understanding of the role of regulation. First, top level NERC entities did not understand that the wholesale market was not competitive at present – they believe that a competitive wholesale market exists in Ukraine. When the Team tried to explain why the wholesale market was not competitive and that a market for power did not exist, this reasoning was rejected. Similarly, when the Team tried to explain a role for bilateral contracts, which would allow the existing pool to work, the view was expressed that bilateral contracts in Ukraine would lead to the destruction of the electricity market. To provide a context, the Team found these same views expressed by Energomarket, NDC, Minenergo, and some of the Oblenergos – views that the Team believes reflect a lack of basic understanding about the issues and options with competitive electric markets.

Secondly, NERC entities did not see any problem with the bundled retail-wholesale rate approach, and the effect it produces to virtually mute all competitive effects. They did acknowledge that the approach used presented distortions, for example when low cost generators request to be dispatched less because they pay high taxes. NERC appears to have the classic U.S. state approach (as opposed to US federal approach) to regulation of monopoly utilities. State regulation of distribution companies and vertically integrated utilities is based on monopoly regulation of tariffs and services. Federal regulation of competitive wholesale entities relies on market forces and the encouragement of market forces, using light-handed regulation. Furthermore, NERC does not seem to understand that “light-handed” regulation is necessary over wholesale market operations, in order to allow competition to work.

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<sup>72</sup> While, for example, FERC in the U.S. does ask for a “tariff” for competitive power markets, it is a tariff in the legal sense of a required filing that explains how the market prices will be set. Thus, FERC and other national regulators allow fully competitive prices to be determined **outside** of a tariff-setting process.

<sup>73</sup> Hagler Bailly did in at least one report find a “clear segregation of Supply and distribution” and that the “supply tariff should be entirely determined by market forces and therefore un-regulated.” Ukraine National Electricity Regulatory Commission, Tariff Formulation and Methodology, Hagler Bailly, 9 September 1999, at pg. 2-3 (“Detailed Findings”). Hagler Bailly did not, however, offer options to accomplish this, nor did it seem to continue to focus on this matter in later recommendations.

Interviews reveal a series of problems that diminish the effectiveness of regulation. A repeating theme is that NERC was not aware of other options and mechanisms to address regulatory issues, such as unbundling, wholesale price setting, and bilateral contracts. Repeating a common theme, NERC and others in the Energomarket explain that definite legislation and a system of laws are lacking. NERC believes that with such circumstances, it is difficult to achieve the desired goals. The tariff system has not been fulfilled. A tariff system and legal rights have not been provided for new private owners of LECs and generation. Private law is lacking, as are specific procedures to achieve privatization.

NERC seemed knowledgeable only on approaches to regulation used in Russia and the UK. NERC's advisor, the Major Contractor, raised related issues about regulatory authority and clarification of roles, classic tariff-setting, and monitoring. Yet, the Major Contractor seemed to accept the centralized pool approach and seemed to do little to further explain the issues and options of bundling of retail rates, transmission tariffs, and unbundling of wholesale prices. This raises questions about the focus that the Major Contractor provided to NERC and the guidance USAID offered as well.

Furthermore, the Major Contractor outlined technical aspects of bilateral contracts and defined a narrow interpretation of contracts for differences (CFDs, but did not explain how CFDs would work with the Ukraine pool). It also did not recognize that (virtual) bilateral contracts are being used now in Ukraine, through the use of barter and other instruments (promissory notes, exchanges, credits, and tax write-offs) to create payment for electricity.

The Team suggests that these bilateral contracts are a form of CFDs, as they provide certainty of payment in some kind of "currency."<sup>74</sup> Lvivoblenergo' experts understood these concepts and agreed with these views when interviewed. The Major Contractor, on the other hand, rejected these views, adhering to a strict, formal definition of CFDs, i.e., that CFDs are only a hedge mechanism, such as to guard against high peak prices.<sup>75</sup> One result is that NERC did not accept that Ukraine currently uses (virtual) bilateral contracts. NERC obviously knows that barter deals occur regularly for generation (and fuel) through Independent Electricity Suppliers (IES), but NERC did recognize these as bilateral contracts or as a form of CFD.<sup>76</sup> IES deals, all of which are bilateral contracts in CFD form, currently amount to about 20 percent of all power produced in Ukraine.

The Team finds that NERC and others are in accord on the need for more relevant legislation in order to increase the effectiveness of regulation. Yet, NERC seems largely unaware of the broader models of regulation or the mechanisms that are used for specific regulatory roles, such as assessment of market power abuse. This suggests that Ukraine needs to strengthen its legislation, regulatory laws, and private laws in order to reduce political intervention, provide for well-defined commercial roles,

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<sup>74</sup> Because the circumstances are different in Ukraine, as compared to the UK, CFDs can act as a "hedge" on payment certainty, as any proposed payment (e.g., promissory notes) is likely to increase the likelihood that value will be transferred for electricity produced. In the UK, CFDs are used to hedge price uncertainty, as compared to the pool price. The difference between price uncertainty in the UK and payment uncertainty in Ukraine can be viewed as a matter of degree. Payment uncertainty merely represents greater variation, in statistical terms, in the "price" obtained.

<sup>75</sup> Interview with Jim Stanfield of Hagler Bailly, Kiev, 21 May 1999. See also, Ukraine National Electricity Regulatory Commission, Report on Key Regulatory Issues, Hagler Bailly, 25 September 1999, at pp. 1-1 to 1-9.

<sup>76</sup> The negotiated part of the deal is through barter, while the customer still owes its generation part of the settlement, to pay for the power provided to the pool at the pool price. Thus, the Ukrainian barter arrangements through Independent Electricity Providers, are CFDs.

and allow the NERC to have greater independence. To do this, NERC needs to understand the issues and options and needs specific advice about how other nations and states address these same matters.

## **B. Ukraine Market Rules and Legislation**

### **1. Recently Proposed Market Rules and Legislation**

The Ukraine electricity policy framework currently involves at least (1) the initial Energy Market Agreement (EMA), (2) the Ukraine Electricity Law (signed in November of 1997), and (3) proposed wholesale market laws. Each of these may be amended in the near future. We will describe the EMA efforts and the proposed wholesale market laws in turn, without explaining the proposals in detail.

An initial Energy Market Agreement (EMA) was formulated in 1997. Since then, a revised EMA has been rejected for lack of sufficient signatures.<sup>77</sup> More recently, an EMA Working Group has met often to discuss amendments and suggested changes to the EMA and to legislation in Ukraine.<sup>78</sup> According to the Major Contractor, five working groups have been meeting, and seven market structures have been discussed, but there has been “no real evaluation of the options.”<sup>79</sup> This was confirmed in other discussions with the Major Contractor, NERC, and Minenergo.

We provide a preliminary assessment of the seven models proposed in the EMA Working group.<sup>80</sup> At least four of the recent EMA options suggest the potential to severely limit competition, including approaches to impose “proportional sales,” impose “two-level sales,” use “consignment contracts” with generators, and use “consignment contracts” with suppliers (customer intermediaries).<sup>81</sup> Direct contracts between generators and suppliers were proposed without an EMA.<sup>82</sup> An “electricity exchange” to register independent bilateral contracts has been proposed.<sup>83</sup> The current market model with minor amendments is also proposed – a model that precludes competitive outcomes.

At least two draft laws that have been proposed, following the extensive EMA Working Group process. The first is a “two-level system” of bilateral contracts where independent suppliers negotiate purchase/sales with electric generators at prices acceptable to the mutual parties. For power and demand not secured by contract, prices will be established based on the demand-to-supply ratio, which is considered to be “free prices.” On the other hand, the proposal explains that pricing will be “affected on the basis of [the] costs of electricity generation, transmission and supply...[and] competition among the electricity generators and suppliers aimed at support and protection of

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<sup>77</sup> See, e.g., Memo of K. Yemelanov to D. Wolcott, J. Stanfield, S. Golokova, Meeting on Issues of Energomarket Members Agreement, Hagler Bailly, 7-9-98 and attachment thereto. (Hereafter, *EMA Summary*.)

<sup>78</sup> Memo, to J. Stanfield and S. Golikova, from K. Yemelyanov, EMA Working Group, Hagler Bailly, 31 March 1999.

<sup>79</sup> Interview with Svetlana Golikova, 3 May 1999, at Hagler Bailly, Kiev.

<sup>80</sup> See, *EMA Summary*, *op sit*.

<sup>81</sup> Under these proposals, bilateral contracts might be used, but scheduling these contracts and using the power system appropriately to match generation and load seems difficult at best. These approaches seem to suggest that a single generator can serve a customer’s varying load, which is very seldom possible. Thus, these approaches look likely to reduce competition, segment the market, create mismatches between generation and load, and encourage Ramsey (inverse-elasticity) pricing.

<sup>82</sup> The comments in the footnote above would also apply to this model, *ibid*.

<sup>83</sup> See, *ibid*.

customers.”<sup>84</sup> At first reading, this proposal presents a number of contradictory statements about “reasonable wholesale tariffs,” “transparent market relations,” “ensuring maximum economic efficiency,” and “control by the state over the legitimacy of application of free prices.”<sup>85</sup> Not unlike legislation in other countries, it seems unlikely that the proposal will fulfill all of its conflicting claims.

The second legislative proposal would make the General Meeting of the Wholesale Electric Market (WEM) the “supreme body” in Ukraine.<sup>86</sup> The WEM Board, through its agreement, would in essence dictate the structure of the wholesale market. Pricing would be based on (1) incremental generation bids to determine the “System Marginal Price” (SMP) for each hour, based on the most expensive block, and (2) a fixed cost factor (Availability Price) approved by NERC.<sup>87</sup>

This proposal seems to remove much of Minenergo’s role and would seem to reduce intervention in the market.<sup>88</sup> On its face it seems simpler and more likely to result in workable competition than the first proposal, but may suffer from some of the same problems as the current Ukraine pool. However, there are at least four major caveats. First, how are incremental costs defined and how SMP are set?<sup>89</sup> Second, whether regulation or government intervention would mute the desired market forces. Third, whether the settlement system would avoid government redistribution of revenues. And fourth, whether CFDs, of any form, are allowed around the pool price.

Important matters not addressed in this proposal are how will the WEM be governed, who can sit on the WEM Board, and how are WEM Board Directors chosen? Rather, the proposal states that the WEM General Meeting will decide these matters.<sup>90</sup>

Most surprising is that NERC has not “weighed-in” on these proposals. The Major Contractor’s scope of work states that during the periods leading up to 31 December 1998 and until 31 August 1999, the Major Contractor shall provide reports on key regulatory issues and recommendations to resolve them, report on EMA changes and impact, and provide comments and legal support on WEM.<sup>91</sup> The Major Contractor has provided both NERC and Minenergo with input on legislation, however, only Minenergo weighed in – incorporating much of what the Major Contractor provided.

In March of this year, a working group was created, headed by Energy Minister Ivan Platchkov, to discuss both the legislative proposal and to reach a compromise. The working group included Minenergo, NERC, Antimonopoly Committee, Ministry of Finance, Ministry of Economy, and the Major Contractor. Activities in the working group have ceased as of late for reasons that have not been made public. All along, the Major Contractor danced around the controversial issue of bilateral contracts.

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<sup>84</sup> Draft proposed by People’s Deputies of Ukraine, Reg. No. 3058-1, 2 March 1999, at pp. 6-8.

<sup>85</sup> *Ibid.*, at pp. 4-8.

<sup>86</sup> Draft, The Wholesale Electricity Market Law, 25 December 1998. (Hereafter, *Wholesale Proposal*.)

<sup>87</sup> *Ibid.*, at pg. 8.

<sup>88</sup> As NERC’s advisor and consultant to USAID, it seems appropriate for Hagler Bailly to “weigh-in” on this proposal and critique it, but to our knowledge this has not occurred.

<sup>89</sup> The draft proposal refers to start-up and no-load bids and how these bids may affect SMP, which is also important. This might be simplified by allowing the generation bidders to integrate, as they wish, start-up and no-load costs into their bids.

<sup>90</sup> The proposal does explain that any entrepreneur who has obtained a license “on a relevant type of ... activity...and signed the [WEM agreement] may be a member of the WEM.” *Wholesale Proposal*, *op cit*, at pg. 6.

<sup>91</sup> Work Order for Hagler Bailly, Power Sector Restructuring in Ukraine (undated), at pp. 1-2, and 7-10.

## **2. Statute Versus Policy and Issues Not Addressed in Proposed Legislation**

Legislation (statute) to create a workably competitive electricity market has at least two major components. The first is the approach to drafting the law and the degree of specificity that is desired. Second is the market structure and the market mechanics – the mechanisms used to produce the desired result.

The difficult task in drafting electric industry legislation is to draw the proper line between statutory prescription and policy flexibility. The legislation must be crafted to properly define the principles, responsibilities, and authority of related entities in such a way as to create legal and policy certainty. At the same time, legislation must build in the necessary flexibility to allow for policy adjustments in the rules and protocols as market participants become more knowledgeable and as circumstances change.

Inherent in this, and possibly the most difficult part, is the choice of market structure and the market mechanics. Specifically, the choices in terms of the types of markets created, the extent of market unbundling, the method to create transparency, the terms of pricing, the market participants (who “plays”), the extent of competitive pressures, approach to market governance, and the roles and tasks for regulation. Each of these considerations must be assessed in terms of the maturity of market participants, the transaction costs that result, and the complexity and costs expected. Ultimately, competitive markets are desirable only if they attract market participants, especially investors, and produce economically efficient results. The two recent Ukraine legislative proposals seem, at least, deficient in what the Team understands as the necessary market mechanics.

The Team certainly believes that a comprehensive system of laws for electricity restructuring is needed and does not yet exist in Ukraine. The Major Contractor has provided some advice on proposed legislation, but has not defined in detail how the draft laws need to be altered to create the policy and market certainty that is necessary. Major Contractor’s work plan defines recommended implementing documents, including legal opinions on the Energomarket, transition plans, and NERC.<sup>92</sup>

This remainder of this section, we explain that a system of laws for energy policy is lacking and that a vision of the end-state for an energy policy framework is lacking. Both are problematic for Ukraine. Underlying these problems, the Team finds that basic knowledge about competitive energy market issues and options is lacking, both among USAID/donors and among Ukrainian counterparts. Without a basic understanding of competitive issues and options, it seems obvious that USAID and donors are unable to craft an energy policy framework, a vision for energy policy, or a preferred statutory mandate for Ukraine. We now explain the need for a system of laws to protect stakeholders, including general conditions for effective policy implementation.

### **a) A System of Laws to Protect Stakeholders – “How to” Without a Vision?**

The most difficult issue to address is the need for a legal framework to stabilize energy policy. Specifically, Ukraine needs laws that provide protections from executive discretion at the top levels (e.g., a Presidential Decree that totally changes past policy and property rights.) When stakeholders invest to serve customers at any level – generation, transmission, distribution, customers, or end-use

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<sup>92</sup> Ibid, at pg. 12.

demand – their basic rights need to be protected. The customer is supposed to be protected by NERC’s regulation, but NERC itself faces huge political pressure, especially from the Cabinet of Ministers.

In general, the Team finds that neither USAID and donors nor private investors have a vision of the desired energy policy framework. This is a fundamental problem. Without a vision of the desired end-state, including the laws to govern energy policy, the end- state cannot be conveyed to the GOU and its separate entities. If a vision and strategy are lacking, then dialog with the GOU to develop the necessary system of energy policy laws seems likely to be hit-or-miss and highly reactive to the statutory “flavor-of-the-month” which is served up in the Rada or through the Cabinet of Ministers. Reactions by USAID, donors, and potential investors seems likely to create greater animosity and discord, especially if GOU proposals are repeatedly rejected and criticized. A reactionary approach does not seem likely to create systematic learning between the GOU and stakeholders. The Team believes that USAID and donors can have a much more direct and effective role in energy policy formation if an energy vision, policy framework, and explicit strategy are fully developed.

### **b) A Guide to Conditions For Effective Policy Implementation**

The conditions for effective and stable energy policy implementation must be established in Ukraine. The policy implementation environment must be stabilized by a system of laws for at least the energy infrastructure. The question of whether Ukraine needs an entire revision in its system of laws is beyond the scope of this report. With respect to Ukraine’s energy situation, USAID has defined simple conditions in Chapter I, but has not followed up with a more detailed policy framework for the country.

The Team recommends that much greater attention be given to the conditions necessary for effective energy policy implementation. This suggests that USAID and donors direct greater effort toward development of an energy policy framework and the requisite specific conditions for Ukraine. That is, USAID and donors should work with Ukraine on general conditions for effective energy policy implementation - a policy framework - and then refine these conditions to address Ukraine’s specific circumstances.

What are basic conditions for effective policy development and implementation? The conditions for effective policy development and implementation are difficult to create, but a checklist is nevertheless useful to evaluate the situation in Ukraine. In the U.S., five generic conditions for effective policy implementation have been defined as follows<sup>93</sup>:

1. a policy framework based on sound technical theory that relates changes in target group behavior to achievement of the desired objectives,
2. a statute is required which contains unambiguous policy directives and structures the implementation process to maximize the likelihood that target groups will perform as desired,
3. the leaders of implementing agencies (e.g., NERC) must possess the necessary managerial and political skill and be committed to the statutory goals,

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<sup>93</sup> P. Sabatier, D. Mazmanian, *The Conditions for Effective Implementation: A Guide to accomplishing Policy Directives*, *Policy Analysis*, 1979 (Hereafter, *Policy Conditions*.); P. Sabatier, *Regulatory Policy-Making: Toward a Framework of Analysis*, *Natural Resources Journal*, July 1977, at pg. 415.

4. the policy framework is actively supported by organized constituency groups and by a few key executives or legislators throughout its implementation,
5. the relative priority of statutory objectives is not undermined by the emergence of conflicting public policies or changes in socioeconomic conditions.<sup>94</sup>

We recognize that Ukraine is quite different than the U.S. in its policy environment, but believe that the checklist provided above is still very useful.

The first step, before these five conditions are considered, is to reach an *agreement in principle* on the objectives of energy policy among (1) energy market participants, (2) private Ukrainian and strategic investors, and (3) the GOU. Any dialog on policy objectives in Ukraine has so far been incomplete, at best. The latest discussion around a new Energomarket Members Agreement has been stalled and remains dormant. We suggest that USAID and donors help jump-start a new dialog to fulfill this first step.

Given an agreement on objectives or an agreement in principle, a cursory assessment of the Ukraine situation suggests that these five conditions for policy implementation are unlikely to be satisfied. The first and second conditions are technical in nature, but the third, fourth, and fifth require political stability and socioeconomic stability. In the near term, Ukraine seems unlikely to provide an environment for the last three of these conditions, even if the first two conditions could be satisfied. This suggests we should use the five conditions as reference points but assume sub-optimal conditions.

To best fulfill the first condition, the policy (e.g., statute) must provide a direct causal linkage between the desired end-state and the target group compliance. If a valid technical linkage between target group behavior and policy objectives is problematic, then USAID and donors can assist statutory authors to make a conscious effort to incorporate a learning process and an open decision process to gain as much input as possible.

The second condition is one of unambiguous policy directives and a high priority level, which have been problematic for Ukraine, as evidenced by the two recent statutory proposals to reform the electricity market. A threshold level of funding and of expertise is required in order to provide an energy policy framework that creates workable competition and the conditions for effective privatization. The Team recommends that USAID and donors collaborate to ensure that financial resources and expertise are made available to conduct the technical analysis necessary to create unambiguous policy directives. Furthermore, the statutory directives must be accompanied by indications that full implementation of the energy policy framework is a very high priority.

With respect to the third and fourth conditions, strategies are available to address sub-optimal conditions. Regarding the fourth condition, if an energy policy *fixer* is not readily available, then USAID, donors, and private investors need to find or develop one. “Whatever this means, however, finding a [policy] ‘fixer’ is of paramount importance for effective implementation.”<sup>95</sup> If policy implementation cannot be performed by supportive entities, then USAID and donors need to enable intervention by stakeholders, periodic reporting to stakeholders and sovereigns, and evaluation studies by prestigious, independent outsiders. In addition, supportive interests (i.e., stakeholders)

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<sup>94</sup> The aim of this condition is to structure the statute, to the extent possible, to avoid undermining its technical basis and its political support.

<sup>95</sup> Policy Conditions, op sit, at pp. 305.

need to be identified and mobilized, so that necessary political and economic pressure can be applied as the energy policy matures. USAID and donors can advance such efforts by assisting with the creation of organizations, such as the newly formed Ukraine LEC organization. A generating association is also needed, as is a consumer association. These associations need to be staffed, have the necessary technical understanding of the energy market, and make policy monitoring and intervention a major responsibility.<sup>96</sup>

Regarding the fifth condition, Minenergo and others in the GOU, in essence, argue that the non-payments and cash-collections problems are socioeconomic problems that have undermined the basis for energomarket reforms. The counter-argument we suggest is that these problems be directly addressed in a new energy policy framework, including options to avoid the transit account if bilateral contracts are used around the pool. If viable the options are presented to directly address the non-payments and cash-collections problems, then competitive market restructuring can proceed if some of the other conditions previously discussed are met. Finally, the process of policy implementation must be accompanied by direct opportunities for policy feedback and evaluation. The Team recommends that USAID and donors provide the necessary resources to enable policy feedback and to perform sophisticated evaluation during the next two years.

### **c) Guidance on Laws for an Energy Policy Framework for the Electric Sector**

Ukraine needs a workably competitive wholesale electric market and workable competition in energy fuels, particularly coal, natural gas, and oil (mazut). The proposed legislation reviewed did not address most of the impediments to competition in the wholesale market. Many of these impediments are described further in subsequent chapters.

One of the most troublesome problems with the existing scheme and the legislative proposals is that neither generators nor loads face direct economic consequences when they under or over perform. The Team's guidance provides direct economic consequences, for example, if a load (LEC) purchases base-load power from a nuclear plant under a bilateral contract for differences, but in fact has loads which vary substantially as compared to plant output. Under the Team's approach, the load would be required to pay for its out-of-balance condition at the hour-ahead prices, which are expected to be significantly higher on average than the demand-tempered prices in the day-ahead market. This and other major issues are addressed in our recommended framework.

The Team recommends an energy policy framework in the form of a checklist of the necessary elements for Ukraine. These elements can serve as beginning points for further dialog. This guidance is consistent with a reference wholesale electric market, summarized in Chapter III. The elements of the checklist are in the recommendation section below.

Each of the elements of the Team's recommended statutory framework needs to be sanctioned in statute, based on clear statutory language, with a sound technical basis, per the discussion above on policy conditions. The necessary technical details regarding grid operations, market operations, and settlements should be resolved through stakeholder discussions and be memorialized as protocols. The detailed grid operations requirements that are necessary to ensure electric system reliability and power quality should be determined in a stakeholder process administered by the IGO and memorialized as operating rules. The detailed bidding, settlements, and accounting procedures need to be determined in a stakeholder process administered by the IEA.

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<sup>96</sup> See, Policy Conditions, [op sit](#), at pp. 304-05, which explains steps that can be taken under sub-optimal conditions.

### **3. Does USAID Need to Take a More Pro-active Role in Electric Sector Policy?**

The obvious question, which the Team raised during the evaluation, is whether USAID needs to pursue a more pro-active role in offering Technical Assistance in Ukraine. To this we answer, simply, yes. To be more pro-active, a strategic course must be charted and a vision of the desired end-state is needed, based on the options for electric reform and restructuring. This requires expertise in electric market issues and options. To reiterate, this also requires the development of a vision for the future electric industry in Ukraine. Hence, the question, does USAID have access to such expertise now in Ukraine? If not, can it acquire such expertise and develop this vision?

Regarding the recent EMA activity, the Major Contractor has been deeply involved in meetings where now there are five different wholesale market models being discussed, mostly with different relationships between generators and distribution companies. Although the Major Contractor has views about the legal issues, such as the need for more detailed protocols, it presented little or no opinion on the options for market structure, except to say “bilateral contracts will not work better without privatization.”<sup>97</sup> The Team is unable to discern why market structure options were not analyzed, why bilateral contracts are considered to be without value absent privatization, or why the Major Contractor participated with such commitment but without a strategy or plan to support one or more of the market structure proposals. The Teams conclusion is that the Major Contractor does not have resident expertise in competitive electric market structure issues and options. This was confirmed in discussions with the Major Contractor.

#### **C. Recommendations for Regulatory and Legal Reform**

##### **1. Recommendations on the Regulatory Environment**

- NERC and other energy stakeholders need additional education and training on the issues and options used in other countries (and states) with respect to performance-based (incentive) regulation, *light-handed* regulation, and market oversight.
- Ukraine’s regulatory status is uncertain and subject to political manipulation, which requires that it be reformed to enable NERC to be an objective, autonomous regulatory body with appropriate responsibilities.
- Minenergy’s interventionist roles over LECs and generators should be eliminated.
- The conditions for workable competition in wholesale electricity and in generator fuels should be established as soon as possible.
- Establish an Independent Energy Accountant, with clear autonomy and statutory authority, to perform grid scheduling, administer bidding, and to resolve settlements, including balancing costs (for over and under scheduling of load and generation).

##### **2. Recommendations on Ukraine Legislation and Market Structure**

The Team’s recommendations, in a checklist of elements for a Ukraine statute:

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<sup>97</sup> Wholesale Proposal, op sit, at pg. 6

- Sanction a single, independent entity to perform grid operation – an Independent Grid Operator (IGO) - based on a clear statutory mandate that makes governance of the new grid operation entity a function of an independent stakeholder board.<sup>98</sup>
- A pool-based day-ahead electricity market that relies upon generator discretion to submit bids based on short-run marginal costs (SRMC), allowing bids to represent one to four price/quantity (p/q) pairs for each hour of the bid schedule submitted.
- Simplification of generator bids to allow start-up and no-load costs to be added in with SRMC so that single bid points (p/q) can be submitted for each hour.<sup>99</sup>
- Allow loads (LECs and large customers) to forecast their own requirements and to submit schedules that represent customer willingness-to-pay, based on one to six price/quantity (p/q) pairs for each hour of the bid schedule submitted.
- Simply allow the submitted generation bids and the submitted load bids to determine the hourly market clearing prices (MCPs) in the day-ahead electricity market.<sup>100</sup>
- An hour-ahead balancing market that derives MCPs from generator SRMC bids.
- Bid-based ancillary services markets for operating reserves and frequency control.<sup>101</sup>
- Explicit requirements that all loads must purchase 15 percent operating reserves (spinning reserves of 7.5% and non-spinning reserves of 7.5%) and pay for frequency control on a pro-rate bases (as a percentage of load).
- Expressly allow for bilateral contracts for differences around the pool, but only if gross load and gross generation are metered (following metering standards). The Team is aware that some within USAID prefer to allow bilateral contracts beginning with companies privatized to strategic investors. The Team believes USAID’s reasons include concerns of an affiliate nature. In other words, concerns that public entities which are, in essence, affiliates of each other via state ownership of the majority of shares, may not negotiate fully arms length agreements.
- Authorize an Independent Energy Accountant (IEA) to administer settlements, the bidding process, and the submission of scheduled loads.<sup>102</sup> (This would eliminate the current transit account and some of the Energomarket Board and NDC functions.)
- Allow LECs to enter into bilateral contracts if they have meters, and pay the appropriate wholesale power fees (transmission, “up-lift,” balancing costs, and administration, including the grid operator and the IEA).

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<sup>98</sup> The GOU, including Minenergo, would be allowed to have only a minority role as a voting member on the stakeholder board.

<sup>99</sup> After much dialog, California resolved to adopt this approach and, upon reflection, it seems to have been a decision with very little compromise in economic efficiency, for the benefit it provided in simplification.

<sup>100</sup> This is known as double auction and has very significant economic efficiency properties. See, R. Wilson, *Exchange, Allocation, Information, and Markets*, The New Palgrave, Macmillan Press, 1987, at pg. 89. Without these efficiency and market power mitigation properties, a Ukraine or UK type of generator-only bidding scheme is likely to allow for major market power abuse. See, E. Woychik, *California’s Schedule Coordinator: Market Maker With Advantage?*, *Public Utilities Fortnightly*, 15 January 1997

<sup>101</sup> Simple rules can be developed to require a certain percentage of bids, in terms of capacity, to meet the required ancillary services requirements (i.e., *bid sufficiency*). *Bid sufficiency* can then be used, possibly with an automatic trigger if bid sufficiency is less than 100% of the ancillary service required, to impose a price-cap if needed to mitigate market power. See discussion in F. Wolak, R. Nordhouse, C. Shapiro, *Report on Redesign of Markets for Ancillary /services and Real-Time Energy*, Market Surveillance Committee of the California Independent System Operator, 25 March 1999, at pp. 7-12.

<sup>102</sup> The IEA should have no connection to the GOU, but it seems appropriate that it be monitored and audited by an entity like NERC. Ottetail Power has pioneered this conceptual approach, including its extension to retail access (choice). *Implementing Customer Choice*, Ottetail Power Company, 10 May 1998.

- Allow generators to enter into bilateral contracts if they have meters, pay for meter data-processing (to the IEA), and pay the appropriate wholesale power fees (transmission, “up-lift,” balancing costs, and administration, including the grid operator and the IEA).
- Implement over time high-voltage meters at transmission interties, at generators and at interfaces between transmission (high voltage) and LECs (lower voltage).
- Allow generators and LECs outside Ukraine sell or purchase power, subject to bidding/scheduling requirements of the grid operator and settlements of the IEA.
- Allow generator purchase of fuel at competitive prices within or outside Ukraine.
- Implement gas pipeline capacity bidding to create market prices on GOU-owned pipelines, and allow generators to purchase gas capacity on that basis.<sup>103</sup>
- Require unbundling of wholesale and retail rates and remove regulatory authority to set wholesale rates absent a clear showing of market power abuse.
- Prohibit GOU intervention in the allocation and pricing of coal, natural gas, or oil.<sup>104</sup>
- Allow private entities to own controlling interest (51% or more) in LECs or generating plants.
- Limit country-wide ownership by any single or joint entity, to no more than 20 percent of the market share of Ukraine’s LECs or generating companies.<sup>105</sup> This should be reviewed if Ukraine is able to expand its market regionally and into other countries.

Finally, the Team recommends that USAID and donors take a more pro-active role with Technical Assistance to advance independent regulation to foster workable competition.

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<sup>103</sup> This would require competitive market reform on Ukraine’s gas pipelines, reform of gas transportation contracts (over time), and provide for a rational system to optimize the use of gas pipeline capacity. Known as gas capacity bidding (GCB), it is simple to implement, but requires some amount of metering, especially at constraint points.

<sup>104</sup> This seems likely to require privatization of the Ukraine production and brokering functions in gas, coal, and oil.

<sup>105</sup> This will control potential market power abuse and reduce the need for regulation or GOU intervention.

## **VI. INTERVENTION AND INSTITUTION BUILDING PROGRAMS**

A major task of the Team was to evaluate USAID's energy sector technical assistance since mid-1994, which includes training (IIE), partnership programs (USEA), and advisory assistance (Hagler Bailly). In this Chapter, we will address these three topics in turn, but first we present the Team's views on the value of training and the difficulties of quantifying the benefits of education.

### **A. Education and Training as Program Achievements**

#### **1. The Value of Training as Education**

USAID has invested in many forms of training in the energy sector of Ukraine. It has established formal programs through the United States Energy Association (USEA), to provide partnerships between Ukraine entities and companies in the United States, and the Institute of International Education (IIE) to provide the Ukraine Energy Sector MBA and Training Programs. In addition, USAID has sponsored numerous training seminars.

At present, USAID is planning its strategy to support education and training during the next two years. An objective of this report is to evaluate this training, in order to provide guidance to USAID in making its decisions. In judging the efficacy of training, several points should be borne in mind. Although these points appear obvious, they are too often overlooked. Instead, conventional financial standards of profitability are applied to programs that increase investment in human capital. The conventional financial analysis is inappropriate for a number of reasons, including the following:

- The result of education and training (i.e., knowledge) is intangible.
- The payback to education and training occurs over the long run, i.e., the costs represent capital investment.
- The market for this capital is highly imperfect, i.e., it is usually difficult, if not impossible, to quantify the "value added" by a year of education or by a training seminar.

As a corollary to these remarks, it should be noted that the value of the same knowledge might vary, depending upon whether the knowledge is embodied in a consultant or in an employee.<sup>106</sup>

#### **2. Investment in Education and Training Should Be Viewed As Capital**

Many forms of expenditure have results that are quickly evident and straightforward to measure. The value of training, however, is often elusive. Simple forms of training, such as instruction in a new piece of computer software, show immediate results: the student is able to use the software. More complex training, however, shows its full value only over the long run. For example, if people decided whether to attend college on the basis of their expected increase in income during the first six months after graduation, few people, if any, would attend. The additional income of a graduate during her first six months out of college, less the costs of attending college, is unlikely to exceed the income of a high school graduate during the first four-and-a-half years out of high school. (Indeed,

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<sup>106</sup> The question of outside advisers has been discussed earlier, in the chapter on Privatization; the team's support of training and education in no way conflicts with our endorsement of outside advisers. The two are completely consistent. Any substitutability implicit in the present discussion would be between training employees in the electric power sector to apply Western standards in the conduct of their business and to be decision-makers, versus engaging consultants to carry out similar activities.

the college graduate's net income over that period – six months' income less four years' tuition and other expenses – may well be negative.) Nonetheless, many people regard college as an important preparation for their lifelong work. This is so because the returns on their education will, they believe, accrue over the long term. Their education is an investment in their human, intellectual capital.

It is relatively recently that many companies and other organizations have recognized the importance of knowledge, intellectual capital, and related intangible assets. Skandia, a Swedish-based financial company, was one of the first companies, in 1991, to develop formal processes for measuring knowledge. Dow Chemical, General Motors, British Petroleum, Steelcase (manufacturers of office furniture), and numerous other firms have implemented programs to manage, measure, and leverage their intellectual capital. The World Bank is engaged in a bank wide program, initiated by President James Wolfensohn, to capture and leverage its knowledge for the benefit of its own staff and for the outside community.

However, these subjects have been in the literature for decades. An article entitled, "Measuring the Intangible in Productivity," in *Technology Review* in February/March 1983, acknowledges that, "[a]n organization's productivity cannot always be measured simply in terms of widgets per labor-hour. Analysts must account for subjective factors ranging from managerial effectiveness to customer satisfaction."<sup>107</sup>

### 3. Intellectual Capital Is Difficult To Measure

It is widely understood that intellectual capital is difficult to identify precisely or to measure. Economists first took up the question. One of the earliest was Kenneth Arrow, who wrote the paper, "Learning by Doing"<sup>108</sup>, in which in which he addressed the phenomenon that the marginal cost of labor for an activity decreases as one repeats the activity. Fritz Machlup also wrote numerous papers and books on the subject. One of the most relevant, "Uses, Value, and Benefits of Knowledge"<sup>109</sup>, expounds many of the difficulties associated with this effort:

*[F]rom the point of view of national income analysis, production may be for the purposes of consumption (in the near future), investment (leading to rewards in a distant future), or further production (using the intermediate product). This division holds for practical knowledge: its acquisition may be in the nature of consumption, investment, or current production cost; but it will be sought as a basis for action. ... Expenditures for practical knowledge serving business management are current cost of production if it is incurred only for the current year's output (like a short-term analysis of the market for raw materials); it is business investment if it is expected to be of lasting usefulness (like an advance in technology, perhaps a patented invention, or some secret technical know-how). In all these cases, the values of knowledge to be acquired are based on anticipations; ex post surprises (pleasant or*

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<sup>107</sup> Michael B. Packer, "Measuring the Intangible in Productivity", *Technology Review*, February/March 1983, pages 48-57.

<sup>108</sup> Kenneth Arrow, "The Economic Implications of Learning by Doing", *Review of Economic Studies*, Vol. 28, 1962, pp. 155-173.

<sup>109</sup> Fritz Machlup, "Uses, Value, and Benefits of Knowledge", "Knowledge, Creation, Diffusion, Utilization", September 1979, reprinted with light editing in "Knowledge, Creation, Diffusion, Utilization", Vol. 14 No. 4, June 1993, 448-466.

*disappointing), do not count, except as experiences from which one can learn and improve one's judgment regarding future valuations of practical knowledge.<sup>110</sup>*

Despite the futility of attempting to quantify its value precisely, Machlup affirms that the positive benefits of investing in intellectual capital may be quite evident:

*Lest there be a misunderstanding, I should say that an analysis of the most probable directions of change in resource allocation and income distribution induced by a public measure – subsidy, regulation, investment, and the like – does not presuppose any measurements of total benefits. It is therefore no contradiction if I first denied the possibility of measuring the total gross or net benefits due to an entire program introduced by the government, and then discussed marginal effects of relatively small changes of some parameters of a program. Even these marginal effects rarely can be measured or estimated with any degree of accuracy, but the directions of induced changes often can be indicated, with a reasonably good chance of being right, with regard to both resource allocation and income distribution.<sup>111</sup>*

As a practical matter, parties interested in evaluating intangible assets can devise estimations that are satisfactory for decision-making. For example, the field of human resource accounting dates to at least 1967<sup>112</sup>, although the more modern forms, entailing decision-making applications, dates from about 1972.

In 1996, the Finnish Ministry of Labour and the Organisation for Economic Co-Operation and Development (OECD), co-hosted a National Experts Seminar entitled, “Human Resource Accounting in Enterprises: Recent Practices and New Developments,” in Helsinki on March 19-20. For two days, experts from industry, government, and academia presented talks on topics related to the measurement of human capital and the value of investment in human resources.<sup>113</sup> The speakers were unanimous, not only about the importance of accounting for human resources but, even more, about the importance of developing human resources. Human resource accounting is merely a means of making visible the value of investment in human capital:

*Determining the benefit of training for a company is a further central problem area of the study. By the benefit of training for a company, we do not mean the earnings produced by trainees as the result of their productive achievements during their training. The benefit for the company stands rather for the advantages obtained by a company after training by virtue of the fact that it has provided such training, and in comparison with a situation in which it would not have provided training or in comparison with another company that generally provides no training whatever.<sup>114</sup>*

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<sup>110</sup> *id.*, page 453

<sup>111</sup> *id.*, page 464

<sup>112</sup> Sonja A. Sackmann, Eric Flamholtz, and Maria Lombardi Bullen, “Human Resource Accounting: A State-of-the-Art Review”, *Journal of Accounting Literature*, Vol. 8, 1989, pages 235-264.

<sup>113</sup> See, in particular, Ulf Johanson, “Human Resource Costing and Accounting in the Enterprise: Addressing the Problem at its Roots,” Working paper presented at “Human Resource Accounting in Enterprises: Recent Practices and New Developments,” National Experts Seminar co-hosted by the Finnish Ministry of Labour and the Organisation for Economic Co-Operation and Development (OECD), Helsinki, March 19-20, 1996.

<sup>114</sup> Richard von Bardeleben, Cost and benefit of in-house professional and vocational training,” Working paper presented at “Human Resource Accounting in Enterprises: Recent Practices and New Developments,” National

Fairly recently, the press has come to recognize the importance of intellectual capital in the total value of a company or other institution. The Financial Times published an article, “Return on investment is difficult to quantify”, on Wednesday April 28, 1999. The subtitle reads: “The measurement of the value of intellectual capital or knowledge may be one of the key factors for business success in the next century.”

In this report, the Team hopes to assist USAID in determining whether and how to deploy its funding for training and educational programs, based upon a sound assessment of costs and benefits. This is despite the fact that most of the benefits will accrue in the future and precise quantification is not possible.

#### 4. Limitations on Use of Ideas

The economist Paul Romer developed the economics of ideas in a seminal paper written for the World Bank.<sup>115</sup> He sets out the purpose of the paper thus:

*All too often, economists concerned with the economy as a whole have been willing to treat the economics of ideas as a footnote to the rest of economic analysis – important for understanding some of the details but not something that changes how we think about big policy questions. A neoclassical model with perfect competition and exogenous technological change continues to frame many, if not most, policy discussions of growth and development. Ideas are routinely ignored.<sup>116</sup>*

Romer distinguishes between using ideas and producing ideas as strategies for economic development. Through detailed comparisons between development in Mauritius and Taiwan, he shows that using ideas may be a valuable stage in development. However, for fuller economic growth and independence, a country should be producing and using its own ideas:

*Most economists would acknowledge that kinds of intervention to support the production of ideas are appropriate. Few would challenge the assertion that governments should subsidize education and some forms of research. If one follows the logic of the economics of ideas, one sees that there is no basis in economic theory (as opposed to political theory) for restricting government intervention to support for education and research.<sup>117</sup>*

...

*A poor island whose prospects for development once seemed very bleak, Mauritius successfully exploited a development strategy that consisted almost entirely of trying to make use of ideas that already existed in industrial countries by encouraging foreigners to produce there. ... Taiwan pursued the second strategy describe in the title – producing ideas – and intervention by the government seems to have contributed to the strategy’s success.<sup>118</sup>*

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Experts Seminar co-hosted by the Finnish Ministry of Labour and the Organisation for Economic Co-Operation and Development (OECD), Helsinki, March 19-20, 1996.

<sup>115</sup> Paul Romer, “Two Strategies for Economic Development: Using Ideas and Producing Ideas”, Proceedings of the World Bank Conference on Development Economics 1992.

This paper is followed by Comments by Kaushik Basu, Marcelo Selowsky, and T.N. Srinivasen, and by a Floor Discussion.

<sup>116</sup> Id., page 63.

<sup>117</sup> Id., page 65.

<sup>118</sup> Id., page 65.

...

*Authorities in Taiwan (China) used a wide variety of approaches to encourage the use of ideas there, with the explicit intention of shifting to the domestic control and production of ideas.*<sup>119</sup>

USAID and other donors provide technical assistance to Ukraine by sending consultants and advisers. The IIE and USEA programs produce experts from present employees in the electric power sector. These employees will make Ukraine less dependent on foreign expertise.

### **5. Ukrainian Officials Recognize the Importance Of Developing Their Own Intellectual Capital**

At the highest levels, Ukrainian officials recognize the importance of educating their own professionals to operate and administer the electric power sector. Then-Minister of Energy, Alexei Sheberstov, in videotape of a ceremony for the MBA graduates extols the MBA Program. He says that it is one of the most valuable programs in Ukraine. It brings about personal change in the energy professionals, to orient them toward a market economy. Technical assistance goes away, he says, but the MBA stays here.

Mr. Yuriy Sakva, Deputy Minister of Energy, who is a graduate of the first MBA Program, is an advocate of it. In an interview<sup>120</sup>, he said that his highest priority among all USAID support was their investment in human resources. “The MBA Program is one of the most successful in Ukraine. I was in it and I can evaluate how much it expanded my professional capabilities and my knowledge. But for the energy system to work, we need a critical mass of people. We have produced about 90 MBAs. Psychologists say that 120 is the critical mass – with 120 people, you can make anything happen.”

### **6. Avoid Abandoning Investment In Human Capital**

Finally, in evaluating the effectiveness of its training and educational programs, USAID must not only consider the costs and benefits of future courses and seminars; it must also consider the economic and social impact of discontinuing existing programs.

This was addressed at an OECD conference:

*[I]t would be fatal for a company that has provided training up to now to abandon it because of the cost. The company would signal towards the inside, i.e. to its own employees, that it is in the process of economic decline and, towards the outside, i.e. to its customers, it would signal that it no longer has any trust in the future. From the company economics point of view, a company that neglects training of its young employees for cost reasons is also acting extremely carelessly because it creates cost disadvantages in the medium and long-term that should not be underestimated.*<sup>121</sup>

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<sup>119</sup> Id., page 82.

<sup>120</sup> May 5, 1999, at Minenergo. Attended by USAID, USAID Evaluation Team, and other representatives of Minenergo.

<sup>121</sup> Von Bardeleben, op. Cit.

## **7. Conclusion and General Recommendation**

The Team supports education and training in the electric power sector in Ukraine. As discussed in detail in the following sections, the Team urges USAID to consider how to improve the current programs, rather than whether or not to continue them.

### **B. USEA: Energy Industry Partnership Programs (EIPP)**

#### **1. Background**

In 1992, USAID entered into a cooperative agreement with the U.S. Energy Association (USEA) to determine the scope of the U.S. Government assistance in the energy sector of the Newly-Independent States (NIS) of the former Soviet Union. To administer this task, USEA and USAID jointly developed the Energy Industry Partnership Program (EIPP) for NIS. The objective of EIPP is to establish long-term cooperative relationship between the U.S. and NIS energy enterprises that provide a mechanism for the U.S. energy industry to transfer its experience in the market-based energy production, transmission and distribution to its counterparts in NIS. Presently, EIPP has established 15 U.S./NIS industry partnerships in seven of 11 NIS countries.

On December 10, 1993, Kieveno and Power & Light Co., (PP&L) of Allentown, PA., decided to sign a contract for the first EIPP in Ukraine under the guidance of USEA which received technical assistance funding from USAID. This started with an Executive Exchange Program. Since then, 21 activities have been organized under this Partnership Program. Kieveno has benefited greatly from the Partnership program. The company management informed the mission that they have been able to solve operational and maintenance problems by introducing the practices they observed at PP&L. They have introduced better labor safety and fire protection practices, and have improved their systems of planning, accounting, project management, procurement, customer service, and debt collection. Further, the management noted that the Program prepared them for initiating efficient implementation of the Kiev District Heating Improvement Project in 1999 with a \$200 million loan from the World Bank.

Even though the impact of the Program has been very significant on Kieveno, the Team feels that the twinning arrangement between Kieveno and PP&L could have been more effective if it was strengthened by bringing in a U.S. company with specialization in power distribution and transmission. PP&L is a generating company while Kieveno is a generating company, a distribution company, and a district heating company.

#### **2. Status of Partnership Program**

Under the Partnership Program, twinning arrangements are made between Ukrainian and U.S. companies including executive exchange visits, advisory missions, internships and seminars. The main focus of the participant program has been to expose selected Ukrainian executives to the systems and practices in U.S. private companies with respect to the following main fields: (1) utility management; (2) utility financing; (3) accounting and financial management; (4) information systems; (5) corporate governance and organization; (6) district heat management; (7) procurement management; (8) project management; (9) metering, billing and collections; and (10) operational safety. There was also some focus on rate setting and tariffs, corporate budgeting, marketing, strategic planning, human resource development, planning process, load forecasting, customer service, regulatory process, contract process and investor relations, in the management seminars

organized in Ukraine with the participation of the participating U.S. companies in the program. Seminars and workshops have been organized by the beneficiary companies in Ukraine, upon the return of employees from foreign study tours. The effect of these seminars is to transmit to other employees what was learned during their trip abroad under the Partnership Program.

One power generating company ( Dneproenergo) and three local power distribution companies (Kievenoenergo, Lvivoblenenergo, and Crimenergo) were the main beneficiaries in the Partnership Program. Each of these companies had a tie-up with a U. S. utility. For example, Dneproenergo had a twinning arrangement with Kentucky Utilities, Kievenoenergo, as noted, with Pennsylvania Power & Light Co; Crimenergo, with Otter Tail Power Co., of Fergus Falls, Minn.; and Lvivobloenergo, also with Otter Tail Power Co.

In addition to Kievenoenergo, the Team visited Lvivoblenenergo, a major power distribution company that has been privatized following its participation in the Partnership Program. The company management informed the Team that the training their employees received under EIRP was very useful in exposing them to the utility operation and business practices, and providing them opportunities for site visits to energy facilities and discussions on matters of mutual interest.

Twinning opportunities between Ukrainian and foreign companies were provided at no cost to the Ukrainian beneficiaries, with USAID meeting the cost of the program using the services of USEA to organize the Partnership Program. The USEA in consultation with the local beneficiary companies selected the U. S. utility companies interested in the program and teamed each of the Ukrainian company with a U. S. company. These U.S. companies did not charge for their services, with USAID funds being used only to meet their cost of travel, inland transportation and board and lodging. By following this approach USEA was able to organize the program at low cost. The total cost of the program over the last five and half years was \$3.2 million.

In spite of operating with a very modest budget, this program has helped both the Ukrainian and U. S. companies. This is reflected in the statement of Mr. Bob Hewett, a top executive of Kentucky Utilities Co. when his company signed in 1996 a contract with Dneproenergo under the program: “This partnership benefits both companies. Our Ukrainian colleagues will gain an understanding of U. S. business practices, which will help them during their transition to a free-market economy, and our staff will be exposed to international opportunities.”

### **3. Interest in Expanded Program**

During the Team’s visit, the members found that the program was modest, covering only four of more than 30 major power sector enterprises, but it had met its objectives with outstanding success. As a result, there is increased interest in the continuation of EIPP in an expanded form. The Team fully endorses this approach. USAID needs to expand the program to include more Ukrainian companies ( i.e., generating and distribution companies as well as the transmission company (the National Dispatch Center which controls the national grid), and cover more areas of interest such as corporate management, utility financing, plant management, cost analysis and decision making, inventory control, reducing technical and commercial losses of power, rate setting and regulation, employee compensation and incentive programs, energy conservation, pollution control, frequency control for power export, and investor relations for privatization. Further, the Team suggests that more attention needs to be given to have twinning arrangements between appropriate U. S. and Ukrainian companies.

#### **4. Need to Cover Other Selected Power Sector Alliance**

The Partnership Program started on a modest scale and only five out of more than 30 power sector enterprises were included. In September 1998, USAID decided to extend the USEA contract for the Partnership Program until the year 2000. In early 1999, USEA has decided to extend the Program to two additional entities (NERC and Centerenergo) as described below. However, the coverage of the Program is limited. In the light of the outstanding success of the Program in bringing about changes in business practices resulting in improved efficiency, the Team recommends that the Program be extended. Specifically, partnerships should be provided to the remaining generating companies – Zakhidenergo and Donbassenergo, while deepening the involvement in Kievdenergo and Lvivoblenergo to make them models for other distribution companies. In particular, these two LECS should be models to introduce modern accounting and financial management systems and their integration using information systems.

#### **5. Proposed Tie-up Between NERC and U.S. Company**

Further, USEA has recently arranged a twinning arrangement between the National Energy Regulatory Commission (NERC) of Ukraine and Ohio Public Utilities Commission (OPUC). NERC is involved in both the regulation of the wholesale electricity market and the retail electricity market while OPUC is dealing with only the retail market in Ohio. Therefore, NERC could benefit more if an organization like Federal Electricity Regulatory Commission (FERC) which deals with the wholesale electricity market in the U. S., could also be brought into the twinning arrangement between NERC and OPUC.

#### **6. Proposed Activity with Centerenergo**

The proposed twinning arrangement for Centerenergo needs to be clearly defined with respect to the role of EU Tacis and USAID. The Team was informed by Centerenergo management that they are working with British Energy and would like to continue with the participation of this company. If that is the case, it has to be clearly defined what British Energy would do and how much funds are available to fund their work from sources other than USAID. Once this is done, USEA can clearly focus on the activities in which USAID financing is required. It is necessary to avoid duplication in working with two donors.

#### **7. Twinning Arrangement for NDC**

As noted, the National Development Company (NDC) is the state-owned transmission company which is in charge of the national power grid. The Government has decided to continue NDC as one company fully owned by the state. The operation of this monopoly has to be improved with technical assistance from abroad. The Team suggests that USEA and USAID consider using a twinning arrangement between NDC and ISO, of California, for example. This could have a significant impact on improving the operation of NDC. Further, there is also an urgent need to introduce international accounting standards and management information systems at the National Dispatch Center. We recommend that this task be included under the twinning arrangement.

#### **8. Need for Orientation Visits to Review Privatization**

Further, USEA needs to give more attention to organizing orientation visits to selected countries in Europe where rapid progress is made in privatizing power sector enterprises such as Poland and

Britain. Such an orientation visit was organized by USEA in 1996 to Hungary to learn from the Electric Utility Privatization there. Representatives from Dneproenergo, Centerenergo, Zakhidenergo and Donbassenergo participated in that event. The Team feels that such orientation visits to Poland and the U.K. could be timely for generating and distribution companies as they are scheduled for privatization.

### **9. Twinning Arrangements Between Educational Institutions**

Moreover, USEA could play a role in arranging twinning arrangements between an Ukrainian and a U.S. university to offer courses in Ukraine in corporate management, corporate finance, accounting, financial management, information systems, regulatory economics, managerial economics, human resource development, project planning and implementation. These courses could benefit greatly the energy as well as other sectors of the economy. This approach could be effective in providing training in Ukraine in areas where there is a need to be more focused in the interest of institution building for achieving faster transition to a market economy. This activity could also help private investors to get locally trained personnel to run companies that are scheduled for privatization.

### **10. Focus More on Accounting, Financial Management and Information Systems**

The Team also wants to emphasize that the work USEA has been doing to strengthen accounting, financial management, and information systems needs review in the light of the following finding of the Team during the visit to Ukraine.

Under the Partnership Program, accounting and financial management internships and information systems internships were emphasized. Selected persons from power distribution companies such as Lvivoblenergo and Crimeaenergo were sent to their partnership company in the U.S., Otter Tail Power Co., Fergus Falls, Minn., to visit its departments dealing with accounting and financial management systems and their integration with information systems. These systems being key for the market-based operation of power sector enterprises, efforts were made by Lvivoblenergo to organize a national seminar with the participation of OTP to discuss and identify which systems (as managed by OTP) could be implemented in their operations, to discuss plans for future activities, and to help apply the systems for operating a private company when privatized. At this seminar, discussions took place on the above matters after selected persons from Lvivoblenergo who had returned from their visit to the U. S. shared their information with their fellow employees. Additionally, representatives of OTC made presentations on accounting and financial management and the use of information systems. Some employees of Crimeaenergo also attended the Seminar. In spite of this Seminar, it is rather disappointing that modern accounting and financial management systems were not introduced at Lvivoblenergo., a distribution company which has been now privatized. During the Team's field visit, we learned from Lvivoblenergo that it is not yet using internationally accepted accounting standards (IAS). It appears that there was no effective use of learning from information received in accounting and financial management under the USAID participant program. In the future, USEA and USAID should follow-up on the effective use of learning and information under the participant training program by stipulating that the beneficiary company should submit a report within a year on how it has made practical use of the training received under the program.

## **11. Importance of Modern Accounting and Information Systems**

As a part of the market reform, the GOU is conducting privatization of the power sector enterprises. Most of the power sector assets in Ukraine are 40-50 years old. Due to problems with payment collection in recent years, Ukraine's power sector enterprises had neither sufficient resources to provide adequate maintenance of the existing facilities. Inefficient facilities have led to a decrease in the reliability of the power supply in Ukraine. In addition, Ukraine remains dependent upon imports of natural gas and oil from Russia and other former Soviet republics, which it buys at world market prices.

The major reason for focusing on the power sector for privatization is to attract new investments and to put the power sector into private hands with the associated advantages of improved management, competition, and incentives for the use of energy-efficient technologies. Part of the privatization process will be the evaluation of facilities and investor due diligence, which necessitates the move to a Western accounting system, understood by foreign investors and lenders. This clear and transparent accounting system is one of the major conditions for attracting private investors. It will also facilitate the processing by Western lending institutions of Ukrainian power companies' loan applications. In addition, a new accounts system with elements such as balance sheets and income statements will provide the company's management with a clear understanding of the company's financial situation.

As noted, raising funds for capital projects is one of the critical problems facing every power company in Ukraine. The company managers need to learn methods of raising capital for new investments and capital improvements, methods of financial planning, issues of optimum financial structure, managing debt, and shareholder relations. To facilitate this, there is an urgent need to introduce international accounting standards and integrate the accounting and financial management with modern information systems. The use of information technology and information systems is also becoming increasingly important in areas such as collection of payments, metering and billing processes, accounting and customer services.

The Team fully endorses this approach and USAID needs to expand the program to include more Ukrainian companies and cover more areas of interest such as corporate management, utility financing, plant management, cost analysis and decision making, inventory control, reducing technical and commercial losses of power, rate setting and regulation, employee compensation and incentive programs, energy conservation, pollution control, frequency control for power export, and investor relations for privatization. Further, the Team suggests that more attention needs to be given to have twinning arrangements between appropriate U.S. and Ukrainian companies.

## **12. Specific Recommendations for the Partnership Program**

Considering the outstanding success of the Partnership Program, the Team recommends that this Program be expanded to include two remaining generating companies (Zakhidenergo and Donbassenergo), the National Dispatch Center (NDC). As for the distribution companies, three have benefited from the program and efforts should be made to deepen the program in these companies so that they could become models for other distribution companies. In this context, particular attention needs to be given to completing the task of introducing international accounting standards (IAS) at Lvivoblenergo, a leading distribution company which was a beneficiary of the Program in the past and which has been recently privatized. Such a task needs to be completed on a priority basis at Kievenergo so that the system of modern accounting integrated with the management information

system becomes a model for other generating companies. The software developed for computerized modern accounting and management information systems for Lvivoblenergo and Kievenergo need to be made available to other power sector enterprises. Further, there is an urgent need to introduce international accounting standards at NDC. The Team recommends that this task be included in a twinning arrangement with an ISO in the U.S. to be organized by USEA. In addition, the Team recommends the following:

- A twinning arrangement between an Ukrainian educational institution and a U.S. educational institution focusing on course development and training urgently needed for a successful transition to a market economy. These courses could include: Market Economy, Financial Accounting, Management Accounting, Financial Management, Corporate Planning and Budgeting, Cost Analysis and Decision Making, Project Planning and Management, Regulatory Economics, etc.
- Orientation Visits on Electric Utility Privatization needs to be arranged under the Partnership Program to some European countries which have made fast progress in privatization such as Poland and the U. K.. (One such orientation visit was arranged to Hungary in 1996). These visits could be very useful for key Ukrainian personnel involved in privatization. They could learn lessons from the experience of selected European countries.
- The recently approved Partnership Program between NERC and the Public Utilities Commission of Ohio (PUCO) needs to be reviewed. The Team feels that PUCO has expertise in regulating the retail power market, not in regulating the wholesale electricity market. Therefore, it is necessary to find out whether the proposed Partnership Program needs to be strengthened with the involvement of an American regulatory commission like the Federal Energy Regulatory Commission (FERC) with expertise in regulating the wholesale market.
- The recently approved Partnership Program between Centerenergo and PP&L also needs review as British Energy has been working with Centerenergo under the EU TACIS technical assistance program. Even though the EU TACIS technical assistance funds have run out, Centerenergo wants British Energy to continue its involvement. If that is the case, the scope of work for British Energy and PP&L has to be clearly defined so that there is no duplication.

### **C. Institute of International Education (IIE)**

#### **1. Focus Of IIE Training**

USAID is supporting the transformation of the electric sector of Ukraine into a transparent, market-based, regulated system as part of its strategic objective SO 1.5, establishing a more economically sustainable and environmentally sound energy sector. Intermediate goals are to establish a competitive, financially sustainable power delivery sector by creating commercially viable independent generating companies and commercially viable local electric supply companies. The Energy MBA Program and the training support to Minenergo's Management Training unit serve to meet the long-term aims of this strategic objective by educating mid-level managers from the commercial units generating and distributing electricity, as well as from the Energomarket transactions unit and the regulatory agency.

## 2. Scope of IIE Training<sup>122</sup>

The Institute of International Education (IIE) is under contract with USAID to provide training to the electric power sector of Ukraine. IIE has been providing short-term training courses since 1994. In 1996, Minenergo established a Sectoral Coordination Center on Personnel and Staff Procurement (the Center) for the energy sector. In September 1996, Minenergo and USAID signed an agreement whereby USAID would assist the Center in the development and implementation of management training through a Management Training Unit. The responsibilities of the two parties were outlined in a Memorandum of Understanding signed September 4, 1996.

Under a cooperative agreement with USAID, IIE reviewed the management training requirements of the Ukrainian energy sector and prepared a report issued in November 1996. The report discussed several aspects of IIE's plans to provide training. It presented a comprehensive plan for a train-the-trainer program, which would provide the energy sector with an internal force of university-level instructors who could independently sustain the educational and training requirements of Ukraine's energy sector. It discussed in detail the responsibilities of the Management Training Unit to coordinate training throughout the energy sector as set forth in the Memorandum of Understanding. It outlined the support to be provided by the USAID Management Assistance Team staffed with IIE personnel.

A major component of the training plan proposed in this initial report was the development of a one-year academic program leading to an MBA. This program was specifically designed for energy sector personnel, from both the industry and the academic community. The Ukraine Energy MBA Program was proposed as the vehicle to meet the goals of the train-the-trainer program. It was concluded that these goals could be achieved only through a high-level long-term educational development program. IIE and the International Management Institute (IMI) of Kiev collaborated to design the Energy MBA Program. In February 1997, under a cooperative agreement between USAID and IIE, the proposed Energy MBA Program was approved by USAID. Through the IIE/IMI partnership, IMI provides the basic core management, finance, economics, and accounting courses, while IIE provides all specialized energy courses. The first official class of the 1997-1998 Energy MBA Program was held in May 1997.

IIE was awarded the current USAID contract, effective from September 30, 1998 to (estimated) September 30, 1999.

In preparing this section of the report, the Team interviewed employees of Minenergo who are involved in all aspects of the IIE training program, as well as alumni of the first MBA program (1997-1998). They reviewed detailed critiques of the five-day seminars presented as one-time training and the five-day seminars that constituted the specialized energy courses in the MBA program, from 1996 through 1999. These critiques were culled from individual responses to questionnaires distributed at the end of each course. They also reviewed individual questionnaire responses from employers of sixteen alumni of the first MBA program.

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<sup>122</sup> Based upon "Ukrainian Energy Sector Training Program Statement of Work", Attachment I of Contract No. LAG-I-00-98-00012-00, issued by USAID to Institute of International Education, effective September 30, 1998 through (estimated) September 30, 1999.

### **3. The Ukraine MBA Program**

In order to develop the task order requirements for the present contract, IMI undertook a detailed review of its MBA courses to develop a program that better meets the needs of the Ukrainian economy. The review dealt with conceptual goals to strengthen the program. The format of the program was specified: A one-week Introductory Program, followed by five terms covering fifteen Core Courses. Each term would conclude with a specialized energy management course. Seven specialized energy management courses would be provided, on subjects including Public Utility Accounting, Tariff Formation, Economic Analysis of Energy Projects, Quality Control, and Customer Relations/Billing and Collections. The program would also include Management Skills Courses, including Management Decision-Making, Business Writing, Computer/Internet Skills, Presentation Skills, Negotiation Skills, and Leadership Skills.

IIE is explicitly orientated toward privatization. Both the MBA Program and the training seminars address the question of how to privatize, not whether to privatize. According to the administrators of the training program, the directors of most of the oblenergos are viewed as lacking in a market orientation, but they are allowing themselves to be influenced by the MBA graduates.<sup>123</sup> IIE also attempts to reach out to foreign investors. For the tour by the MBA candidates (in progress at the time of this writing), several students have prepared presentations to potential investors on: Minenergo, a nuclear plant, a hydro plant, a thermal generating company, a privatized distribution company (Poltavoenergo), a state-owned distribution company (Nikolaevenergo), and the transmission company, Ukrenergo.

According to Minenergo, initially the companies were reluctant to send students to the program because they did not know how effective it would be. Now they are increasingly interested; for the second session, each company proposed two or three candidates, making the selection process difficult. However, at the present time, no electric power entity can afford to pay tuition for its employees. USAID will continue to fund the program for the 1999-2000 academic year. One purpose of the present report is to help it decide whether to continue funding thereafter. By the year 2000, the economic situation in the electric power sector could be considerably different, especially if privatization resumes and is successful. Moreover, administrators hope that IMI will have additional funds through its banking program.

As a result of attending the MBA Program, about 70% of the students received promotions. At least three have the title "deputy director", and one is the director of a heat electropower station. Others are assistant directors, chief economist, and department heads. Mr. Yuriy Sakva, the Deputy Minister of Minenergo, who represents Minenergo in the training program, is another alumnus. The program administrators said that they think that every company in the USEA partnership program has at least one employee who holds this MBA.

### **4. View of the Participants**

The Team interviewed several alumni of the first-year MBA Program. All of them were very enthusiastic about it. From talking with them, it is concluded that the MBA Program is successful at instilling in the students a market orientation and an appreciation of Western business and financial

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<sup>123</sup> IIE also provides training programs that explicitly prepare management and government officials for privatization. There are discussed below, in the section on training.

practices. (It is less certain that the program is successful in teaching the necessary tools, but this can be improved. This is discussed in more detail below, under “recommendations”.)

The alumni said that most of the students were already working at LECs. The MBA Program is already having an impact on these companies because they have an existing need for the knowledge contained in the program. They thought that only one or two persons in their group did not have an opportunity to apply their knowledge. The program is well timed with respect to the privatization effort, because privatization is only in the first stages.

The alumni thought that the MBA Program was extremely effective in conveying the importance of IAS. (As should be clear from the Team’s observations throughout this section, we have not determined whether the students have as yet actually learned IAS.)

Another strength of the MBA Program is the preparation it provides for a competitive environment. Several of the disciplines teach about competition, but the most valuable was a marketing course, which taught the technical aspects of competition through business games.

The criticisms offered concerned proposed additions or expansions. One alumnus suggested adding more advanced courses on banking, credit, and insurance – including mathematical models - to the curriculum. Alumni also thought that the courses in finance and banking, insurance and social policy, and the stock fund market, should be more detailed.

## **5. MBA Promotion Through the Alumni Association**

According to questionnaire responses, almost every participant in the MBA program regards it very favorably<sup>124</sup>. Most alumni stated that their primary objective for participating in the program was to learn more about economics, finance, and management (i.e., to receive a general business education), and/or to increase their knowledge and skills in international energy management. 95% of the alumni of the 1997-1998 MBA Program said that the program had overwhelmingly met or exceeded their expectations. According to the administrators, 70% of the alumni had received promotions as a result of attending the program.

In responding to the questionnaires on a scale of 1-5 (5 is best), the participants gave scores of 4 or 5 to almost every curriculum, presentation, and individual instructor. In interviews, administrators and alumni said that the training materials are kept permanently as reference books.

## **6. Program Design**

Alumni gave very high marks to this part of the evaluation. The assessment questions were divided into five sections: (I) quality of program materials, (ii) quality of program organization; (iii) appropriateness of core MBA courses; (iv) appropriateness of the specialized energy courses; and (v) usefulness of the US-based internship and study tour program. The highest scores for program materials were received by the US Internship and the Economics/Finance/Accounting courses, followed by Management, Organization, and specialized energy courses. The integration of the energy courses throughout was considered good or excellent by over 90% of respondents. The

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<sup>124</sup> See, e.g., 1997-98 Ukraine Energy MBA Program, Summary of Alumni Evaluation Data, received from Minenergo coordinator of training.

sequencing of the core MBA courses was considered average to good by about 75% of the respondents.

Nevertheless, three out of the 36 respondents felt that the specialized energy courses were not relevant to their jobs. Their main concerns were that courses did not focus on or apply to the situation in Ukraine, courses were not detailed enough, and there was not enough time to cover the material adequately. More revealingly, when asked how each course could be improved, or what it was lacking, the alumni gave responses that suggest some serious deficiencies in the present program. Two courses in particular, from the 1998-1999 program, stand out.

Energy Economics was a five-day course, given in November-December 1998. Although (based upon 43 evaluation forms) it received overall ratings of 4.5 for the course content (as well as 4.86 for the instructor and 3.65-4.4 for the interpreters), the question, "What could be added and/or excluded to improve the content of the course?" elicited significant criticism.

- Seven respondents said that the information should be associated with Ukraine, while two said that more actual information about the US energy sector should be provided. Three suggested a comparative analysis between the US and Ukraine.
- One respondent said that more attention should be paid to the economics and regulation of electric power, while two more requested more analysis of the particularities of the energy industry in different countries and their "impact on the country's economics".
- Two respondents suggested that more analysis of competition should be offered.
- Two respondents were interested in, respectively, the management of the energy sector and the stock market responses.
- Two respondents felt that the course was too theoretical, without reference to concrete electric power entities.

The limitations of the five-day duration are noted explicitly in two responses:

- More lectures and practical training are needed, with the participation of managers of electric power entities.
- The time is too short.

"Accounting in the Companies of Utility Industry", a five-day course given February 15-19, 1999, covered standard topics in American utility accounting, including: revenue requirements, operating revenues, operating expenses, rate base valuation, depreciation, CWIP and AFUDC, and related financial topics. Although entitled, "Accounting", the course was clearly oriented toward ratemaking. The course received 27 evaluations of 5, 14 evaluations of 4, and 3 of 2. However, when asked what could be added to improve the course content, and what course topics the participants regarded as necessary, they provided an extensive list of topics that were either lacking or inadequate. These included:

- More practical examples, and more analysis (from different respondents)
- More comparisons between the US and Ukraine.
- More depth and less breadth (particularly with regard to taxes and depreciation), and more breadth (to include more about taxes, cost accounting, finance, cost reduction, business ethics, and numerous other topics) – from different respondents.

The Team knows, from its own experience, that the subject of utility accounting simply cannot be covered in a five-day seminar. The diversity and the inconsistency of the alumni's responses lead to the conclusion that they recognize this as well.

## **7. Quality of Instruction**

Over 90% of respondents thought that the knowledge of the instructors was either good or excellent. They felt that the instructors were very knowledgeable, worked very hard, had good presentation skills, and help stimulate the learning process.

## **8. Self Assessment**

The Respondents were very interested in the course subjects. Most of them responded that they used the knowledge from the MBA program in their work. Obstacles to using their knowledge included:

- Lack of decision-making authority;
- Difficulty of economic climate during transition to a market economy.

Many of them used, and most planned to use, their course materials as references. Most of them had not yet contacted the instructors via e-mail, phone, or fax, but were planning to do so. In response to the question, "How have you tried to share your knowledge with colleagues," most alumni gave examples of informal, one-to-one communication, rather than formal presentations or training sessions.

## **9. Application of Training Skills**

Almost two-thirds of the respondents said that as a result of the MBA Program their supervisor had specifically selected them for tasks that involved the utilization of their new skills and knowledge. The skills put into immediate use were diverse, including IAS (at least three alumni), human resource management, working with business plans, and finance. One of the negative answers said that the respondent was already working on tasks connected with the MBA topics; on the contrary, the respondent's work had influenced him or her to enter the MBA Program.

The remainder of the negative responses expressed disappointment that management does not appreciate the MBA Program. One respondent identified him/herself as a NERC employee and said that the knowledge acquired in the MBA Program "is not applied in NERC activities."

Although only 13 respondents said that they were not utilizing their new skills, the number of "barriers" to using their new skills that are quoted in the summary report greatly exceeded 13. The categories into which they fell included:

- The laws of Ukraine;
- The economic situation in Ukraine;
- Resistance of management to changes in ideas or practices;
- Level of education of the respondent's professional peers.

The largest category is the third, the resistance of higher management to change. This includes barriers such as:

- “Full misunderstanding of the issues.”
- “Misunderstanding in the area of new and progressive methods of enterprise management.”
- “My company does not need my new knowledge.”

The question of how to overcome the barriers also elicited numerous answers. They included some economic and political suggestions (including “complete privatization”), but the predominant answers proposed change within the company through communication, education, expansion of training, and attrition of the current generation of management. Just as the alumni believe that their MBA education has helped them, they also believe that this, or similar education, will help others. Their suggestions included:

- “Only by means of patience, constant and gradually making changes in the minds.”
- “By conducting training and consultations.”
- “Attraction of the MBA alumni.”
- “Spreading new knowledge, increasing the number of staff who knows it.”
- “To include additional courses in the MBA Program.”
- “These barriers could be overcome by reorganization and interest in the personal work of everyone.”

Answers to the question, “Has your supervisor included you in more decisions since your graduation?” indicate some ambiguity in the question. It appears that some respondents have always been responsible for decision making, others have become increasingly responsible because of their promotion (i.e., indirectly, but not directly, because of the MBA), while eleven respondents said, “No.” One commented, “Our self-confident supervisors are not interested in my attraction to serious decision making.”

### **10. Assessment by Employers Of 1998 Alumni**

The “Ukraine Energy MBA: Alumni Employer Evaluation “ was sent to the employers of alumni of the 1997-1998 program to solicit their opinions of the effectiveness of the program on their company. The Team reviewed twenty responses that had been translated into English. (It is our understanding that this is an unbiased sample of the complete set of responses.) The employers are primarily upper management at LECs, but they also include members of Minenergo. Out of twenty respondents, five employers said that the Energy MBA program was highly effective for their company. Seven said that it was very effective, while eight said that it was only fairly effective. No one said that it was ineffective. However, it must be recognized that this questionnaire does not really elicit their opinions about the program overall but asks about one particular employee. It is likely that their only exposure to the MBA Program is through this employee. In the light of that observation, the responses of the employers are extremely favorable toward the program.

Overall, the responses of the employers were consistent with those of the alumni. All employers indicated that the alumnus had improved his personal effectiveness and decision-making skills, and seemed active and determined to use the new knowledge. Almost every respondent said that the alumnus had informed him or her in detail of his new knowledge and had also tried to share his or her knowledge with colleagues. They agreed with the alumni, that this sharing took place primarily through one-to-one briefings, rather than in formal presentations.

All but two of the alumni had received promotions; in one case, no promotion had occurred because the company, Ternopiloblenergo, was reorganizing. All but two of the alumni had been selected for tasks involving the utilization of new skills and knowledge. (The exceptions were the Ternopiloblenergo employee and the alumnus discussed under, "Alumni questionnaire results", who was already utilizing MBA skills on the job. Apparently, the second alumnus who was not promoted nonetheless has the opportunity to use new skills on the job.)

The employers are divided on the question whether there are barriers to using new knowledge and skills. Most employers state that there are no internal barriers, only external ones (such as economic conditions or regulatory climate). One of the most specific barriers was: "The position of engineer does not allow one to show and use qualifications acquired at the International Management Institute to full capacity."

The responses to the question, "Please tell us what has been achieved as a result of the alumni's application of new knowledge and skills to your organization," show a very positive attitude toward the program. 17 of the 20 respondents provided an answer (two did not answer, and one said that nothing had been achieved yet). Some of the answers were very specific, indicating that the alumnus had utilized an identifiable skill learned in the program. These include:

- improving customer relations;
- forecasting activities;
- new training programs within the company;
- creation of a new department, Finance-Analytic Department;
- cost savings;
- development of new incentives;
- new strategies for debt collection.

Even more revealing, however, were the vague answers, "New disciplines have been introduced," "Managerial skills have improved," and "The new strategy of enterprise management is being implemented." Such responses indicate a belief in the efficacy of the program, even in the absence of specific, demonstrable results.

## **11. Training Seminars**

In the present contract, IIE is continuing its activities in assisting the Management Training Unit in organizing and presenting short courses in the areas of management, finance, accounting, and economics that are essential in supporting current reform and restructuring. They are expected to present twenty sessions, consisting of 10-12 different courses, up to five (sometimes seven) days per session, targeted to specific audiences of energy sector professionals. Trainers are obtained locally, or in the region; more so than in the MBA Program, trainers must be able to present materials relevant to the immediate needs of Ukraine's energy managers.

IIE explicitly promotes privatization. Although two years ago, companies did not, in general, want to be privatized, they do now. IIE has held seminars for management, in which representatives of companies that had been privatized addressed them. IIE seminars teach the companies how to choose among bidders' investment proposals. These were valuable in privatizing Poltavaenergo and Luganskenergo: the companies asked IIE for additional advice on which offers to accept.

Two months ago, IIE offered a seminar on corporate governance, which was aimed at members of the supervisory boards of all the companies. According to the present rules, each council includes at least one Minenergo official. The focus of the seminar was to prepare board members for the changes that will occur under privatization. The panel consisted of representatives of Minenergo,

## **12. Evaluations Of 1996 Courses**

The Team reviewed course evaluations beginning in 1996. From an early seminar, “Financial Statement Analysis of the Energy Enterprises”, October 14-18, 1996, the criticisms suggested the inadequacy of the time:

- Extend the time allocated in the course to solving practical problems.
- Give more time and attention to methods of making a business plan.
- Give more detailed treatment to methods of cash flow statement preparation and analysis in the energy utilities.

In addition, respondents suggested that more supporting materials be supplied.

The achievements of the IIE Energy Training Programs in 1997 and 1998 are summarized in their reports to USAID.<sup>125</sup>

## **13. Evaluations Of 1997 Courses**

In 1997, IIE established, organized, and carried out twelve five- and seven-day seminars for the management of the energy companies of Ukraine. Participants included directors, deputy directors on economic issues, deputy directors on personnel issues, economists, accountants, and employees of the securities departments. In addition, IIE provided training in computers and created a library for the Management Training Department.

As usual, the seminars received high ratings from the participants. As with the specialized courses in the MBA program, the comments and recommendations of the participants often reveal deficiencies in the training.

The course, “Rate Making Process for Electricity”, was taught jointly by US consultants and specialists from NERC. Since this seminar was intended to familiarize Ukrainian electric sector specialists with Western ratemaking practices, it is questionable whether NERC possessed sufficient knowledge at that time. According to the summary seminar report, the NERC specialists presented the ratemaking process as it has been adopted in Ukraine. They did not, apparently, discuss the principles (Western) that they were supposed to follow in setting rates, nor did they contrast their ratemaking process with that of the US, or of other countries. In spite of this, the NERC instructors all received ratings of 4.4 and above. (The only instructor to receive less than 4.0 was one of the consultants.)

However, the recommendations of the participants demonstrate two failings. First, the course failed to present either the principles or the necessary knowledge by which Ukraine would be able to set

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<sup>125</sup> “United States Agency for International Development (USAID), Institute of International Education (IIE) Energy Training Programs, Summary Report of the Institute of International Education (IIE) Activity in Ukraine During 1997” (IIE97), and “United States Agency for International Development (USAID), Institute of International Education (IIE) Energy Training Programs, Summary Report of the Institute of International Education (IIE) Activity in Ukraine During 1998” (IIE98).

rates in an economically sound manner. Second, the course failed to provide the additional managerial and technical expertise that would bring Ukraine's electric sector up to Western standards of performance (thereby making it more attractive to investors). The long list of *topics to add* looks as if it should have been the original syllabus:

- Restructuring of the LECs;
- Review of the problems of the sector;
- The entire agreement between NERC and Minenergo;
- Legislation providing for the workings of the wholesale market based on the current laws for the energy sector;
- Examination in more detail the principles for expense allocation for transmission and supply according to voltage classes;
- Calculation of average wholesale purchase price according to time of day;
- Methods for determining expenses according to voltage classes;
- American experience in retail tariff calculation.

#### **14. Evaluations Of 1998 Courses**

In 1998, IIE carried out eleven five-day seminars for the administrative staff of energy companies (directors, deputy directors on economic issues, deputy directors for personnel development, economists, accountants, employees of stock departments). Some categories of participants, including lawyers, employees of labor and salary departments, and employees of control-inspection departments, were new to these seminars. As usual, almost all the courses and the instructors received ratings between 4.5 and 5.0. The sole exception was the seminar, "Human Resources Development", organized by BCC Kadry. The course received a grade of 4.0 overall, with the instructors receiving ratings of 4.3, 3.0, 3.2, and 2.5, respectively.

The seminar on The Electricity Ratemaking Process was not repeated. The reason provided by IIE is that NERC did not participate in the training program in 1998. The Team does not know why NERC did not participate; nonetheless, an understanding of the ratemaking process would be valuable to anyone in the distribution companies or in Minenergo. Thus, the cause-and-effect relationship of canceling this seminar is not apparent.

In its Summary Report for 1998, IIE asserts that the training activity helped some companies in the process of their privatization, and in conducting shareholders' meetings. Specifically, several of the energy companies are said to have delivered financial accounts converted according to the International Accounting Standards. From interviews with outside accounting and consulting firms, it is the Team's understanding that the electric power companies are receiving technical assistance in preparing their financial reports according to IAS. However, the Team remains concerned about the extent to which Ukrainian electric power professionals themselves understand the new system.

In particular, the questionnaire responses concerning the seminar, "Accounting for Securities", awarded the course and its instructors grades between 4.9 and 5.0. Nonetheless, the topics that were lacking included IAS (cited by two respondents) and tax legislation and tax accounting (cited by 15 respondents). Such an omission calls into question the actual level of this course.

## **D. General Recommendations for IIE Programs**

### **1. USAID Should Reinforce the Value of IIE Training and MBA Programs**

- The IIE training program and the MBA program make valuable contributions to the electric power industry in Ukraine. In particular, they prepare present and future management and technical staff for participation in the global economy. We have met some of these participants and read comments from many others. They are strong advocates of privatization and competition. The possibility of employing such professionals should serve as an attraction to potential investors in the electric power companies. USAID's treatment of the programs will be a signal to investors of the worth of the programs and, by extension, of its graduates.
- We recognize some technical weaknesses in the courses and seminars, and we offer specific suggestions for their improvement. These weaknesses do not, however, detract from the underlying value of the programs.
- In further support of this recommendation, we note that the MBA alumni leverage their knowledge within their companies primarily through personal communication, such as one-on-one briefings. Their knowledge becomes integrated in the day-to-day workings of their organization. The value of such accessible knowledge may be enhanced, but cannot be replaced, by outside advisers or by additional training seminars.<sup>126</sup> This constitutes a strong argument in favor of continuing training to internalize the knowledge needed by the companies.

### **2. Recommendation of Continued Funding For The MBA Program**

- If privatization prevails, the market will determine the viability of the MBA Program. Since this is not likely to occur within the next year or two, we recommend that USAID fully fund the MBA Program for at least another year (to which, as we understand, it is already committed) and consider full funding for an additional year.
- At present, every employer who responded to the questionnaire found the MBA program effective (fairly effective to highly effective), but said that his/her company could not afford to pay for the training. Once a company is privatized to a strategic investor, USAID should contact them and discuss the transition from USAID funded training to funding by the new owner. This discussion could occur in the context of the social transition plan.
- USAID should recognize that, although the companies are not spending money to send their employees to the MBA Program, they are incurring a great cost in allowing the employees to attend classes rather than work. This is a strong indicator of their valuation of the program.

### **3. Strengthen IIE Training So Participants Better Understanding Markets**

- Foster an appreciation of competition at all stages of the value chain, together with an understanding of the effect of regulation on outcomes in this scenario. Provide a careful, technical exposition of transaction costs.
- Promote an appreciation of the manner in which regulation engenders transaction costs. Contrast the differences in transaction costs between various types of market structure.
- Devote more attention to Minenergo and NERC. Target more training to them, and solicit their participation.

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<sup>126</sup> The choice that this represents, between using ideas and producing ideas, is a textbook example of Paul Romer's analysis. See Romer, op. Cit.

- Review curriculum for IAS. Make any necessary changes that will lead to a program to prepare Ukrainians to function independently..
- Provide longer seminars, lasting several weeks. Although five days may be adequate for presenting the material, it does not allow time to absorb the material and reflect on it. This recommendation applies equally to the MBA program and the training seminars. Extend the time allocated in the course to solving practical problems.
- In each course, to the extent possible, present detailed comparisons between Ukraine and other countries, in order to achieve the following objectives: create an understanding of how things can be done in Ukraine; and create an understanding of how things are done in other countries.

## **E. Hagler Bailly Program for Ukraine**

### **1. DO #4 (October 1995-December 1995)**

The proposed “task is designed to provide assistance to support the development of the legal and regulatory framework for a market-oriented power sector and to support the restructuring of the power sector with emphasis on the thermal generation plants.”<sup>127</sup>

Demand-Side Management: It is unclear how the proposed task was reconciled with demand-side management (DSM) and integrated resource planning, given the market structure orientation proposed by Ukraine. Integrated resource planning (IRP) is a central planning approach, which is likened to the socialist planning approaches of the former Soviet Union. U.S. regulators, seeking to continue control through regulation, sought to in the 1980’s and early 1990’s impose IRP and to integrate DSM based on a set of economic tests.<sup>128</sup> When this task was initiated, the Ukraine power pool did not offer prices to wholesale or retail customers that reflected either market rates, marginal costs, or avoided costs. Some version of the prices or costs that consumers face is necessary to make the comparison to DSM programs. Even then, this problem should have been identified but apparently was not. This suggests that the strategy and objectives were not clearly thought through.

An example of unclear strategy is in Subtask 3, which states that a model will be identified to estimate the cost-effectiveness, but the basis for cost-effectiveness in DSM, which is market price, marginal cost of avoided cost, is not discussed or defined.

A derivative problem is that the counterpart was not yet defined, even though “the DSM potential, promising DSM programs, and estimates of costs and benefits of [DSM] in Ukraine” was expected. This suggests that program focus and strategy were developed without a direct counterpart in mind and without the input from a counterpart.

The Major Contractor apparently produced most of the expected deliverables. The “expected results by task” merely restate the tasks and do not explain the benefits to the counter party or the applicability to the Ukrainian situation.<sup>129</sup> This again suggests that the effectiveness of these programs may be enhanced and may create more concrete results if specific counter parties are involved and if each task is better melded with the Ukrainian context.

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<sup>127</sup> Ukraine Power Sector Regulatory and Restructuring Task Scope of Work: Demand Side Management: DO #4 (undated). (Hereafter, Task DO#4.)

<sup>128</sup> See, C. Danforth and E Woychik, Standard Practice for Cost-Benefit Analysis of Conservation and Load Management Programs, California Public Utilities Commission and California Energy Commission, February 1983.

<sup>129</sup> Task DO#4, Section 6.

Resident Energy Economist (1 January 1995 - 31 December 1995): The scope of work (SOW) explains the context in terms of the need for significant institutional restructuring. The focus of this SOW was to assist non-Ukrainian parties, including USAID, ENI, EEUD, and EI. The resident economist was to initially submit a work plan for the SOW and then to perform analysis for the above parties on a wide set of topics. Objectives of the work included evaluation of consequences of actions taken in Ukraine and evaluations to determine the consequences on the design and execution of USAID/donor energy programs. The counterparts were listed generally as professional resources available in Ukraine. Specific counterparts within Ukraine were apparently not contemplated. Products were to include a series of reports submitted within 30 days of the completion of the tasks identified in the work plan.

The Major Contractor in this case produced some but not all of the expected deliverables. The initial SOW, however, was very general and lacked a Ukrainian counterpart. This suggests that the program was possibly too broad in its focus, appears other-directed, and did not reflect the specific needs of the Ukrainians or the Ukrainian situation.

Regulatory Reform and Restructuring Program (1 October 1994 - 25 February 1996): The SOW states that the task is to support the development of the legal and regulatory framework for a market oriented power sector. It appears that many of the expected tasks have been fulfilled, particularly regarding the regulatory rules and policies. NERC states that additional rules are needed beyond what has been provided in order for them to properly implement the proposed market structure.

The SOW does not emphasize training on market mechanics of NERC and those that NERC would need to interface with, including related ministries and the energos themselves. The SOW includes one statement, from among thirty-three, that explains the need to “develop policies concerning privatization and measures to promote competition.” This suggests a major gap in knowledge about the fundamental basis for electric competition and for regulation of electric competition. Interviews with Major Contractor suggest that there was almost no emphasis on training to explain to NERC and related parties (e.g., energos and ministries) how and why electricity competition works to efficiently price and allocate resources. Interviews we performed indicate that the NERC does not understand what is necessary to make the electricity market work properly nor do they seem to understand the role of regulation with respect to a competitive market. This seems most obvious in discussions with the NERC’s office of “Market Regulation.” The conditions for a market include absence of regulatory intervention and low transaction costs.

The NERC approach to “market regulation” and tariff setting both mutes the market signals that might otherwise be forthcoming and adds a substantial layer of transaction costs in the form of costs for regulatory compliance. This regulatory compliance is also a source of regulatory uncertainty, which will limit involvement of private participants in the market. This and other conditions (e.g., lack of ability to have 51% ownership) seem likely to limit private interests in Ukrainian privatization. It appears that the distinction between regulation that is used for vertically integrated utilities in the U.S. and regulation of competitive electricity markets (e.g., of ISO-based markets by FERC) has not been emphasized. In short, several important knowledge gaps – gaps in understanding -- seem to exist in the Ukrainian setting and specifically among persons at NERC. Thus, there are several knowledge gaps among Ukrainian ministries and the energos about how competition works, the conditions necessary for workable competition, and the regulation necessary to enable a competitive electricity market to work.

Specific gaps in knowledge are as follows:

- Knowledge about what constitutes an electricity market.
- Knowledge of how market equilibrium creates proper prices and proper allocation of resources.
- Knowledge of how regulatory constraints limit competition and remove the forces of market creation.
- Knowledge of how electricity capacity and ancillary services are allocated in other market models.
- Knowledge about the pros and cons of the various market models, including the issues surrounding “mandatory” pool (single buyer) market models.
- Knowledge of the market models that use both “pool” pricing and bilateral contracts.

## 2. DO # 10

This delivery order focused on Technical Assistance for LECs and for demand-Side Management (DSM) efforts. The general LEC objectives were to separate out LEC functions, establish commercial operations, and develop capabilities and systems to allow for sustained LEC operations on an economically efficient basis.

The LEC activities appeared somewhat successful in creating separate governance structures and business decision-making. Major Contractor stated, however, that it was difficult to get LEC activities implemented: “Because of the ever changing policies and directives from various agencies, many of the recommendations have not been completely implemented.”<sup>130</sup>

The DSM objectives were much broader, ranging from demonstration of DSM benefits to the development of innovative energy service company (ESCO) contracts. The work under this task built on activities begun under the previous DSM Task which produced a national assessment of DSM potential, conducted end-use load research, and designed a DSM pilot project. It called for DSM pilot demonstrations, facilitating DSM participation by U.S. ESCOs, and training for Ukrainian energy engineers and utility officials. Major Contractor and USAID stated that really little of anything came from these DSM efforts. The Ukraine context was simply too different from the U.S. experience brought by Major Contractor. Major Contractor placed a large amount of weight on the non-payments and cash-flow problems that emerged in 1994. The Team, however, believes that the scope and tasks of this DSM work were simply not well thought out. The report on deliverables mentions products, but they seem less than noteworthy. For example, with Subtask &, the major results were (1) a *Final Monitoring Report*, (2) a *Task Completion Memorandum* was produced, and (3) Major Contractor staff participated in an Energy Efficiency Conference.<sup>131</sup>

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<sup>130</sup> UKRAINE DEMAND SIDE MANAGEMENT, (SUBTASKS 5, 6, 7, 8 & 9), Under the Energy Efficiency and Market Reform Project, Contract No. CCN-0002-Q-00-3152-00, Delivery Order No. 10, Reform Program, for U.S. Agency for International Development, Hagler Bailly, September, 1998., at pp. 6.

<sup>131</sup> UKRAINE DEMAND SIDE MANAGEMENT, (SUBTASKS 1, 2, 3, 4, 5, 6 & 7), Under the Energy Efficiency and Market Reform Project, Contract No. CCN-0002-Q-00-3152-00, Delivery Order No. 10, Reform Program, for U.S. Agency for International Development, Hagler Bailly, September, 1998., at pp. 9.

### **3. DO # 18 (August 1997 through September 1998)**

The focus of this set of tasks was largely to (1) strengthen the role of the NERC, (2) support refinement of the pricing mechanisms, (3) support NERC's organizational development, and (4) support thermal generating companies.

Major Contractor explains that it “played a crucial role in advising various sectors of the electric power industry since 1994.”<sup>132</sup> Major Contractor specifically advised (1) generation companies in the procurement of fuel, (2) moving to International Accounting Standards (IAS), (3) was able to increase cash collections and IAS, (3) provide the Energomarket with organizational and legal support, and (4) performed design-like work to revise the Energomarket Members' Agreement and recommend changes to the Energomarket rules.

The concerns of the Team are that the Major Contractor has made claims that are not supported in the various writings or in the outcomes of policy dialogs. The Team's additional analysis of the Major Contractor suggests that it did not contribute substantially in many cases (see Chapters III and V), including as advisor to the GOU, regarding generation fuel procurement, movement to IAS, organizational and legal support for the Energomarket, and recommended changes to the Energomarket rules.

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<sup>132</sup> Regardless, “Ukraine is beset by corruption, a barter economy, ineffective bankruptcy laws and a myriad of other problems.”

## **VII. FINANCIAL RECOVERY PLAN AND WORLD BANK CONDITIONS**

### **A. Overview**

#### **1. Status**

Notwithstanding the above problems, significant TA was available to help Ukraine carry out power sector reforms. However, as the whole economy has been facing serious cash constraints, leading to most transactions taking place on the basis of barter transactions and offset accounts, many state enterprises and government agencies in particular are not in a position to pay employees on a timely basis. As a matter of fact, many such entities have not paid employees for months. As these and other employees throughout the Ukraine economy are not being paid in cash, they are not in a position to pay electricity bills. Further, GOU continues to subsidize the supply of electricity to selected groups of consumers, through a complex system of cross-subsidization. As a result of the non-cash transactions based on barter and offsets, power enterprises along with enterprises in other sectors have been facing a serious cash flow problem. Inter-company receivables and payables have been building up. This created an illiquid financial situation, with the cash collection amounting to hardly 5-10%.

Faced with this situation, the World Bank provided in early 1997 a policy-based loan of \$317 million to the Electricity Market Development Project (EMDP) to help bring about policy improvements focusing on pricing, collections, and debt restructuring. However, as there was no progress in meeting the loan conditions, on July 28, 1998, the World Bank suspended disbursement under the EMDP loan. Following this, GOU expressed its strong interest in taking necessary measures so that the Bank could lift the loan suspension. It agreed with the Bank to develop a Financial Recovery Plan (FRP) to achieve financial restructuring of the power sector and help meet the agreements reached under the EMDP loan. This Plan, which was developed by an inter-ministerial committee with representatives of five ministries in consultation with the World Bank, was approved by the Cabinet of Ministers (COM) on April 18, 1998 to improve compliance with the EMDP loan conditions.

#### **2. Progress Under Financial Recovery Plan**

Considerable progress has been made under the FRP to improve the power pricing and regulatory systems. However, the cash collection has not improved significantly. It is still below 15%. Progress on debt restructuring has also been slow. USAID has been involved in providing technical assistance by involving Hagler Bailly in monitoring the progress under FRP. Monthly progress reports on the implementation of FRP are prepared and submitted to the World Bank and other donors involved in the power sector restructuring of Ukraine. The latest report (April, 1999), shows that the cash collection has reached about 14.4% in April compared to about 5% in January 1999. Further, significant progress has been made in power tariff increases.

Overall, of the 23 covenants under FRP (see [Annex-4 for details](#)), 13 have been met and 10 have been either not met or have been partially met by GOU as described below:

(1) Require that all non-cash financial settlements, including offsets for old debts between enterprises, be executed by, or on behalf of, electricity companies using the National Bank of Ukraine's Bank Offset Mechanism (BOM) to be created to reduce the large and growing backlog of cross-claims among enterprises. (Articles for the creation BOM were drafted but not approved by

the Cabinet of Ministers. As a result, this action has not been taken so far. Meanwhile, COM has, however, limited the right of issuing promissory notes to settle debt for electricity purchased to only State Treasury and Oblast administrations).

(2) Generating companies apply all financial resources which remain available (after payment of wages, maintenance and capital repair costs, and taxes) for cash purchases of all types of fuels from suppliers using competitive procurement practices. (Of the cash now being spent on the procurement of fuels, none goes through the GENCO accounts. Further, currently fuel procurement is conducted by government agencies, but not by using competitive procurement practices.

(3) Identify as of January 1, 1998, accounts payable of electricity supply and generating companies and make arrangements for this debt to be rescheduled for payment over five years. (COM issued a decree April 28, 1998, for rescheduling the fuel debts of GENCOs. So far, only the debt of GENCOs to the State Coal Co. has been rescheduled).

(4) Draft and submit for consideration, in line with the established procedure, law to cancel privileged electricity tariffs based on occupation and to set and enforce consumption limits for all remaining classes of privileged customers. (COM prepared a draft law for consideration by Parliament to cancel privileged tariffs based on occupation. However, Parliament rejected this law on October 10, 1998).

(5) Transfer the Market Funds Administrator from NDC to a new, NERC-licensed Energomarket Enterprise. (According to the Ukrenergo Charter, Energomarket is a division of Ukrenergo. There is opposition by Ukrenergo to separating Energomarket as a separate legal entity. Minenergo is, therefore, not favoring this step).

(6) Formalize and enforce compulsory use of the Clearing Account under the Market Funds Administrator for all receipts of LECs (obloenergots) as specified in the Wholesale Market Funds Administration Procedure. (Most of the seven recently privatized LECs are not paying their cash collection to the Clearing Account on the pretext that their cash collection is low as a percentage of their total accounts receivable and this limited cash they receive is needed to pay their employees. They want GOU to break the barter/offset system by enforcing discipline on budget-supported government agencies, to start with, to pay for electricity without delay. The President tried to issue a decree to insure compliance by LECs in using the Clearing Account but it was opposed by Parliament. Now a Special Investigation Commission is looking into this problem). As mentioned earlier, the Team supports reform of the transit account in a manner which allows for settlements outside of the transit account.

(7) For major non-budget customers, identify arrears that are due over three months and reschedule them as legally-enforceable, interest-bearing saleable debt instruments. (It is not allowed to apply this provision to some non-budget customers such as agricultural customers as they are exempt from any stringent action (even when they are large consumers of electricity) under a separate GOU decree. Further, LECs are not showing seriousness in identifying major customers as targets to enforce this action as they are afraid of losing these major customers to Independent Energy Suppliers).

(8) Privatize all LECs (obloenergots) by selling majority stake through tender offers to strategic private investors by July 1, 1999, with GOU keeping no more than 25% plus one share. (So far, only

seven out of 27 LECs have been privatized and not through 51% tender offers. It is unlikely that GOU will privatize all LECs by July 1, 1999).

(9) Following up on the partial (about 20 %) privatization of Gencos, sell at least 24% block shares in each of the GENCOs through competitive tenders, with investment commitment by the winning bidder to invest according to a committed investment schedule. GOU to consider providing not less than 50% of the initial selling price of the shares as loans to the privatized companies for their rehabilitation and modernization. (This is not going to happen by the agreed date of July 1, 1999 as investment bankers/privatization advisors have not been hired to prepare tender documents for selling block shares to strategic investors. Further, strategic investors are likely to insist on majority control while GOU wants to keep 51% of the shares in GENCOs).

(10) As noted, HB is performing the monitoring of FRP under the TA program of USAID and the Team feels that there is need for the continuation of the monitoring function of HB. In this context, USAID need to consider providing additional technical assistance for realizing one of the important objectives of FRP – privatization of power generating and distribution companies as detailed later in this report.

## **B. Priority Issues**

### **1. The Need to Reduce Policy Uncertainty**

Over the past five years, the power sector of Ukraine has been trying to move from a “command and control system” to a market-based system under which consumers pay for the true cost of production and delivery of electricity, and management of power sector entities are held accountable for the efficient operation and financial stability of the entities under their control. To achieve this strategic objective, as noted, GOU is following an integrated approach to economic stabilization of the energy sector with the following strategic measures:

- Establishment of a National Energy Regulatory Commission (NERC);
- Privatization of thermal generation companies;
- Privatization of regional electricity distribution companies;
- Establishment of a Wholesale Electricity Market;
- Establishment of a Market Settlement Procedure where wholesale rates and generation dispatch are based on supplier bid prices;
- Non-tariff regulation of Independent Energy Suppliers;
- Retail tariffs to be based on Wholesale Market Prices and to include regulated transmission fees; and
- Establishment of a Market Funds Procedure to insure fair distribution of cash resources among power sector entities.

While the above framework developed by Western advisors is satisfactory, the actual implementation is being done by Ukrainian leaders who lack a clear understanding of the systems they are being asked to implement. In addition, there is policy uncertainty especially about pricing reform and subsidy reduction on a sustainable basis in an inflationary situation. Political considerations also impact on proposed reforms. As a result, the progress of implementation of the strategic steps mentioned above has been partially successful. The national regulatory agency has been established but its role in regulating prices at both the wholesale and retail ends seem to contradict the market-based pricing system. As for privatization of the generating and distribution companies, they have

been created as joint stock companies as a first step to facilitate privatization. However, there seems to be no strong political commitment to selling large blocks of shares by auction to strategic investors. GOU seems to be showing vacillation on privatization especially in the context of the forthcoming political elections later this year. The wholesale market for power has been established but its operational procedures are not in keeping with a market-based system with NERC setting bid caps. The retail pricing is being done on the basis of a formula endorsed by NERC on the advice of consulting firms while this function could have been better left to LECs, encouraging them to compete in each other's designated Oblasts (as envisaged under the statutes setting up LECs). Independent Energy Suppliers, whose tariffs are not controlled by NERC, are allowed the flexibility of buying power from any source and selling it to bulk consumers such as industrial enterprises. Such flexibility in fixing retail tariffs should be available to LECs as well in a competitive environment based on the general retail pricing principles prescribed by NERC. Further, the Market Funds Procedures for a fair and timely distribution of cash among power sector entities are not yet clear. These procedures need to be made more transparent.

## **2. Privatization as Key to Commercial Viability**

Electrical generating companies have to become economically viable and competitive to achieve the strategic objectives in the sector. Privatization is the key to commercial and financial viability of those enterprises in power generation and distribution assuming strategic investors could be attracted to participate in bidding for large blocks of shares with a commitment to invest on rehabilitation and modernization of the existing plant facilities. This will help: (1) reduce costs for electricity production and distribution in a competitive environment; (2) establish procedures to serve consumers trouble-free and collect from them in full; (3) bring investment funds needed to rehabilitate/modernize the existing enterprises and boost power exports wherever possible; and (4) increase the cash flow to the national treasury to help reduce the budget deficits and also help pay off outstanding salaries to employees.

Initial efforts to privatize electric distribution companies on a priority basis were not successful because of the macroeconomic crises and the national non-payment problem combined with hesitation on the part of GOU to sell large blocks of shares to strategic investors on an auction basis. USAID and other donors are continuing the dialogue on this matter with GOU to develop a program for successful privatization of the power sector with the non-discriminatory participation of strategic investors. In this context, the Minenergo has been a strong supporter of strategic private investments in the power sector. USAID should consider providing TA to Minenergo to prepare a Privatization Plan for the power sector in collaboration with the State Property Fund and NERC. Further, the privatization process can be expedited by giving focused attention to vital pre-privatization activities to strategic investors such as introduction of internationally accepted accounting practices, and preparation of annual audit reports in English using Western standards. In this context, USAID consider providing TA to review the status of introduction of IAS in power generating and distribution companies, prepare a plan of action and implement this plan in the power sector enterprises including the National Dispatch Center (NDC). Even though NDC is expected to remain a natural monopoly under the regulatory oversight of NERC, the power generating and distribution companies will have to continue to deal with NDC for power transmission even after privatization. This being the case, it is in the interest of all power sector enterprises to have NDC develop the capability to sue IAS in its accounting and audit systems.

### **3. GOU/Minenergo Role in Managing Wholesale Market**

In November 1994, the Ukrainian parliament approved an action plan to implement the May 1994 Presidential “Decree on Market Transformation Measures in the Electricity Sector of Ukraine.” Under this action plan, a number of measures were taken including the establishment of the Wholesale Electricity Market (Energomarket) under Minenergo as a division of Ukrenergy. The Energomarket has become the national wholesale electricity market operation. Upon setting up the wholesale power market, the operations and maintenance of thermal, hydro and nuclear power plants were considered sufficiently distinct to warrant assigning them to separate holding companies. The Energomarket buys wholesale power from thermal, hydro, and nuclear generators and sells them to the Local Electricity Companies (LECs) and large industrial consumers (who purchase power directly from the high voltage grid). LECs re-sell electricity to their retail customers. Everyday each generating company bids its price for each of its generating plant (of more than 20 MW) for each hour of the following day. On the basis of bids, Energomarket sets schedules and dispatches units (subject to system constraints) to meet the demand at market-based competitive prices. While the wholesale electricity price is to be set by nationwide through the power pool (Energomarket), local retail prices for consumers is regulated by NERC, taking into account differences in transmission and distribution costs of LECs. NERC is now also regulating the pool price by setting a bid cap for sale of electricity by generators.

GOU’s overall intent is for competition to develop in power generation among four thermal companies. Taking into consideration the low-cost generation by hydro and nuclear plants, the power from these plants are purchased on the basis of contracts rather than at pool prices which apply only to the four thermal power companies.

### **4. Constraints on Ownership and On Dispatch**

The Energomarket is managed under the Minenergo by two administrators – the System Settlements Administrator and the Market Fund Administrator to deal with its functions of dispatch and settlements. Dispatch responsibilities include operating the bidding process, scheduling power plant generation, determining hourly prices, and maintaining system stability. Settlement responsibilities include issuing payment orders to all market participants and clearing payments among them.

As noted, currently, Energomarket is a division of Ukrenergy under Minenergo. As it has to play an important role in developing and maintaining the wholesale power market based on competitive bidding, it is recommended that the Energomarket be made an autonomous agency under Minenergo. There appears to be need for USAID technical assistance to develop Energomarket on sound lines to perform its dispatch and settlement functions.

### **5. Debt Repayment and Tax Issues**

Currently, the macroeconomic crisis in Ukraine and the associated socio-political instability have had a negative impact on power pool operation. As a result, power generation does not occur at the lowest possible cost and generating and distribution companies do not get paid for months. Most of the receivables and payables of companies are settled on the basis of barter and/or offsets. As a result of central and municipal government pressures not to cut off power to non-paying customers in order to compel them settle their payment obligations, generating companies are unable to purchase sufficient fuel to operate at attainable capacity and the overall economy suffers losses.

The non-cash transactions have been draining cash resources of enterprises. Therefore, these enterprises in general are trying to find ways to increase the amount of cash they can retrain. So long as the Cabinet of Ministers, Minenergo and other Ministries in Ukraine continue to allow “book-keeping” schemes to take the place of cash transfers through the Clearing (Transit) Account under the Market Funds Administrator of Energomarket, cash transfers from LECs to the Energomarket will remain low and virtually all power sector enterprises will continue to suffer from extremely poor cash flows.

Under the Financial Recovery Plan (FRP), an offset account mechanism has been established under the Bank of Ukraine to reduce the growth of large amount of cross-claims. Using this offset mechanism, BOU is offsetting receivable against payable of power sector enterprises, thus arriving at the net outstanding debt of each enterprise and getting this debt rescheduled and monitoring repayment subsequently. However, the debt rescheduling by BOU is going very slow as many power sector enterprises are not yet making use of the mechanism operated by BOU.

As for the future, the Energomarket should expedite collection of funds from LECs at least within 75 days from the first day of the billing cycle, i.e. collection within 30 days of the billing date, assuming the billing will be done within 45 days (as is the case in many utilities in the U. S.). It is recommended by the Team that the procedures followed by Kievenergo (which in 1998 had a cash collection ratio of about 85% in 1998, is applied by other oblenergos as well following the national laws of Ukraine. Kievenergo is using the recent GOU decree for cutting off power supply to industrial consumers who do not pay by the deadline for payment after receiving a 15-day notice.

Currently, power generating companies owe suppliers of main inputs such as coal, natural gas and fuel oil a substantial amount of money. As a result, the operation of both these group of companies is seriously affected. As a result of no-payment of dues over long periods, coal companies are not in a position to produce quality coal (meeting the design boiler specifications for coal, making the required investment on equipment for producing quality coal by focusing on mines having richer quality specifications. As noted earlier, the operation of coal-based thermal power plants is adversely affected by the low-grade coal supply. As a result, these power plants are compelled to mix gas and fuel oil with coal for use in boilers, which is not done under normal circumstances. Power generating companies are also finding it difficult to make payments for two other fuels – natural gas (which is imported to cover about 80% of the Ukrainian requirements, and fuel oil (which is produced in local refineries using mostly imported oil from Russia and other sources).

As for taxes, power generating companies have to pay a VAT tax of 20% in cash on the purchase of fuel oil, and on the transmission cost of natural gas, and there is no VAT on the supply of coal. The power generating companies as well as other power sector enterprises, however, are exempt from VAT on electricity sales up to the year 2002. The nominal corporate profit tax is 30% but the actual corporate profit tax is about 43% as Ukraine imposes tax on certain parts of operating e costs (e.g. advertisement , public relations, land rent, land lease payment, bonus payments to labor, investments on capital repair, etc).

Further, there are some other provisions in the tax code which would discourage strategic private investors from investing in Ukraine. For example, companies have to pay tax on asset revaluation gains. It also has to pay taxes on increase in losses carried forward as a result of the revaluation. Further, any salary increases over and above the inflation rate (including merit increases and bonuses) are subject to tax . These are some of the examples of taxes which discourage incentives for better efficiency and better performance.

As there is VAT on fuel oil, one of the fuels for power generation, thermal power plants which depend on it as the main fuel and/or rely on it partially for mixing with coal, face large payables to fuel oil suppliers. Power companies are seeking reimbursement of VAT on fuel oil and gas transmission. In this context, there is need to review whether VAT on fuel oil should continue while coal is exempt from it. There is also need to review whether VAT on the gas transmission should continue. Further, even though there is no VAT on electricity sales for cash, there is VAT on the sale of electricity on a barter basis.

Thus, there is need to review the complexity and impact of the current corporate and other taxes (including VAT) on capital investment, procurement and enterprise operations in the power sector. There is also considerable confusion about calculating VAT. Therefore, considering the importance of taxes on the privatization process, the Team recommends that USAID finance the services of an International Tax expert to review the existing tax structure as it impacts on the power sector in particular.

### **C. International Donors**

#### **1. Current Status and Possible USAID Role**

As noted, serious efforts for the restructuring of the power sector started with the preparation of a Market Transformation Plan adopted by the Ministry of Energy (Minenergo) in April 1992. On May 21, 1994, GOU decided to implement this plan with the Presidential Decree “On Market Transformation Measures in the Electricity Sector of Ukraine.” In mid-1994, EBRD convened the first power sector conference in Kiev at which donors agreed to provide grant funds to a Technical Assistance Program for implementing the power industry reforms. EBRD agreed at the conference on donors’ request, to coordinate the donor TA activities to ensure that identified priority needs were covered without unnecessary duplication. The cost of these activities had to be financed by grants only, as the Government refused to borrow for technical assistance. Because of this stipulation by the Government, EBRD could not directly finance any of the TA tasks. The use of grant financing was thus a central feature of the TA program. It was also a weak feature as EBRD loan funds were excluded in meeting part of the large-scale technical assistance required by the critically important power sector. As a result, the sector had to depend on a limited availability of grant financing from bilateral sources including USAID. The grant funds available from these sources were not adequate to meet fully the large-scale TA requirements of the power sector in a comprehensive manner. Moreover, with the involvement of many donors offering grants, EBRD coordination role became a very difficult one.

This practice of GOU not to borrow for TA has not served the country well in meeting its wide-ranging TA in the power sector. As a result, some tasks such as the introduction of international accounting standards (IAS) and computerization of accounting and financial management systems including training and acquisition of the necessary software and hardware have been done only in a very few institutions. TA in this area has been of fundamental importance for moving from a “command and control” system to a market-based system. However, adequate funds were not available for this purpose.

In spite of the above-mentioned constraint on getting adequate funding for TA from grants alone, the TA program for the power sector has played an important role in institution-building for market reforms and initial pre-privatization work. The TA program as agreed in mid-1994 was organized in

such a way that each sub-sector within the power industry would have some support. Advisory services, training and software/equipment support were provided for institution-building focusing on:

- Power generation companies;
- Legal and regulatory institutions including the setting up of the National Energy Regulatory Agency and the Energomarket (to deal with the newly-formed wholesale electricity market).
- Local Electric Companies (“Obloenergots”) which are responsible for distributing power in different “Oblasts.”

The TA Program also had some topical consultants to deal with issues of interest to multiple advisors (i.e., privatization, information technology, metering, licensing, legislation, etc.)

Each donor was asked by the coordinator, the World Bank, to select areas of interest for support. Following that it was mutually agreed that the work would be shared as follows:

<b><u>BENEFICIARIES/TOPICS</u></b>	<b><u>DONORS</u></b>	<b><u>PRIME CONTRACTORS</u></b>
<b><u>A. Generator and HV Network Advisors</u></b>		
- Thermal Power Companies	USAID	Hagler Bailly
- Hydro Power Companies	Swiss Govt.	Electrowatt
- Nuclear Power Sector	EU-TACIS	British Energy
- High-Voltage Network	EU-TACIS	Red Electrica
<b><u>B. Market and Regulatory Advisors</u></b>		
- NERC	USAID	Hagler Bailly
- Energomarket	USAID	Hagler Bailly
- Licensing	KHF	CoopersLybrand
- NDC	KHF	Coopers & Lybrand
- Metering	Dutch	KEMA
<b><u>C. Advisors to “Oblenergots” (LECs)</u></b>		
- All LECs	EU-TACIS	ESBI
- Crimea LEC	EU-TACIS	ESBI
- Donbass LEC	EU-TACIS	ESBI
- Kharkiv	EU-TACIS	ESBI
- Kiev LEC	USAID	Hagler Bailly
- Vinnitsa LEC	USAID	Hagler Bailly
- Zaporozhye LEC	USAID	Hagler Bailly
- Lviv LEC*	USAID	Hagler Bailly
- Khmelnytsk LEC*	USAID	Hagler Bailly
- Lviv LEC	EdF	EdF
- Odessa LEC	EdF	EdF
<b><u>D. Topical Consultants</u></b>		
- TA Coordination	KHF/Swiaa	PHB & EWE
- Legislation Concept	EU-TACIS	Univ. Dundee
- Legislative Process	---	SSD
- Information Technology	Japan	PCI
- Privatization	KHF	Schroders
- Financial Recovery Plan		
Monitoring*	USAID	Hagler Bailly

\* Additional tasks assigned

The TA Program was originally planned to last for a year, ending in mid-1995. However, because of the complexity of the Program which required the development of a legal and regulatory institutional framework, creating 33 joint stock companies (including four power generating companies and 27 distribution companies, upgrading the National Development Center (NDC) for power transmission through the national grid, and development of the wholesale electricity market (the national pool), and carrying out pre-privatization work for the power sector enterprises, the donors decided to extend the TA program to strengthen the market-based power industry structure developed with the help of foreign advisors. It was also decided to extend the TA for privatization.

All parties involved in the TA program have tried to improve the effectiveness of the new market structure. However, the role of TA in carrying out pre-privatization work has been of very limited effectiveness as the donors did not find enough resources to do so in a comprehensive and timely manner. Further, during 1996-97, privatization did not receive much support in the Ministry of Energy. The donors also had to work under the deepening economic crisis during 1995-98 when there was serious fuel shortages for power generation because of non-payment for power.

As noted, during 1997/98, with the strong support of the World Bank and the G-7 countries, GOU developed a Financial Recovery Plan (FRP) for the power sector to increase tariffs, improve collections from power sales and settlement of outstanding debts. The World Bank helped develop the FRP including an Implementation Action Plan (IAP) which was approved by Deputy Prime Minister Tygypko on June 3, 1998. The IAP sets out key indicators for monitoring performance under each action and identifies the technical assistance being provided by different consultants. Under USAID financing, Hagler Bailly has been performing the function of monitoring and reporting and providing advice and guidance to NERC and Energomarket in the tasks they have to perform under the IAP of the Financial Recovery Plan. Until this Plan implemented in full, there is need for USAID assistance to have effective monitoring and reporting of the Plan on a sustainable basis. Further, there is need for revitalizing the FRP by expediting the privatization of generating and distribution companies, starting with the latter and following a time-bound program for privatization to make the power sector viable on a sustainable basis. If the Government agrees to this, expanded TA would be required to implement the privatization program. In this context, USAID can consider putting forward at the next donor conference a proposal for the formation of an Inter-Ministerial Task Force for the Implementation of the Privatization of the Power Sector Enterprises and offer to finance a Privatization Advisor for two years to work with the proposed task force consisting preferably of Deputy Ministers from the Ministries of Energy, Finance and Economy. As noted, if the privatization process gets strong support from GOU, the monitoring and reporting function under a modified FRP becomes important. This could also be considered for continued financing by USAID. Further, there is need for legal consultancy services to help the Energomarket revise and finalize with the help of other relevant agencies the Wholesale Market Law.

Even though the TA program is still continuing in some form, some of the donors have decided to end their involvement while some others have decided to extend the program. USAID has decided to continue its role in the TA program. One example is extending the contract of the consulting firm, Hagler Bailly, up to August 1999. Meanwhile, it has also decided to get an evaluation of its TA activities in Ukraine to find its effectiveness and find out whether there is justification for continuing its TA work in Ukraine in some areas of critical importance. This report is a major component of that evaluation.

Further, continued USAID technical assistance seems to be needed for personnel training and advisory services to strengthen the National Energy Regulatory Commission (NERC). NERC has emerged as a key player in the energy sector, with regulatory powers on a national level. Currently NERC does not have adequately trained staff to undertake its key mission in the regulatory field. Further, NERC has been a central player in the implementation of the Financial Recovery Plan (FRP) and USAID advisory services in this context has made significant contribution. It seems worthwhile continuing USAID technical assistance to NERC.

## **2. GOU, USAID, and Donor Cooperation: Issues and Lessons**

As noted, multilateral and bilateral donors, as noted, started providing initial technical assistance to the power sector when GOU adopted a Market Transformation Plan in April 1992. In July 1994, the World Bank convened the first power sector donor conference in Kiev at which donors agreed to expand their technical assistance to help GOU implement its power sector restructuring program. At this conference, the World Bank agreed, at the donors' request, to coordinate the overall technical assistance activities of different donors to insure that all TA needs were covered without unnecessary duplication.

The main objectives of the TA Program were to help the GOU in carrying out market reforms in the power sector and help with the preparatory work for privatization of power sector enterprises. TA parties expected to achieve their objectives by the end of 1995. However, because of delays in the process of developing and implementing a market-based electricity industry structure, the donors had to continue the TA program well beyond the originally intended period. This program was carried out under very difficult conditions when the power sector was facing crisis because of large-scale non-payment of bills by consumers and the consequent inability of power sector enterprises to pay for fuel and meet labor and other costs. Moreover, there was lack of GOU commitment to privatization of power sector enterprises by relying on the sale of large block of shares to strategic investors and transferring management control to those investors. Faced with the financial crisis in the sector, GOU agreed with the World Bank and G-7 member countries to develop a Financial Recovery Plan (FRP) for the power sector in late 1997. Subsequently, recognizing the problems and issues involved in effectively coordinating activities of multi-donors, in February 1998, the World Bank did organize in Kiev an International Donor Institution Workshop on Power Sector Financial Restructuring. A number of outstanding issues notably concerning the volume of both financial and technical assistance for the sector and the phasing of the privatization of the power sector enterprises were clarified.

As noted, the FRP was enacted on April 18, 1998. Based on this Plan, it was decided to expand the TA program through mid-1999 with the following main objectives to help: (1) achieve full implementation of market-based retail tariffs set by NERC without government interference; (2) make the wholesale electricity market work efficiently by using transparent and fair procedures; (3) facilitate privatization of government controlling share in four power generating companies and in all 27 LECs; and (4) with measures to collect arrears within three years. To achieve the above goals, USAID continued to fund advisors to NERC, Energomarket/NDC, selected generating companies and LECs in the fields of regulation, financial management, and procurement, and undertook the responsibility for monitoring the progress under FRP while other donors continued providing advisors for facilitating privatization and for the development of information systems in power sector enterprises. As noted, many multilateral and bilateral donors were involved in the TA program which was carried out under very difficult conditions. The power sector market structure and its operation needs further improvement, the accounting and financial management practices in power

sector enterprises continue to be deficient (as they are still using largely Ukrainian accounting standards), and privatization goal has been met only partially. Therefore, there is a crucial need for continuing the TA program but many donors have either run out of funds and/or are thinking of stopping funding in the near future. Further, it is not clear whether the World Bank would be willing to coordinate the TA activities in the future. Looking back, the Bank faced a difficult task of coordinating the TA activities of many donors. The Bank used the services of an advisor from the consulting firm, PHB, with Swiss funding, to do the TA coordination. This advisor used to hold monthly meetings of all donors for the TA program and provide monthly reports to the World Bank. The Bank used to hold semi-annual reviews of the TA program. As TA activities of some donors have either ended or ending, and as there is still need for TA, the Team recommends that USAID continue funding for TA. The lessons from the past TA activities are that: (1) it is difficult to coordinate TA activities of multi-donors, avoiding duplication and optimizing benefits; (2) when TA needs are large-scale, it would have been more advisable for GOU to fund the TA program partly with loans and partly with grants; and (3) dependence only on grant funds for TA funding need to be avoided in the future. Tailoring TA activities to the availability of grant funds, not to meet the overall critical needs of the power sector, was not an efficient approach. In this context, it has to be noted that in spite of limited funding by both EU-TACIS and USAID for improving accounting and financial management system, there has been only limited progress as the grant funds available for this task were not adequate to make a marked impact.

### **3. Recommendations**

The Financial Recovery Commission (FRC) should set a new schedule to meet the provision in the FRP which have not been met and/or partially met so far. In this context, FRC should give increased attention to monitoring progress in cash collection and debt rescheduling.

GOU should appoint an Inter-Ministerial Task Force consisting of top officials (preferably Deputy Ministers) of the Ministries of Energy, Finance, and Economy to expedite the privatization process by ensuring a transparent process. USAID should consider providing a Privatization Advisor to the Task Force who will also participate in all deliberations of the Task Force.

Power generating companies and LECs should be required to submit annual audit reports based on financial statements that meet international accounting standards.<sup>133</sup> Additional TA from USAID could be required in achieving this important task which will also help make reliable financial information available to potential strategic investors.

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<sup>133</sup> GOU is currently developing national standards of accounting for Ukraine based on international accounting standards. Technical assistance is required to ensure that these new national standards of accounting are developed on a sound basis. Meanwhile, USAID can finish the accounting improvement activity initiated in Kievenergo and Lvivoblenergo and make them models to be used by power sector enterprises to move toward the use of modern computerized accounting systems.

## VIII. EVALUATION OF THE UKRAINIAN SITUATION GOING FORWARD

### A. Evaluation Criteria

The Statement of Work for this evaluation provides a context for our evaluation criteria. Our evaluation criteria make up a checklist to ascertain whether desired outcomes were forthcoming (e.g., effectiveness of strategy and of implementation). The checklist criteria we developed to apply in this Chapter are as follows:

- Resource was directed to known needs in the power sector.
- Provided effective strategy.
- Provided effective implementation.
- Ensured profitability of the power sector.
- Created efficient and effective market operation.
- Created efficient and effective financial operation

We apply these evaluation criteria to refine our recommendations for the next two years.

### B. Evaluation of Methods to Achieve USAID Objective

The task here is to evaluate the approach taken to meet the desired objective. USAID's future objective, discussed in Chapter 1, is without question appropriate. We will address each of the major topics in the previous chapters, in light of USAID's objective, and apply the evaluation criteria in order to refine our recommendations.

#### 1. General Conclusions

Measured against our criteria, how did the technical Assistance of USAID and its contractors work to resolve some of these fundamental problems? The Ukraine situation is difficult because it presents the appearance of reform, but faces huge gaps in institution building. As a result of *diplomatic drift*, international donors have allowed Ukraine to maintain the illusion, internally among its experts, that it is very advanced in terms of restructuring, which is a false premise. These difficulties notwithstanding, it seems abundantly clear that the Technical Assistance of USAID and donors did not overcome ineffective market strategy, ineffective market implementation, uncertain profitability, and ineffective financial operations.

The major problem we observed is that basic market concepts have not been transferred to electricity experts in Ukraine, even though major resources were expended to achieve this aim. The Team observed that the Major Contractor did not have full expertise in the issues and options for competitive electric market restructuring. Ukraine's electricity *market* is very far from being competitive, at any level. Direct intervention in the *market* by the GOU is the primary problem. The source of this problem, however, is the market structure and the market mechanics, both of which require significant reform. The corollary problems of non-payments and cash-collections are caused in large part by GOU control, but are used to justify further GOU intervention.

These and additional circumstances previously described give rise to the following general recommendations for the next two years:

- Accelerate education on the energy industry’s “3Rs,” reform, (market) restructuring, and refinance (including privatization).<sup>134</sup>
- Implement options for generators and LECs to avoid depositing their revenues in the GOU transit account.
- Require resolve of the major market structure and market mechanics problems, to enable the pool to provide unbundled, competitive market clearing prices.<sup>135</sup>
- Require development of legal institutions that provide for certainty in energy economics and in the energy policy environment.<sup>136</sup>
- Take proactive steps to create strategic leadership in Ukraine on the critical issues of competitive market structure and privatization.
- Accelerate privatization of LECs and generation companies.

These recommendations are followed by more detailed recommendations in support.

## 2. Privatization

USAID has not taken a direct role in privatization, however, with respect to Technical Assistance. But it has been responsible for development of economic conditions that enable privatization. We reiterate our finding that the necessary conditions for privatization, in terms of infrastructure development, have not been developed. Ukraine’s circumstances include a socialist orientation against private ownership, a fear of foreign takeover, a fear of job loss (from replacement or downsizing), and government emphasis on control, rather than effecting privatization. From our view, the barriers to privatization are all but overwhelming. This makes it difficult to prioritize the problems so that they can be systematically resolved.

The main problems are obvious to the Team, nevertheless, that the conditions for competition have not been developed, adequate legal and regulatory institutions are lacking, and privatization must be preceded by restrictions on the GOU’s intervention in the market. Thus, we again reiterate themes stated by USAID, that an adequate legal and regulatory context must be in place, workable competition in electricity and in power plant fuels is essential, and generator indebtedness to fuel providers must be reduced. In addition, the Team emphasizes the need for Technical Assistance to increase the level of understanding among Ukrainian experts about privatization and regulator functions.

Looking forward, privatization will become more complex in Ukraine. This suggests the need for specific recommendations. A number of questions arise. What should AID’s role be in privatization, what are the key elements of a plan, including the players, what are the necessary conditions for privatization, what legal conditions are necessary for privatization, and how can privatization be connected to new energy legislation? The Team’s proposed legislative framework, summarized in Chapter V, attempts both to integrate privatization and to create the necessary conditions for privatization. Recommendations in this section can be viewed as the first steps toward integration of market restructuring and privatization.

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<sup>134</sup> Use training programs, conferences, expert advisors, and a closer relationship between USAID/donors and Ukrainian decision-makers.

<sup>135</sup> Bilateral contracts are already allowed, or are not prohibited, in the form of CFDs.

<sup>136</sup> The legal and regulatory context, which is conducive to private investors, is in not in place.

We strongly recommend that USAID become directly involved in electric sector privatization. Accordingly, the Team offers a summary list of specific recommendations from the longer list of recommendations in Chapter II, as follows:

- Improve conditions for investors in tender offers.
- Form an association for LEC and generation investors, including potential investors.
- Provide legal advisers to assist in drafting legislation for better results, moves the onus of the subsidies from the company to the government, and compensate private companies directly.
- Provide advisers to each tender commission, to monitor both the technical and the legal aspects of each sale.
- Change tax treatment to make tenders more attractive to foreign investors.
- Provide tax advisers at a high level in the Ministry of Finance.
- Determine a mechanism for avoiding payments to the Transit Fund, in order to provide incentives to investors who collect cash and non-cash payments.

### **3. Wholesale Market Development**

USAID and donors need to be able to explain how to provide an effective wholesale market strategy and how to implement this strategy. This requires a level of understanding and expertise on market goals, market functions, and effective market operation. Accordingly, we summarize the needs we perceive, from the most basic to the most sophisticated, as follows:

- In depth expertise on competitive electric market issues and options.
- Explain why low cost plants will not sell power at low prices under bilateral contracts.
- Explain why a customer with varying loads cannot obtain all its power needs through a bilateral contract with a base-load plant.
- Reform the pool to allow for competitive prices based in marginal generation bids.
- Eliminate government intervention of plant commitment and wholesale price setting.
- Remove incentives for generators and customers to avoid payments and use of cash.
- Pursue tax reform to remove unnecessary penalties on the most efficient generation.
- Create incentives to enable bilateral contracts around the pool.
- Establish explicit market protocols to ensure workable competition in electric power.
- Reform the Transit Account to eliminate mandatory deposits to the extent possible.
- Allow generators to purchase adequate supplies of natural gas, coal and fuel oil to avoid limitations of plant operations.
- Propose a *base line*, or minimum, market structure that includes a workably competitive balancing market and bilateral contracting.
- Explain the specific reasons why Ukraine does not have a competitive electricity market.
- Explain why pool prices will regulate and largely track bilateral prices if workable competition is possible.
- Create simple markets for ancillary services, balancing power, and frequency control in Ukraine.
- Enable Ukraine's generation and transmission to re-integrate with the power systems of neighboring countries.
- Perform a regional market study for Central and Eastern Europe to determine the scope for exporting power from Ukraine and the related transmission constraints.
- Provide TA to demonstrate full use of IAS in a generating company and a LEC.

#### 4. Local Electric Distribution Companies

USAID's Technical Assistance to LECs needs to focus on ensuring LEC profitability and efficient and effective financial operation. The major issues, oft repeated, are customer non-payment and cash-collections. Customers can negotiate an agreement with the LEC to decide a debt repayment schedule. LECs also need to be able to terminate electricity and heat supply of customers who do not comply with the terms of payment. To cure these problems, many of those interviewed by the Team suggested that privatization of LECs was essential and possibly the only viable solution. Bilateral contracting was suggested by many as a way to provide for payment certainty between large customers and LECs. Based on these points, the Team recommends that USAID's Technical assistance to LECs focus on the following:

- Debt rescheduling with incentive options.
- Termination procedures and enforcement of termination rights.
- Flexibility for LECs to set retail prices within a broader range.
- Develop protocols for an Independent Energy Accountant to administer wholesale market settlements (see Chapters III and V).
- Strategies to expedite privatization of LECs by auctioning large blocks of shares to private investors.

#### 5. Regulatory Development

The Team sees evidence that USAID and the Major Contractor placed inordinate weight on the role of NERC and relied on NERC's Chairman to champion – be the *fixer* for -- competitive restructuring. In retrospect, this strategy was unsuccessful because it placed so much pressure on the NERC that its Chairman was fired. The Major Contractor and USAID applied substantial resources to educating and advising NERC, but other entities in the GOU were not given these same opportunities. An expected result is resentment and fear that NERC is becoming more knowledgeable, and knowledge is power in the business of energy policy and regulation.<sup>137</sup>

Our consistent theme is that knowledge and expertise on the issues and options related to competitive power markets, and the regulation thereof, has not been transferred to key stakeholders, including the GOU. As a result, The Major Contractor efforts to provide knowledge about issues and options may have benefited NERC, but the overall result on Ukraine is questionable with regard to providing effective regulatory strategy, effective regulatory implementation, or efficient and effective market operation.

Without a broader diffusion of expertise, it seems unlikely that effective energy regulation and an effective statutory framework can be developed. Thus, a deeper understanding of the issues and options seems essential for stakeholders in Ukraine to advance regulation and legal institutions, particularly a statutory framework. At the risk of redundancy, we repeat a summary version of most of our recommendations from Chapter V, as follows:

- Sanction a single, independent entity to perform grid operation – an Independent Grid Operator (IGO).

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<sup>137</sup> Generally, see A. Toffler's famous book Power Shift: Knowledge, Wealth, and Violence at the Edge of the 21<sup>st</sup> Century, Bantam, 1990.

- A pool-based day-ahead electricity market that relies upon generator discretion to submit bids based on short-run marginal costs (SRMC).
- Simplified generator bids to include start-up and no-load costs in with SRMC.
- Allow loads (LECs and large customers) to forecast their own requirements.
- Allow submitted generation and load bids to determine market clearing prices.
- An hour-ahead balancing market based on generator SRMC bids.
- Bid-based ancillary services markets for operating reserves and frequency control.
- Require loads to purchase operating reserves and pay for frequency control.
- Allow for bilateral contracts for differences around the pool, if metering is used.
- Authorize an Independent Energy Accountant (IEA) to administer settlements, the bidding process, and the submission of scheduled loads.
- Allow LECs to enter into bilateral contracts if they have meters, and pay the appropriate wholesale power fees.
- Allow generators to enter into bilateral contracts if they have meters, pay for meter data-processing, and pay the appropriate wholesale power fees.
- Implement over time a system of high-voltage meters at the grid level.
- Allow generators and LECs outside Ukraine sell or purchase power, subject to bidding/scheduling requirements of the grid operator and settlements of the IEA.
- Allow generators to competitively purchase fuel within or outside Ukraine.
- Implement a system of gas pipeline capacity bidding to create market prices and open access to GOU-owned pipelines.
- Require unbundling of wholesale and retail rates.
- Prohibit GOU intervention in the allocation and pricing of coal, natural gas, or oil.
- Allow private entities to own controlling interest (51%) in LECs or generating plants.
- Limit ownership by any single or joint entity, to no more than 20 percent of the market share of Ukraine's LECs or generating companies.
- USAID and donors should take a more pro-active role with Technical Assistance to advance independent regulation to foster workable competition.

## 6. Intervention and Institution Building Programs

Success in acquiring and using knowledge has a direct impact on the level of change in electric industry reform and restructuring. The acquisition of knowledge is even more fundamental than that. As the recent World Development Report explains, “poor people differ from rich ones not only because they have less capital but because they have less knowledge.”<sup>138</sup> For this and other reasons, the Team strongly supports education and training in the electric power sector in Ukraine, especially the USEA Partnership Program and the IIE MBA and Training Programs.

The USEA and IIE programs need to be *client driven* on the one hand, but need to address important topics of relevance to competitive market restructuring on the other hand. Ukraine counter-parties may be largely unaware of the critical issues and options related to competitive markets. Thus, supportive leadership on this may be necessary from USAID, The Major Contractor, or donors. Both the partnership program and the training program should focus on the development of effective strategy, efficient markets, and effective financial operation.

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<sup>138</sup> World Development Report, World Bank, 1998/99 (ISBN 0-19-521118-9)

#### **a) Recommendations on USEA and IIE**

Primary recommendations of the Team regarding USEA are as follows:

- The Team recommends that the Partnership Program be offered to Zakhidenergo, Donbassenergo, and the National Dispatch Center (NDC).
- The task of introducing international accounting standards (IAS) should be completed at Lvivoblenergo.
- The Team recommends a twinning arrangement with an ISO in the U.S., to be organized by USEA.
- Like entities, for example wholesale regulators, should be twinned in partnerships, in order to avoid major mismatches between entities in strategic viewpoints and objective functions.

Primary recommendations regarding IIE are as follows:

- Assess how regulation engenders transaction costs and contrast the differences in transaction costs between various types of market structure.
- Provide longer seminars, lasting several weeks, both for the MBA program and for training.
- Present detailed comparisons between Ukraine and other countries, in order to show how things can be done in Ukraine and how things are done in other countries.

#### **b) Management of Technical Assistance – More Experts and Counter-parties?**

The Team believes that USAID's intervention and institution building programs did not meet many of the known needs of counter-parties, especially the need for in depth expertise on specific issues and options. The question is how can this be avoided during the next two years? To better manage Technical Assistance the tasks need to be clearly stated and understood and managed on a day to day basis. If tasks are vague then there is little recourse and usually a misdirection of The Major Contractor resources. USAID needs to better manage these tasks, but the prerequisites appear to be in-depth expertise in the relevant subject area and a vision of the desired end-state

An obvious problem is that USAID administers the contract for Technical Assistance, but the Major Contractor is usually considered the expert and usually has the most interface with the counter-party. To best focus these efforts, USAID needs to work very closely with the counter-parties and have substantial expertise in the relevant subject matter. Can the system of relationships between USAID, counter-parts, and The Major Contractor be enhanced? In part this is a problem of accountability. But how can USAID assure accountability at low transaction costs to itself and The Major Contractor? One response is to ask for weekly meetings with The Major Contractor and propose a streamline form of reporting. USAID needs to know what its contractor is doing, what is planned for the next month, and what are the critical events and possible unmet needs? This can be integrated into next versions of IQC contracts.

A less obvious problem is that the context for market restructuring has not been well defined. Upon reflection, the *missing piece* may be that a well-defined competitive market context has not been formed. The Ukraine situation seems to fit these circumstances. If the context is not well defined and counter-parties and others do not achieve a high level of learning, then the objectives of restructuring are likely to remain vague and ill defined.

Related is the question of how to best offer Technical Assistance? The Team was asked to evaluate, in general, the value -- the bang-for-the-buck -- of different forms of Technical Assistance? We compared The Major Contractor's development of papers to the development and presentation of a course on the same topic. The results were quite obvious. The counter-party, when it is placed as the target audience, becomes more involved and guides the Major Contractor to issues and dialog of direct relevance. Hence, the audience engages in dialog with the Major Contractor and the audience provides more direct feedback. This makes the Major Contractor assume greater accountability. The "performance indicator" is also more directly known (i.e., whether the course was a success or was not). Thus, presentations (workshops, training, and education) appear to provide much greater value to counter-parties, as compared to reports written by The Major Contractor that usually stay largely unread on shelves.

The Teams response to these problems is twofold. First, we recommend that Technical Assistance be offered to a broader set of counter-parties. Second, Ukraine counter-parties are likely to gain major benefits by viewing the competitive market context in other countries. This can be achieved both by bringing outside experts to Ukraine and by giving Ukrainians more out-of-country exposure. One problem with educating and training Ukrainians is that management and executive positions change so rapidly (i.e., the *musical chairs* problem). An approach to combat this is to target department heads for training and education.

Thus, we recommend both the cultivation of more counter-parties and the development of more partnerships between counter-parties and outside experts. The later can be achieved through a series of exchanges between Ukraine experts and international experts (e.g., on competitive wholesale markets), both in Ukraine and in other competitive contexts. This may be achieved through the use of *virtual partnerships* that leverage pro-bono efforts of international institutions.

#### **d) Identification of Policy Gaps Between GOU, USAID And Other Donors**

Despite some progress in economic reform, most observers agree that Ukraine has not made the tough, but necessary, policy reforms done more successfully by its central European neighbors such as Poland, Czech Republic and Hungary. There seems to no strong political will and commitment to implement reforms. Decrees are issued as reforms, but sometimes without reference to a long-run vision. As well, decrees are usually not followed up on in a timely manner. Some leaders in key positions and members of Parliament do not seem to be convinced of the need for painful reforms. There seems to be need for policy reform orientation seminars for selected policy makers which could possibly be organized by the Economic Development Institute (EDI) of the World Bank. Meanwhile, the reform process is slow. As a matter of fact, because of the forthcoming election in October 1999, progress under reforms agreed with international and bilateral donors is at a standstill. As a result, the transformation to the market economy in Ukraine is most likely to take a much longer period than anticipated in the early 1990's and the U.S. assistance would be required well into the early part of the next decade. A recent USAID Country Strategy Paper for Ukraine notes that the operating environment for the private sector in Ukraine is no better than it was five years ago. This reflects not only unsatisfactory progress on GOU policy reforms and development efforts, but also the inability of the donor community to influence significant changes at the national level.

The energy production has been cut in half since independence and the physical infrastructure has deteriorated seriously. The energy sector has accumulated large debts -- more than \$1.7 billion since independence, which have been financed by credits and loans from international and bilateral sources. The country has taken some initial steps to restructure the power sector. As noted, there

was a break-up of the energy production and distribution monopolies, and there are now four thermal, one nuclear, two hydroelectric companies (GENCOs), 27 distribution companies (LECs) and one dispatch and transmission company. The National Energy Regulation Commission (NERC) has been set up and the Energomarket consisting of all GENCOs, LECs and Independent Electricity Suppliers (IESs) is operating, but they do not have autonomy and the Ministry of Energy and Electrification (Minenergo) still exercises control and decision making. NERC and Energomarket are unable to function as independent bodies following transparent rules and procedures because of political interference. As a result, there is widespread confusion in the sector. The wholesale electricity market (the national power pool) is under attack. There is a growing demand for bilateral contracts. Cash collection is hardly 15%. As a result, employees are not paid for months. The commercial losses of power is range from 20-50% in different “Oblasts,” partly because of power thefts by tapping the supply network.

Looking back, the Team feels that the TA program was unwieldy with the participation of many donors and consulting firms. There was lack of unified focus among donors as the TA program consisted of a series of independent activities. The World Bank faced a serious problem in coordinating the activities under these conditions. There seemed to be some mismatch between TA need and resources. For example, the coal sector which is of critical importance for supplying coal to thermal power plants and has been experiencing crises, was left out of the scope of the TA program. Further, power distribution companies (LECs) did not receive enough TA. According to the original plan, all the 27 LECs were to receive some form of TA. USAID was to be involved in seven of them and EU-TSCIS was to be involved in the other 17. However, as it turned out, USAID helped three LECs intensively under the Partnership Program and helped four others in a marginal way, focusing on making them aware of the need for improving their accounting standards. EU-TACIS was not able to provide TA to many LECs as it focused its TA funds on Energomarket, the State Property Fund (which is in charge of privatization) and Minenergo. There was lack of efforts on the part of donors to educate key policy makers on energy sector issues and solutions. The constant change in leadership in the energy sector also proved to be a delaying factor.

Deeper reforms in the energy sector are needed. The policy, legal and regulatory environment needs to be strengthened and extended to other aspects of the energy market, including coal, oil and gas. Suppliers such as LECs should be empowered to collect energy tariffs. For efficiency and financial reasons, privatization and restructuring of energy companies with significant involvement of international strategic investors is essential. Strategic investments are necessary to supply the needed capital, technology and managerial expertise, and to put the energy sector on a sound commercial footing. The ability of strategic investors to withstand political pressures is essential to achieve the final objective.

Electric generating and distribution companies have to become economically viable and competitive in order to achieve strategic objectives. Those companies have to develop and adopt policies to: (1) reduce costs for electricity production, transmission and distribution while simultaneously increasing investments; and (2) establish the procedures to serve customers trouble-free and collect bills from them in full in a timely manner. Currently, the macroeconomic crisis in Ukraine and the associated socio-political instability have had a negative impact on the power pool operation, which means that production is not occurring at the lowest possible cost and generating and distribution companies do not get paid, especially not in cash. As a result of capital and municipal government pressure not to cut off power to non-paying customers, companies are unable to purchase sufficient fuel to operate at attainable capacity and the overall economy suffers losses. USAID consultants have worked intensively on monitoring the progress of cash collection under the Financial Recovery Plan agreed

by GOU with the World Bank. The major thrust now for USAID would be strategic privatization, starting with the distribution companies. In the past, USAID was not actively involved in the process as EU-TACIS was providing TA for privatization. As EU-TACIS funds have run out, USAID now should take the lead in providing TA for accelerating strategic privatization and tax reform (which is needed to attract strategic foreign investors. Currently, Ukraine has a complicated taxation system which needs to be reformed on a priority basis). Further, continued USAID support is needed for strengthening the new institutions established with USAID funding, namely NERC and Energomarket. The current operational problems they face have to be resolved by making their working transparent under a sound legal framework. In this context, USAID technical assistance is needed to review the Electricity Law, which appears to have been passed by GOU by patterning it after such laws in the U. K. and some other European countries, without adapting it adequately to local conditions in Ukraine. Now Parliament is in the process of developing a new Wholesale Electricity Market Law which is expected to resolve many of the problems currently being faced in the Electricity law. It is of crucial importance that USAID provides expert legal services for developing a legal framework for the electricity sector.

Initial efforts to privatize electric distribution companies were not successful. USAID and other donors are discussing with GOU the necessity to develop a program for successful privatization of the power sector with the non-discriminatory participation of strategic investors. The assistance probably would be rendered to the Ministry of Energy (MOE) which is an advocate for strategic investments to the power industry and also to other entities as opportunities arise. In addition, necessary pre-privatization activities need to be implemented within the power utilities to provide documentation to interested investors (i.e., master and business development plan, restatement of accounts in the generally accepted accounting standards, audited annual reports). These activities are based on the belief that only a privatized energy sector can be economically viable.

The power industry suffers from non-transparent fuel procurement practices. In most cases, power entities obtain poor quality coal at high cost as part of the electricity-coal offset mechanism. The existing practice does not stimulate coal mines to compete on the basis of quality of coal. In addition, power companies suffer from utilization of poor quality coal (increased maintenance needs plus purchase of fuel oil for co-firing), and the marginal cost of electricity remains quite high, which constrains them from bidding competitively in the wholesale electricity market. GOU has not restructured its major agency for fuel procurement, the State Reserve Fuel Committee. In this context, the Team supports USAID plans to assist GOU to introduce market-oriented, tender-based procurement practices of fuel (coal, fuel oil) and required similar approaches by independent suppliers who pay for electricity with fuel.

Further, as noted, USAID needs to consider expanding the highly successful Partnership Program and the IEE Education Program to cover the training of more personnel to carry out the power sector restructuring program which is expected to continue well into the early part of the next decade.

The TA Program was originally planned to last for a year, ending in mid-1995. However, because of the complexity of the Program which required the development of a legal and regulatory institutional framework, creating 33 joint stock companies (including four power generating companies and 27 distribution companies, upgrading the National Development Center (NDC) for power transmission through the national grid, and development of the wholesale electricity market (the national pool), and carrying out pre-privatization work for the power sector enterprises, the donors decided to extend the TA program to strengthen the market-based power industry structure developed with the help of foreign advisors. It was also decided to extend the TA for privatization. All parties involved in the

TA program have tried to improve the effectiveness of the new market structure. However, the role of TA in carrying out pre-privatization work has been of very limited effectiveness as the donors did not find enough resources to do so in a comprehensive and timely manner. Further, during 1996-97, privatization did not receive much support in the Ministry of Energy. The donors also had to work under the deepening economic crisis during 1995-98 when there was serious fuel shortages for power generation because of non-payment for power.

In late 1997, with the strong support of the World Bank and the G-7 countries, GOU agreed to develop a Financial Recovery Plan (FRP) for the power sector to increase collections from power sales and settlement of outstanding debts. The Plan, developed by an inter-Ministry Financial Recovery Commission (FRC) which includes representatives from five ministries, developed a package of 23 measures. The World Bank helped develop an FRP Implementation Action Plan (IAP) which was approved by Deputy Prime Minister Tygypko on June 3, 1998. The IAP sets out key indicators for monitoring performance under each action and identifies the technical assistance being provided by different consultants. Under USAID financing, Hagler Bailly has been performing the function of monitoring and reporting and providing advice and guidance to NERC and Energomarket in the tasks they have to perform under the IAP of the Financial Recovery Plan. The implementation of this Plan was originally scheduled to be completed by April 18, 1998. However, all actions have not been completed so far. Until this Plan implemented in full, there is need for USAID assistance to have effective monitoring and reporting of the Plan on a sustainable basis. Further, there is need for revitalizing the FRP by expediting the privatization of generating and distribution companies, starting with the latter and following a time-bound program for privatization to make the power sector viable on a sustainable basis. If the Government agrees to this, expanded TA would be required to implement the privatization program. In this context, USAID can consider putting forward at the next donor conference a proposal for the formation of an Inter-Ministerial Task Force for the Implementation of the Privatization of the Power Sector Enterprises and offer to finance a Privatization Advisor for two years to work with the proposed task force consisting preferably of Deputy Ministers from the Ministries of Energy, Finance and Economy. As noted, if the privatization process gets strong support from GOU, the monitoring and reporting function under a modified FRP becomes important. This could also be considered for continued financing by USAID. Further, there is a need for legal consultancy services to help the Energomarket revise and finalize with the help of other relevant agencies the Wholesale Market Law and advice the prepare and help finalize the Wholesale Market Law.

Even though the TA program is still continuing in some form, some of the donors have decided to end their involvement while some others have decided to extend the program. USAID has decided to continue its role in the TA program by extending the contract of the consulting firm, Hagler Bailly, up to August 1999.

Further, continued USAID technical assistance seems to be needed for personnel training and advisory services to strengthen the National Energy Development Center (NERC). NERC has emerged as a key player in the energy sector, with regulatory powers on a national level. Currently does not have an adequate staff to undertake its key mission in the regulatory field. Further, NERC has been a central player in the implementation of the Financial Recovery Plan (FRP) and USAID advisory services in this context have made significant contributions. It seems worthwhile to continue USAID technical assistance to NERC.

### e) Does USAID-Ukraine Need a Larger Budget?

While the question of the appropriate level of budget for USAID-Ukraine is difficult to ascertain, given the competing priorities that are present, we recommend that this budget be increased. Our reasons are five, as follows:

- In order to influence a country as large and as politically motivated as Ukraine, major resources are required, resources beyond those previously allocated for these tasks.
- Ukrainians need to achieve a deeper understanding of “3Rs” (reform, restructuring, and refinance), especially the issues and options for competitive market restructuring.
- A broader set of counter-parties needs to be reached in order to provide a critical mass of new Ukrainian experts and supporters that recognize the benefits of competitive markets and privatization.
- The competitive market context must be established -- this is essential (1) to convince key decision-makers that restructuring is an imperative for the economy, (2) in order to provide the basis for development of more sophisticated energy legislation, and (3) to create a viable plan for privatization of LECs and generation.
- The region needs to be stabilized and maximum leverage can now be applied to Ukraine by EBRD, IMF, World Bank, USAID, and other donors.<sup>139</sup>

### 7. Financial Recovery Plan

The Financial Recovery Plan (FRP) has been useful to show progress with under-payments and cash-collections. It has allowed Ukraine to assess the extent of problems with financial recovery. In a meeting on 18 April 1998, the Government of Ukraine approved a revised version of the FRP, with strong support from the G7. The plan developed by a five-ministry Financial Recovery Commission and comprising 23 separate actions that fall into the following key reform areas: (1) cost reduction; (2) retail tariffs; (3) strengthening payment discipline; (4) collect arrears; and (5) privatization.

A summary of the Team’s recommendations for the future of the FRP are as follows:

- The Financial Recovery Commission (FRC) should continue to increase attention on the monitoring progress for cash collection and debt rescheduling.
- The success of FRP on a sustainable basis depends on the success of the privatization program.
- GOU should set a new schedule for the sale of block shares, following auction, to private strategic investors who commit themselves to an agreed amount of funds for rehabilitating/modernizing the enterprises in which they purchase large stakes.
- GOU should appoint an Inter-Ministerial Task Force consisting of top officials (preferably Deputy Ministers) of the Ministries of Energy, Finance, and Economy to expedite a transparent process.
- USAID should provide a Privatization Advisor to the Task Force to participate in all its deliberations.
- Power generating companies and LECs should be required to submit annual audit reports based on financial statements that meet international accounting standards.<sup>140</sup>

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<sup>139</sup> The opportunity is now to move it to workably competitive markets, financial recovery of LECs and generators and to profitable trading of electricity and fuel with its neighbors.

## 8. Critical Points in the Evaluation

The Team finds that much deeper reform is needed to advance Ukraine's sagging electricity situation. Electricity policy, legal and regulatory institutions need to be bolstered and competitive markets need to be created for international electricity trading, natural gas, coal, and oil. Market restructuring and privatization of energy companies will benefit significantly from strategic investors. Strategic investors have access to the necessary expertise, supply of capital, and management experience necessary to place Ukraine's energy sector on a sound commercial basis.

Success with electricity restructuring will likely be a condition on EBRD lending activities and on G7 support for funding of the K-2/R-4 nuclear plants, which will then allow for the Chernobyl Nuclear Plant to be closed.<sup>141</sup> Along with the World Bank and donors, USAID will have a lead role in assisting with the wholesale electricity market, support regulatory development, and assist in selection of privatized electric generating and distribution companies. The Team recommends that USAID address a number of critical points, both substantively and by providing resources either internal to USAID or through contractors, as follows:

- Support an independent, stand-alone market funds administrator and settlements administrator, through technical training in legal, market, and organizational areas.
- Complete separation is necessary in order to bring greater integrity and confidence to the intended allocation of cash electricity revenues.
- Provide expertise for a legislative and market rules framework that provides workable competition, allows bilateral contracts, and preserves a reformed version of the pool.
- Provide technical assistance to develop prototype bilateral contracts for LEC's and generators.
- Develop protocols related to bidding, scheduling, settlements, metering, market agreements, and market operations, while ensuring grid reliability.
- Develop NERC's capability to assess Energomarket performance and to recommend other requirements or mechanisms to assure a transparent, non-discriminatory, competitive market.
- Ensure NERCs proactive role in the Regional Regulatory Working groups in four major areas (1) licensing, (2) pricing, (3) management/organization, and (4) competition.

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<sup>140</sup> Additional TA from USAID could be required in achieving this important task which will also help make reliable financial information available to potential strategic investors. GOU is currently developing national standards of accounting for Ukraine based on international accounting standards. Technical assistance is required to ensure that these new national standards of accounting are developed on a sound basis. Meanwhile, USAID can finish the accounting improvement activity initiated in Kievenoenergo and Lvivoblenergo and make them models to be used by power sector enterprises to move toward the use of modern computerized accounting systems.

<sup>141</sup> On April 18, 1998 with strong support from the G7, the Government of Ukraine approved the Financial Recovery Plan (FRP) for the power sector. The plan includes 23 separate actions that fall into the following reform areas: (1) cost reduction; (2) retail tariffs; (3) strengthening payment discipline; (4) collect arrears; and (5) privatization.

- Recommend NERC procedures and options to achieve autonomy and authority in decisions, including how to write orders, the nature of the discovery process, and general due process.

The resources necessary to perform these tasks seem likely to include the following:

- 1 Senior Policy Analyst for 2 years (Energy Policy) (U.S. Expatriate)
- 1 Senior Attorney for 2 years (Energy Policy) (U.S. Expatriate)
- 1 Senior Business Admin. for 2 years (Energy Finance) (U.S. Expatriate)
- 1 Junior Energy Policy Specialist for 2 years (Financial Analysis) (U.S. Expatriate)
- 1 Engineer for 2 years (cooperating Country Nationals)
- 1 Lawyer for 2 years (cooperating Country Nationals)

## ANNEX I

### Specific Recommendations for IIE Training Program and MBA Program

These appear in the body of the text. They are taken from the questionnaire responses.

- Give more time and attention to methods of making a business plan.
- Give more detailed treatment to methods of cash flow statement preparation and analysis in the energy utilities
- Add to the topics in energy ratemaking
  - review of the problems of the sector;
  - restructuring of the LECs;
  - the entire agreement between NERC and Minenergo;
  - legislation providing for the workings of the wholesale market based on the current laws for the energy sector;
  - examination in more detail the principles for expense allocation for transmission and supply according to voltage classes;
  - calculation of average wholesale purchase price according to time of day;
  - methods for determining expenses according to voltage classes;
  - American experience in retail tariff calculation.
- Add to the topics in accounting:
  - More practical examples, and more analysis (from different respondents)
  - More comparisons between the US and Ukraine.
  - More depth and less breadth (particular with regard to taxes and depreciation), and more breadth (to include more about taxes, cost accounting, finance, cost reduction, business ethics, and numerous other topics) – from different respondents.
- Discuss the management of the energy sector and the stock market responses.

## **ANNEX II**

### **RETAIL PRICE SETTING METHODOLOGY NON-RESIDENTIAL (INDUSTRIAL) CONSUMERS**

#### General Framework

Each Local Electric Company (LEC) performs two functions: (1) it serves as a Low-Voltage Network Operator (LVNO) which provides wire services to affiliated and non-affiliated suppliers such as Independent Power Suppliers (IES); and (2) a Regulated-Tariff Supplier which supplies power to its retail customers, buying wire service from the LVNO and energy from the Energomarket State Enterprise (ESE) and small generators (including captive generators) and selling to its retail customers. As a LVNO operator, LEC charges all suppliers the Local Transmission Tariff (LTT) set forth in its license from NERC. The initial LTT set in the license (the base rate) remains effective for one year with monthly adjustments for inflation. The base LTT rate can change with the approval of NERC.

Further, the license from NERC also sets forth certain loss percentages (which are subject to change every quarter by NERC) to account for only technical losses, not for commercial losses.

The LTTs and the Total Loss Factor (TLF) fixed by NERC vary depending upon whether the consumer is residential or industrial. For industrial consumer, there are two voltage classes: (1) Voltage Class I pertains to industrial consumers using energy at 0.4 -10 Kv. Voltage Class II refers to industrial consumers using energy at 35-154 Kv.

The Electric Supply Tariff (EST) which is to cover the cost of transmission through the national grid by NDC to the LEC local network is to cover the cost of supply by NDC. EST is also calculated by NERC separately for residential customers and all other customers. In the future, NERC may allow NDC to charge different EST based on factors such as customer's demand, load factor, and frequency.

The Cost of Energy (E) is the cost at which LEC purchases power from ESE and small generators. ESE will provide to LECs daily reports of the cost of purchases from it in accordance with the Energomarket Members' Agreement (EMA). It is the weighted average cost of electricity purchased at wholesale from all sources (including ESE, from special status energy companies like Kievenergo, from combined heat and power (CMP) plants, and from small captive power plants. Currently, NERC is providing this figure with a lag of one day, with the weighted average price of yesterday is being used for today, with adjustment to be made at the end of each day.

The LTT and EST contained in the Retail Price calculation will lag their announcement by one month as the market cannot operate properly. Further, Under the RTS license, purchases by RTS from affiliated and independent generators must reflect the expected price of electricity purchased from ESE.

Formula for Retail Tariff to Non-Residential Customers

Based on the above explanation of terms, the formula for Retail Tariff (RT) to be calculated separately for Voltage Class I and Voltage Class II industrial consumers is as follows:

Retail Tariff = Electric Supply Tariff (EST) + Local Transmission Tariff (LTT) + Cost of Energy (E) (RP) (1-Total Loss Factor)

(i.e.)

$$RP = \frac{EST + LTT + E}{(1 - TLF)}$$

(As for retail prices for residential consumers, they are announced periodically by Minenergo).

## ANNEX III

### ALGORITHM USED FOR CASH COLLECTION AND DISTRIBUTION UNDER THE MARKET FUND PROCEDURES OF THE ENEROMARKET

The transmission and supply fee (for local transmission of power through the local LV lines) for each Local Electricity Company (Obloenergo) under the retail pricing system is fixed by NERC. Further, the Energomarket sets daily cash collection targets for each LEC. The actual collection is transferred to the Clearing Account (Transit Account) under Market Fund Administrator in the National Dispatch Center (NDC). Following this, the actual collection rate (as a percentage of the target) is calculated for each LEC following the Market Fund Procedure (MFP). The LEC receives certain percentage (say 10%) of the actual amount collected. This percentage is calculated on the basis of what it could have received as transmission and supply fee if it had met the daily cash collection target. After paying this percentage of amount to the LEC concerned from the actual collection, the remaining amount is to be divided among generating companies. (However, in practice, the Energomarket could keep a small portion in an Emergency Fund for support to companies in serious financial crisis). The balance amount (Z) is distributed among the existing power companies based on the following formula:

$$\frac{\text{Balance Amount Available (Z)}}{\text{Total Amount Due to All Power Companies}} \times \text{Amount Due to Each Power Company}$$

The amount the power companies get includes a transmission and supply fee to be paid to the National Development Center (NDC), a part of the Ukrmarket, for using its HV lines (of 220 KV and above) for transmission of power. This fee is fixed periodically by NERC as a certain amount per unit of power transmitted. The power companies pay this fee from the cash they receive from Energomarket everyday on the basis of the following ratio:

$$\frac{\text{Total Amount Owed by NDC to the Power Company}}{\text{Total Amount Due from NDC to the Power Companies}}$$

## ANNEX IV

### FINANCIAL ACCOUNTING STANDARDS

A critical issue affecting the future of Ukraine's power industry is the reliability of company record keeping and accounting systems. Under the Soviet system, the principal purpose of accounting was to monitor and control economic resources in order to meet the production targets of the central plan. There are many anomalies in the Soviet system of accounting. Capital charges were not considered as costs as the state was investing in capital improvements. Production costs were narrowly defined as the sum of expenses for materials, energy, salaries and maintenance and repairs (the so-called "prime costs."). Based on this, company "profit" was calculated which was then used to cover additional costs of production: taxes, worker benefits, housing, schools and hospitals. There were mandatory contributions from the remaining profit to specified state funds. Retained earnings were not considered important as the state was providing funds for capital investments. Further, there was no provision for write off of bad debts (uncollectable account receivable). Further, no distinction is made between "production costs" and "accounting period costs." The company revenues are recognized when the actual receipts are received, while expenses are recorded when payments accrue. This mismatch between revenues and expenses distorts the income of the company for a particular period.

Companies in Ukraine still continue to use the Soviet system of accounting even though efforts have been made to expose them to the Western accounting systems through seminars, training courses, study tours, orientation visits under the Partnership Program of USAID and technical assistance from some other donors. Further, there was an inter-ministerial Special Committee on International Standards of Accounting which organized the publication of the International Standards of Account in 1998 with the support of USAID. Following that, a Manual on International Accounting Standards (IAS) has been prepared and a Presidential Decree has been issued to use this Manual. However, the actual progress in the adoption of IAS has been very tardy as the Government has not set a time schedule for this purpose. Companies are waiting for the government decree requiring this conversion by a certain date. Meanwhile, donors should have insisted on the Government setting a deadline for this conversion while providing technical assistance for exposing key executives of selected companies to the use of IAS in U.S. companies. Further, those companies which were exposed to these modern standards, must have been required to produce their accounts in both Ukrainian and Western standards without waiting for a government decree setting a deadline, in the interest of providing reliable information to potential strategic investors in the power sector. Moreover, USAID could have made one generating company and a distribution a model for other companies in conversion to IAS.

There is an urgent need for improving accounting standards so that reliable information is available for improving the financial management of companies in Ukraine. Without this, the government cannot make informed decisions regarding the restructuring and supervision of state enterprises, lenders cannot evaluate financial profitability of companies and project viability, and potential investors have inadequate information to evaluate risks.

Currently, the Government, as both majority shareholder and regulator, finds it difficult to make tariff decisions based on transparent rules without having reliable financial reports. They cannot judge whether the companies are controlling costs or are trying to pass on costs to their customers regardless of whether they were prudently incurred. One way to remedy this situation is to require

all enterprises to develop more accurate income statements and balance sheets using international accounting standards. This will make companies more accountable for their performance. The efficiency of those companies can be easily evaluated based on financial reports prepared using international accounting standards.