Report and Recommendation of the President to the Board of Directors

Project Number: 41340
August 2011

Proposed Loan
Republic of Uzbekistan: Advanced Electricity Metering Project

Asian Development Bank

CURRENCY EQUIVALENTS
(as of 29 July 2011)

Currency Unit	–	sum (SUM)
SUM1.00	=	$0.0005799
$1.00	=	SUM1,724.47

ABBREVIATIONS

ADB	–	Asian Development Bank
AEM	–	advanced electricity metering
GDP	–	gross domestic product
kV	–	kilovolt (1,000 volts)
kWh	–	kilowatt-hour
LIBOR	–	London interbank offered rate
MDM	–	meter data management
PMU	–	project management unit

NOTES

In this report, "$" refers to US dollars.

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PROJECT AT A GLANCE

1. Project Name: Advanced Electricity Metering Project **2. Project Number:** 41340-013

3. Country: Uzbekistan **4. Department/Division:** Central and West Asia Department/Energy Division

5. Sector Classification:

Sectors	Primary	Subsectors
Energy	√	Electricity transmission and distribution

6. Thematic Classification:

Themes	Primary	Subthemes
Economic growth	√	Promoting economic efficiency and enabling business environment

6a. Climate Change Impact

No Climate Change Indicator available.

6b. Gender Mainstreaming

Gender equity theme (GEN)	
Effective gender mainstreaming (EGM)	√
Some gender benefits (SGB)	
No gender elements (NGE)	

7. Targeting Classification:

General Intervention	Targeted Intervention		
	Geographic dimensions of inclusive growth	Millennium development goals	Income poverty at household level
√			

8. Location Impact:

National	High
Rural	Medium
Urban	Medium

9. Project Risk Categorization: Low

10. Safeguards Categorization:

Environment	C
Involuntary resettlement	C
Indigenous peoples	C

11. ADB Financing:

Sovereign/Nonsovereign	Modality	Source	Amount ($ Million)
Sovereign	Project loan	Ordinary capital resources	150.0
Total			150.0

12. Cofinancing:

No Cofinancing available.

13. Counterpart Financing:

Source	Amount ($ Million)
Government	50.0
Total	50.0

14. Aid Effectiveness:

Parallel project implementation unit	No
Program-based approach	

I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed loan to the Republic of Uzbekistan for the Advanced Electricity Metering Project.[1]

2. The project will install an advanced electricity metering (AEM) system that uses modern, accurate, and theft-proof revenue meters for 1 million residential and commercial customers in Bukhara, Jizzakh and Samarkand regions. AEM will allow accounting for every unit of power consumed, which is essential to minimize commercial losses and identify upgrades that will lower technical losses. The project will help improve energy efficiency, reduce commercial losses, and improve the efficiency of electricity revenue collection.[2]

II. THE PROJECT

A. Rationale

3. The economy has sustained high growth, averaging 8.5% since 2006. Growth in 2011 and beyond is expected to remain at 8%–9%. The Government of Uzbekistan prioritizes modernizing industry and developing infrastructure and the private sector. Reliable and affordable electricity supply is vital to achieving these goals.

4. The country is one of the most energy-intensive in the world, with one of the highest electricity consumption rates.[3] High energy intensity and electricity consumption relative to the size of economy mean that even a slight improvement in energy efficiency could have a great economic impact. Promoting energy efficiency is a strategic priority for Uzbekistan and the Asian Development Bank (ADB),[4] as it is the least-cost low-carbon solution to sustaining energy security. Energy efficiency eases high energy intensity and improves energy productivity.

5. The efficient use of electricity can be promoted by accounting for every unit of power consumed. Minimizing commercial losses and identifying upgrades that will lower technical losses will help improve energy efficiency. Uzbekistan suffers high transmission and distribution losses. The state joint stock company Uzbekenergo, a vertically integrated utility fully owned by the government, estimates total system losses of up to nearly 20%: 2%–4% in transmission and 13%–15% in distribution. This is nearly four times the 5% losses experienced in advanced countries, and actual losses are thought to be higher, with commercial losses in the range of 25%–35%. As total annual power supply in Uzbekistan is 51,935 gigawatt-hours, reducing losses by 1% would annually save 520 gigawatt-hours, worth $26 million.

6. Uzbekistan's electrification rate is almost 100%. All connections are metered and billed according to tariffs set for consumer categories. But the electricity meters—electromechanical devices that were manufactured during 1960–1990—are generally old and unreliable. They are still in service well beyond their designed economic life without recalibration for accuracy,

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[1] The design and monitoring framework is in Appendix 1.

[2] ADB provided project preparatory technical assistance. ADB. 2010. *Technical Assistance to the Republic of Uzbekistan for the Advanced Electricity Metering Project.* Manila (TA7740-UZB, for $1.0 million, approved on 17 December).

[3] In 2008, Uzbekistan was the second most energy-intensive country in the world, when measured by total primary energy supply per unit of gross domestic product (GDP) (tons of oil equivalent per unit of GDP at purchasing power parity, measured in constant 2000 US dollars). It has the ninth-highest electricity consumption in the world, when measured by electricity consumption per unit of GDP (kilowatt-hour per unit of GDP, measured in constant 2000 US dollars). (International Energy Agency. 2010. *Energy Balances of Non-OECD Countries.* Paris.)

[4] ADB. 2009. *Energy Policy*. Manila.

making it difficult for Uzbekenergo to account for electricity use. They are also easy to tamper with.

7. A shortage of meter-reading personnel means that not all meters are regularly read. Customers read their meters themselves but sometimes underreport their consumption. Meter readers (or controllers) are often unable to read the meters and collect revenue, as most meters are installed inside the house. Controllers can decide to either disconnect the customers immediately for past unpaid consumption or overlook the excess consumption and enter into the system a reading lower than the actual one.

8. AEM, or "smart metering" with digital meters, allows two-way communication between the utility and consumers. AEM enables the utility to remotely monitor and disconnect supply without sending reading personnel to the site. It provides consumers with power usage information more frequently. AEM can help identify losses, reduce commercial losses, and improve tariff collection. The AEM system will accommodate both pre- and post-payment. Uzbekenergo expects to use AEM technology to increase energy efficiency through loss reduction and, potentially, demand-side management.[5]

9. With an internal budget of $32 million, Uzbekenergo is installing bulk revenue meters capable of accurately measuring and reporting interval demand for large, high- and medium-voltage industrial customers and transmission–distribution interfaces. This is to be completed by the end of 2014. The installation of an AEM system that encompasses low-voltage residential and small commercial customers is a step toward ensuring the accurate measurement of losses in various system components, allowing loss reduction efforts to focus on feeders with the highest losses.

10. Uzbekenergo has undertaken several pilot automated and advanced metering projects in Tashkent, covering 53,000 consumers. The pilot schemes have generally reduced commercial and collection losses, substantially increasing revenue.[6] AEM's two-way communication feature allowed remote connection and disconnection and prevents theft and bypassing the meter. However, integration was difficult because of the differing and incompatible technologies used. Building on the experience of the pilot projects in Tashkent, Uzbekenergo and the government plan to integrate the AEM system and expand it to all 4.5 million customers in phases. After covering the first 1 million customers with ADB assistance, the same system will be replicated in other regions.[7]

11. The project follows ADB's strategy for Uzbekistan, which includes a focus on energy efficiency and reliable power supply.[8] It will be ADB's second intervention in Uzbekistan's power sector.

[5] AEM technology enables the utility to manage load with tariffs differentiated by time of day. The power usage information that consumers will have access to, and the utility's ability to remotely control the power supply, can be used to encourage consumers to conserve energy and pay on time.

[6] The revenue increase attributable to the pilot projects was 80% of the base revenue in 2005 (World Bank. *Smart Metering, Communication, and Data Management System of Uzbekenergo*. Unpublished.

[7] The government has requested the World Bank to finance the investment cost for AEM system development in Tashkent City, Tashkent Region, and Sirdaria, which together comprise 1.5 million customers.

[8] ADB. 2011. *Country Operations Business Plan: Uzbekistan, 2011–2013*. Manila.

B. Impact and Outcome

12. The impact of the project will be a power sector that is more financially viable. AEM will help improve energy efficiency and ensure that the energy used is properly accounted for and billed. The project outcome will be substantially reduced commercial and tariff collection losses for residential and small business entity customers. The project will target distribution systems in Bukhara, Jizzakh and Samarkand.

C. Outputs

13. The project will install advanced electricity meters in 1 million residences and commercial entities. It will enable Uzbekenergo to monitor the energy balance. The billing system will be automated to improve accuracy and efficiency. The project will improve metering accuracy, anti-tampering and fault-detection capability, billing efficiency, and the tariff collection rate.

14. The project will improve the quality of customer service. With better access to information on their power usage and energy efficiency, customers will be able to make better decisions on electricity use. In households, women are the main users of electricity but do not necessarily make spending decisions. The project will give them more household decision-making power, as well as train them for jobs at regional data-management centers and district service centers.

1. Physical Outputs

15. **Advanced electricity metering system development.** The system requires (i) the installation of 1 million meters and an associated data communication system, including single-phase retail AEM meters for residential and small commercial customers, 16,000 data concentrators for retail meters and bulk three-phase meters to obtain balance (one per transformer), and cable products and (ii) the programming and installation of meter data-management (MDM) and billing systems, including computers, printers, servers, and software for three regional data-management centers and 45 district service centers.

2. Nonphysical Outputs

16. **Training Uzbekenergo personnel.** Skills training will be given to (i) staff that will install meters and create the customer database, (ii) operation and maintenance personnel and management at regional data-management and district service centers, and (iii) meter controllers who will be transferred to other sections. Special attention will be given to women employees. Contractors and a supervision and project management consultant will train staff and transfer knowledge.

17. **Public information program.** The program will disseminate information on electricity services, payment, and energy conservation through media and other means, with special attention paid to household gender roles. The program will also improve the complaint-redress mechanism and emergency hotline.

D. Investment and Financing Plans

18. The project is estimated to cost $200 million (Table 1).

Table 1: Project Investment Plan
($ million)

Item		Amount
A.	**Base Cost** [a]	
	1. Equipment	129.7
	2. Installation works and services	8.4
	3. Consulting services	2.0
	4. Social and gender program	1.0
	5. Taxes and duties [b]	32.1
	Subtotal (A)	**173.2**
B.	**Contingencies** [c]	**18.3**
C.	**Financing Charges during Implementation** [d]	**8.5**
	Total (A+B+C)	**200.0**

[a] In mid-2011 prices.
[b] To be financed from government resources.
[c] Physical contingencies were computed at 10% for equipment and consulting services. Price contingencies were computed at 0.5% for foreign exchange costs and 11.4% for local currency costs; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.
[d] Includes interest and commitment charges. Interest during construction for the Asian Development Bank loan was computed at 2.88% based on the 5-year forward London interbank offered rate plus a spread. Commitment charges for the Asian Development Bank loan are 0.15% per year, to be charged on the undisbursed loan amount.
Source: Asian Development Bank estimates.

19. The government has requested a loan of $150 million from ADB's ordinary capital resources to help finance the project. The loan will have a 25-year term, including a grace period of 5 years; an annual interest rate determined in accordance with ADB's London interbank offered rate (LIBOR)–based lending facility; a commitment charge of 0.15% per year; and such other terms and conditions set forth in the draft loan and project agreements. The government has provided ADB with (i) the reasons for its decision to borrow under ADB's LIBOR-based lending facility based on these terms and conditions, and (ii) an undertaking that these choices were its own independent decision and not made in reliance on any communication or advice from ADB. The ADB loan proceeds will be relent from the borrower to Uzbekenergo with the same terms and at the same annual interest rate as the ADB loan pursuant to a subsidiary loan agreement. Foreign exchange risk will be assumed by Uzbekenergo.

20. The financing plan is in Table 2. The government will arrange counterpart financing, in part to cover taxes and duties amounting to $32.1 million. Uzbekenergo's internal resources will cover the balance of the project cost, including installing meters and creating the billing system database, training controllers assigned to other sections, and implementing the gender action plan and public information program.

Table 2: Financing Plan

Source	**Amount** ($ million)	**Share of Total** (%)
Asian Development Bank	150.0	75.0
Government and Uzbekenergo	50.0	25.0
Total	**200.0**	**100.0**

Source: Asian Development Bank estimates.

E. Implementation Arrangements

21. The implementation arrangements are summarized in Table 3 and described in detail in the project administration manual.[9]

Table 3: Implementation Arrangements

Aspects	**Arrangements**		
Implementation period	September 2011–December 2014		
Estimated completion date	December 2014		
Management			
(i) Executing agency	Uzbekenergo		
(ii) Management unit	Uzbekenergo (minimum of 9 full-time staff members)		
Procurement	Method	Contracts	Amount
Goods and services for (i) AEM and communication system and (ii) meter data-management and billing systems [a]	International competitive bidding	1 contract	$127.9 million
Consulting services	Method	Person-months	Amount
Supervision and project management consultant	Quality- and cost-based selection	56 person-months	$2.0 million
Retroactive financing and advance contracting	Both retroactive financing and advance contracting are requested for goods and services procured in accordance with ADB's Procurement Guidelines (2010, as amended from time to time) before loan effectiveness but not exceeding 20% of the loan amount and not incurred earlier than 12 months before the signing of the loan agreement.		
Disbursement	The loan proceeds will be disbursed in accordance with ADB's *Loan Disbursement Handbook* (2007, as amended from time to time) and detailed arrangements agreed upon between the government and ADB. Direct payment, commitment, and reimbursement procedures will be used for all the expenditure categories.		

ADB = Asian Development Bank, AEM = advanced electricity metering.
[a] Uzbekenergo will install advanced electricity meters and a communication system and create a customer metering database. The supplier will install the meter data-management and billing systems and provide training and trouble-shooting during implementation.
Source: Asian Development Bank.

22. A dedicated full-time project management unit (PMU) has been established in Uzbekenergo and staffed with qualified and experienced personnel. The PMU, funded by Uzbekenergo's internal sources, will administer all consulting and procurement contracts on behalf of Uzbekenergo. It will be responsible for preparing project plans, bid evaluation reports, progress reports, applications for withdrawal of funds, and any other reports required by ADB.

23. Uzbekenergo will employ a single contractor to (i) procure the MDM and billing systems for the regional offices and district service centers and (ii) the advanced electricity meters and associated communication system using ADB's single-stage, two-envelope bidding procedure. The contractor will provide related services to Uzbekenergo such as training, trouble-shooting, and the customization and installation of the MDM and billing systems.

24. ADB will rigorously assess the project's social and economic impacts on households, focusing on gender impacts.[10] Uzbekenergo will facilitate the impact evaluation study.

[9] Project Administration Manual (accessible from the list of linked documents in Appendix 2).

III. DUE DILIGENCE

A. Technical

25. ADB conducted technical due diligence on the proposed investments and is satisfied with the rationale, technical specifications, quantities, and cost estimates. The AEM system will make billing transparent, improve operational efficiency, and build the strategic infrastructure for future load management in the three project regions.

26. The project will consist of two components to allow full AEM system functionality: (i) meters and an associated communication system and (ii) the MDM and billing systems. The project will replace over 1 million conventional electromechanical electricity meters with advanced, highly accurate solid-state electricity meters. Manipulation will be minimized by installing all meters outside of customer premises, in publicly accessible and visible areas, and in weather-proof and tamper-proof cabinets. A three-phase bulk meter will be installed at each transformer to allow electricity balancing. The meter data will be transmitted to the MDM and billing systems, eliminating the commercial losses caused by frequent human errors and inaccurate measurements. Secure two-way communication links will be installed between all meters, regional centers, and district service centers through existing power line carriers and/or communication infrastructure, to enable frequent monitoring of meter reading and better management control.

27. Regional offices will be equipped with separate MDM and billing systems and provide system operation and management oversight. The MDM system will be customized to operational needs and improve the efficiency of management and operational processes. Each regional office will be able to perform MDM functions, including regional load balancing, financial audit and planning, service quality monitoring, and asset management, as well as adopt a real-time tariff structure. The system will be able to integrate large-scale customers connected with 6 kilovolts (kV), 10 kV, and 35 kV supply lines into the system.

28. Forty-five existing district service centers in Bukhara, Jizzakh and Samarkand will be provided with billing hardware and software and linked to the regional MDM centers through a communication system. The service centers will extract information from the regional MDM system. The AEM system will enable service centers to (i) improve operation efficiency in their traditional functions such as billing and customer management and relations, (ii) balance load at the district or transformer level to reduce commercial losses, (iii) improve system stability by limiting the load that can be drawn during supply shortages or other emergencies, and (iv) remotely connect and disconnect customers.

B. Economic and Financial

29. The project's economic viability is assessed based on streams of benefits and costs resulting from installation and operation over the project's life. By eliminating distribution losses caused, for example, by bypassing meters, the project may reduce consumption by those who are not paying properly. But the benefits of additional consumption resulting from reduced outages and efficient electricity distribution will be significant. The economic internal rate of

[10] This impact evaluation study is expected to be financed through separate technical assistance to be processed and implemented beginning in early 2012.

return is 18.0%, which compares favorably with the 12.0% opportunity cost of capital and justifies investment in the project.

30. The project's financial internal rate of return is 8.0%, which compares favorably with the estimated weighted average cost of capital of 1.8%, indicating that the project is financially viable. Financial viability was gauged by comparing the revenue and cost streams of scenarios with and without the project. The revenue stream from residential and commercial customers is expected to increase by 70%.

31. Uzbekenergo's financial performance has been strong since 2006. The company has become highly profitable, with a low debt–equity ratio, helped by the accelerated depreciation of fixed assets. Most of the fixed assets are inherited as equity, not as debt, and their residual value appears to have already depreciated.

32. The projected financial sustainability for 2011–2015 incorporates Uzbekenergo's investment plan to expand its power facilities. The total investment, including this project, will require funding of over $3 billion. The financial plan, with a good mix of debt and Uzbekenergo's internal sources, can be implemented without putting undue stress on Uzbekenergo's future finances and creditworthiness. But the tariff should be adjusted to reflect the cost of services and inflation.

33. Uzbekistan's challenge is how to manage the cost of new finance required to replace aging power infrastructure, most of which continues in use beyond its economic life. The government is committed to maintaining the cost of service tariffs for electricity. Since 2004, the nominal tariff for electricity has increased by 18%–20% per year. As a result, the retail tariff per kilowatt-hour (kWh) has since 2004 more than quadrupled, from SUM20/kWh to SUM84/kWh. Continued tariff increases above the 10% rate of inflation has allowed the power utility to achieve a sustainable financial performance without direct subsidy.

C. Governance

34. The government has undertaken a series of measures to strengthen its national governance, including (i) legal reforms to improve the judiciary and courts; (ii) reforms to public sector management, especially public financial management and tax reforms; (iii) demonopolization measures to make the private sector more competitive; and (iv) more transparent procurement procedures. Progress has been made in public financial management, including the adoption of the Budget System Law and Treasury Law approved in 2007 and the public expenditure reform process covering 2007–2018. Uzbekistan acceded to the United Nations Convention against Corruption in July 2008. A comprehensive governance assessment is being conducted as part of ADB's new country partnership strategy now under preparation.

35. The financial management assessment of Uzbekenergo found that it has a basic financial and accounting policy that adopts accrual accounting, double-entry bookkeeping, and other generally accepted accounting principles and conventions in compliance with national standards. Capacity development under the ongoing Talimarjan Power Project will strengthen Uzbekenergo's financial management capacity and accounting and auditing practices.[11]

[11] ADB. 2010. *Report and Recommendation of the President to the Board of Directors: Proposed Loans and Administration of Loan to the Republic of Uzbekistan for the Talimarjan Power Project*. Manila (Loans 2629-UZB, 2630-UZB, and 8244-UZB).

36. Uzbekenergo's procurement capacity was assessed during fact finding. It has limited experience working with ADB.[12] Smooth project implementation requires (i) that the PMU have direct access to Uzbekenergo management for efficient decision making, (ii) the staffing of PMU with competent specialists and translators, and (iii) an international consultant to assist in procurement and related activities.[13] Procurement will follow ADB Procurement Guidelines (2010, as amended from time to time), including the use of standard bidding documents. Uzbekenergo's key PMU staff members have participated in a procurement workshop. An international consultant under ADB project preparatory technical assistance will help Uzbekenergo prepare bidding documents.[14] Supervision and project management consultants will assist in bid evaluation and contract negotiation, as well as provide PMU staff with on-the-job training in procurement. An early warning system will be established to ensure timely procurement and project implementation.

37. ADB's Anticorruption Policy (1998, as amended to date) was explained to and discussed with the government and Uzbekenergo. The specific policy requirements and supplementary measures are described in the project administration manual (footnote 9).

D. Poverty and Social

38. The project will help improve customer services by (i) increasing the staffing of existing district service centers, (ii) introducing a 24-hour customer service hotline with emergency response services for households, (iii) establishing a complaint-redress mechanism, and (iv) developing a participatory public information program.

39. The project will improve fair billing for electricity. It will empower consumers through a public information program, with women as agents of change to promote energy efficiency, consumer rights, and the newly introduced billing system. The project will also improve career opportunities and working conditions for women, allowing women meter readers (or controllers) to be absorbed into safer job environments and retrained. The project's gender action plan includes improving project benefits for women and, therefore, gender equality in the energy sector.[15]

E. Safeguards

40. No major social or environmental safeguards issues are envisaged under the project. The project is category C for all safeguards as defined in ADB's Safeguard Policy Statement (2009). ADB will monitor safeguards issues during implementation. If any unanticipated environmental or social impacts become apparent during project implementation, ADB will advise and require the Uzbekenergo to (i) assess the significance of such unanticipated impacts; (ii) evaluate the options available to address them; (iii) prepare relevant safeguards documents; and (iv) take necessary action(s). The project will be implemented and operated in compliance with the government's rules and regulations governing the project's environmental and social aspects.

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[12] Uzbekenergo has limited experience working with other multilateral and bilateral financiers; this is the second ADB project in Uzbekistan's energy sector.

[13] These key success factors were the lessons from the Talimarjan Power Project, the first ADB energy project in Uzbekistan.

[14] ADB. 2010. *Technical Assistance to the Republic of Uzbekistan for the Advanced Electricity Metering Project.* Manila (TA7740-UZB, for $1.0 million, approved on 17 December).

[15] Gender Action Plan (accessible from the list of linked documents in Appendix 2).

F. Risks and Mitigating Measures

41. Major risks and mitigating measures are summarized in Table 4 and described in detail in the risk assessment and risk management plan.[16]

Table 4: Summary of Risks and Mitigating Measures

Risks	Mitigating Measures
Procurement delay. Procurement takes time and delays project implementation.	Advance contracting is adopted to recruit the supervision and project management consultant and to draft bidding documents for the equipment to be procured. Procurement assistance for bid evaluation is included in the terms of reference of the supervision consulting services. Feedback and lessons from the ongoing Talimarjan Power Project will be used to gradually refine and custom-tailor the support rendered to Uzbekenergo for procurement and project and contract management. [a]
Project management. Project implementation capacity of Uzbekenergo is weak.	The PMU has been established and fully staffed with qualified people. Supervision consulting services include assistance for the smooth implementation and management of the project.
System compatibility and interoperability. Advanced electricity meters and the MDM system may lack compatibility and interoperability.	Specification requirements for contractors supplying meters and the MDM system are developed by the same consulting firm to ensure system compatibility. Meters and the MDM system are procured under one contractor, which will assume responsibility for system compatibility and interoperability. Implementation sequencing will be coordinated by the PMU with the assistance of the supervision and project management consultant.
Operation and maintenance. AEM system operation and maintenance capacity is lacking.	Operation and maintenance staff will be trained by contractors.
Social acceptance. AEM may not be socially accepted.	A public information program, including a customer complaint-redress mechanism, will be implemented.

AEM = advanced electricity metering, MDM = meter data management, PMU = project management unit.

[a] ADB. 2010. *Report and Recommendation of the President to the Board of Directors: Proposed Loans and Administration of Loan to the Republic of Uzbekistan for the Talimarjan Power Project*. Manila (Loans 2629-UZB, 2630-UZB, and 8244-UZB).

Source: Asian Development Bank.

IV. ASSURANCES AND CONDITIONS

42. The government and Uzbekenergo have assured ADB that implementation of the project shall conform to all applicable ADB policies, including those concerning anticorruption

[16] Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).

measures, safeguards, gender, procurement, consulting services, and disbursement as described in detail in the project administration manual and loan documents.

43. The government and Uzbekenergo have agreed with ADB on certain covenants for the project, which are set forth in the loan agreement and project agreement.

44. As a condition for disbursement after the proposed ADB loan is declared effective, a subsidiary loan agreement for the relending of the ADB loan to Uzbekenergo, in form and substance satisfactory to ADB, shall have been signed and become effective in accordance with the terms.

V. RECOMMENDATION

45. I am satisfied that the proposed loan would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve the loan of $150,000,000 to the Republic of Uzbekistan for the Advanced Electricity Metering Project from ADB's ordinary capital resources, with interest to be determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility; for a term of 25 years, including a grace period of 5 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft loan and project agreements presented to the Board.

Haruhiko Kuroda
President

26 August 2011

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
Impact Power sector financial viability increased	Sustained profit generation by Uzbekenergo in the medium term (until 2020) National system losses reduced from 21% in 2010 to 15% by 2020	Uzbekenergo's audited annual financial statements Uzbekenergo's regional distribution units' monthly consumption and billing report	**Assumptions** Metering system modernized in other regions and for all customer types by Uzbekenergo Cost of power supply appropriately managed
Outcome Commercial and tariff collection losses for residential and small business entity customers substantially reduced in the targeted regions of Bukhara, Jizzakh and Samarkand.	Commercial losses for the targeted customers in the three regions reduced from 20% in 2010 to 5% by 2015 Tariff collection rate for the targeted customers in the three regions increased from 60% in 2010 to 90% in 2015	Targeted distribution units' billing system database	**Assumptions** Uzbekenergo continuing to embrace incentives to reduce distribution losses All necessary legal and regulatory frameworks in place and effectively enforced by the government
Outputs 1. Advanced meters installed and associated data communication equipment functional	1.1. Advanced meters are installed at 1 million customers and relevant substations in the targeted regions by 2014. 1.2. Data communication system developed in the targeted regions and commissioned by 2013	Targeted distribution service centers' customer database Commissioning certificate by Uzbekenergo	**Assumption** Customers understanding and accepting the introduction of the AEM system **Risks** Availability of competent installation personnel limited The system subject to system attacks or misuse of private information
2. Data management system developed and operational	2.1. Customer database is established and data management system developed in the targeted regions by 2014 2.2. 500 controllers and operators trained (including all 80 women personnel) on data collection and data management system by	Commissioning certificate by Uzbekenergo Project's training report	

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
	2015		
3. Customer services for end-users improved	3.1 Customer relations officers positioned at each of 45 district service centers by 2014, and 50% of customer relations officers are women	Regional distribution unit human resource database	
	3.2 20,000 public information leaflet distributed, complained-redress mechanism and emergency hotline operations are established and functional by 2014	Regional distribution unit's operational reports	

Activities with Milestones

1. Uzbekenergo engages in the following
1.1. Advance action for the supervision and project management consultant recruitment (June 2011)
1.2. Recruitment and mobilization of consultant (December 2011)
1.3. Bidding announcement for procurement and installation contract (March 2012)
1.4. Contract award (August 2012)
1.5. Meter installation training for Uzbekenergo staff (June 2013)
1.6. Uzbekenergo completes installation of 1 million meters (November 2014)

2. Uzbekenergo engages in the following
2.1. Bidding announcement for procurement and installation contract (March 2012)
2.2. Contract award (August 2012)
2.3. Data entry and system operation training for Uzbekenergo staff (April 2013)
2.4. System completion and handover by contractor (June 2015)

3. Uzbekenergo implements public information program with creation of women core groups at the regional centers by 2013

Inputs

Loan (ordinary capital resources)

ADB: $150.0 million

Item	**Amount** ($ million)
Equipment	129.7
Consulting services	2.0
(Excludes contingencies of $18.3 million)	

Government: $50.0 million

Item	**Amount** ($ million)
Installation works and services	8.4
Financial charges	8.5
Social and gender program	1.0
Taxes and duties	32.1

ADB = Asian Development Bank, AEM = advanced electricity metering.
Source: Asian Development Bank.

LIST OF LINKED DOCUMENTS

http://www.adb.org/Documents/RRPs/?id=41340-013-3

1. Loan Agreement
2. Project Agreement
3. Sector Assessment (Summary): Energy
4. Project Administration Manual
5. Contribution to the ADB Results Framework
6. Development Coordination
7. Economic and Financial Analysis
8. Country Economic Indicators
9. Summary Poverty Reduction and Social Strategy
10. Gender Action Plan
11. Risk Assessment and Risk Management Plan

Supplementary Documents

12. Financial Management Assessment
13. Financial Performance and Projection