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USAID ENERGY POLICY PROGRAM

MONTHLY PROGRESS REPORT

May 2015



Satpara Multipurpose Dam Project

USAID ENERGY POLICY PROGRAM

MONTHLY PROGRESS REPORT May 2015

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©USAID Energy Policy Program
House 4, Street 88, Sector G-6/3
Ataturk Avenue, Islamabad, Pakistan
Tel: +92 (51) 835 7072, Fax: +92 (51) 835 7071
Email: tjaved@ep-ep.com.pk

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ACRONYMS

AEAI	Advanced Engineering Associates International, Inc.
CPPA	Central Power Purchasing Authority
ECC	Economic Coordination Committee
DGPC	Director General Petroleum Concessions
DISCO	Distribution Company
EPP	Energy Policy Program
FWO	Frontier Works Organization
FARA	Fixed Amount Reimbursable Agreement
G2G	Government-to-Government
GENCO	Generation Company
GOP	Government of Pakistan
JPCL	Jamshoro Power Company Limited
LNG	Liquefied Natural Gas
LSA	LNG Services Agreement
MPNR	Ministry of Petroleum and Natural Resources
MW	Megawatt
MWP	Ministry of Water and Power
MMP	Mott Macdonald Pakistan
NEPRA	National Electric Power Regulatory Authority
NPCC	National Power Control Center
NTDC	National Transmission and Dispatch Company
PESCO	Peshawar Electricity Supply Company
PIL	Project Implementation Letter
PowerSIM	Power Sector Integrated Model
PPA	Power Purchase Agreement
PTS	Petroleum Technology Solutions
PPEPCA	Pakistan Petroleum Exploration and Production Companies Association
PQA	Port Qasim Authority
PSO	Pakistan State Oil Company
SBLC	Standby Letter of Credit
SSGC	Sui Southern Gas Company
USAID	United States Agency for International Development
WAPDA	Water and Power Development Authority
WB/IMF	World Bank/International Monetary Fund

EXECUTIVE SUMMARY

The Energy Policy Program (EPP) continued to provide support to GOP for improvement of the Generation and Transmission network, diversification fuel supply and furtherance of policy reforms. During the reporting month, EPP facilitated USAID visit to the Satpara Multipurpose Dam Project upon its completion. The project is now capable of generating 17.6 MW of electricity and also irrigating 15,500 acres of land. EPP also facilitated USAID in visiting Jamshoro and Guddu Thermal Power Stations. Major rehabilitation work is already completed, however the visits were critical to expedite the installation of the remaining equipment at these projects.

EPP engineers visited Tarbela Power Station for inspection of remaining equipment under phase-I rehabilitation including drainage and dewatering pumps on units 1-10 and upgrading of the SCADA System on units 1-14. Following the visit, EPP certified Water and Power Development Authority (WAPDA) Tarbela invoices of \$1.3 million for this equipment. With this, procurement of only one remaining spare pump is underway to complete Tarbela phase-I.

EPP's Environmental Expert visited the Mangla Dam, Jamshoro and Guddu thermal power Project to ensure that the rehabilitation work underway is in compliance with the Government of Pakistan and United States Government regulations as recommended in the approved Environmental Monitoring and Mitigation plans (EMMP). Subsequently, EPP submitted an environmental monitoring and audit reports to USAID.

Ministry of Petroleum and Natural Resources. The liquefied natural gas (LNG) Services 'Waiver Agreement' and 'Time Charter Party Agreement' with Elengy Terminal Pakistan Ltd. (EETL) for transporting the next four LNG cargoes from Qatar on an FOB basis were concluded. EPP provided support to the GOP in finalizing Government to Government (G2G) agreement with Qatargas, including the LNG SPA negotiations with Qatargas in Islamabad May 7 and 8.

The Security Risk Assessment conducted during May 5-8 at Port Qasim was declared acceptable by Qatargas. Port tariff for LNG carriers calling at Port Qasim Authority (PQA) was revised by EPP on the basis of additional inputs and parameters communicated by PQA. A draft gazette notification for port tariff for LNG carriers was also prepared and submitted to PQA, which approved the port tariff model for LNG vessels in a meeting held May 15.

A review meeting with EPP partners was held May 27 to discuss infrastructure, technology, and costs for Shale Gas production. Response is awaited regarding the possibility of re-visiting the provisions with a view to providing a pre-policy guidance document. A model supplemental agreement for incentive for 10% incremental production under the 2012 Exploration and Production Policy for tight gas, low BTU gas, and marginal/stranded gas has been prepared and is under EPP review.

New Projects, Planning, and Development.

Subsequent to USAID meeting with WAPDA on upcoming G2G projects, EPP is working with WAPDA to identify eligible costs of works/equipment, and develop project construction schedules to draft a completion milestone and associated payment schedule for the proposed \$81 million USAID funding for Kaitu Weir (Kurram Tangi Dam) and \$36 million for the Golen Gol projects.

Ministry of Water and Power. EPP jointly with Power Distribution Project (PDP) continued support towards making Central Power Purchasing Authority (CPPA) an independent entity from NTDC. EPP team is currently in process of developing a Connection Agreement as required under the National Transmission and Despatch Company's (NTDC) Grid Code, and the Business Transfer Agreement which has already been approved by the NTDC Board. New Power Purchase Agreements (PPA) are also being developed in line with an independent CPPA.

Under direction from Chairman BOD/NTDC Strategic Business Plans are developed for NTDC identified that includes meeting the Strategic Plan Performance Targets for Frequency Response; Operating Reserve Margin; SCADA System Functionality; Addressing Network Overloading

Conditions; Development of HVDC Training Program; and Central Power Purchasing Authority (CPPA) Separation.

EPP continued working with the Technical Staff of Ministry of Planning and Development for designing and implementation of the Local Area Network (LAN) at Energy Wing, Planning Commission. Through its seconded staff, EPP continued to provide general technical assistance, and system and network administration to the offices of Member Energy.

Ministry of Finance. The PowerSIM model, which was introduced in the Energy Reforms Unit of Ministry of Finance, was well received and acknowledged for its capability to project the cash flows of the power sector. EPP's team updated the model with 2013-14 data and demonstrated the capabilities of the model to Ministry officials. Training on PowerSIM has started and will be continued through the next month.

COMPONENT I: PROJECT MONITORING AND IMPLEMENTATION

EPP continues to provide monitoring and implementation support for the seven G2G Signature Energy Projects. EPP engineers visited Tarbela Power Station for inspection of drainage and dewatering pumps on units 1-10 and upgrading of the SCADA System units 1-14. Afterwards, EPP certified Water and Power Development Authority (WAPDA) Tarbela invoices of \$1.3 million for this equipment. On Tarbela Phase II, subsequent to the opening of WAPDA/Tarbela Operation and Maintenance Account and Special Assignment Account, EPP provided USAID with detailed information regarding the account. This action fulfilled the conditions precedent set forth in Activity Agreement and will expedite the signing of the Project Implementation Letter (PIL).

EPP's Environmental expert visited Mangla Dam Project to ensure that the work under the Mangla agreement is in compliance with the GOP and USG regulations as recommended in the approved EMMP. Subsequently, EPP submitted an environmental monitoring and audit report to USAID.

EPP facilitated USAID in the completion ceremony for the Satpara Project. The project is now capable of generating 17.6 MW of electricity and also irrigating 15,500 acres of land. EPP also facilitated USAID in visiting Jamshoro and Guddu Thermal Power Stations. The visit was critical to expediting the installation of the remaining equipment at these projects.

Table I: Results Achieved through G2G Projects

Projects	USG Funding (U.S. \$ Million)	Disbursed (U.S. \$ Million)	Completion Date	MW GAINS/BENEFITS	
				Target	Achieved (May 27, 2015)
Tarbela (Phase I)	16.50	15.55	12/31/15	128.0 MW	128.0 MW
Jamshoro	19.32	19.32	7/31/15	150.0 MW	270.0 MW
Guddu	19.12	18.91	7/31/15	75.0 MW	80.0 MW
Muzaffargarh	15.77	15.71	7/31/15	475.0 MW	500.0 MW
Gomal Zam	45.00	45.00	Completed	17.4 MW	17.4 MW
Satpara	26.00	26.00	Completed	17.6 MW	17.6 MW
Mangla	150.00	13.00	12/31/17	90 MW	In progress
Tarbela (Phase II)	25.00	PIL underway	12/31/16	20 MW	In progress
Total	316.71	153.49		973 MW	1,013 MW

REHABILITATION OF TARBELA HYDROPOWER PLANT

Phase-I:

EPP engineers visited Tarbela Power Station for inspection of drainage and dewatering pumps of units 1-10 and SCADA System units 1-14 under Tarbela Phase I project. Subsequently, EPP certified WAPDA invoices of \$1.3 million for this equipment and forwarded the necessary paper work to USAID for further process.



Dewatering Pump



Inspection of Dewatering Pump

Phase-II:

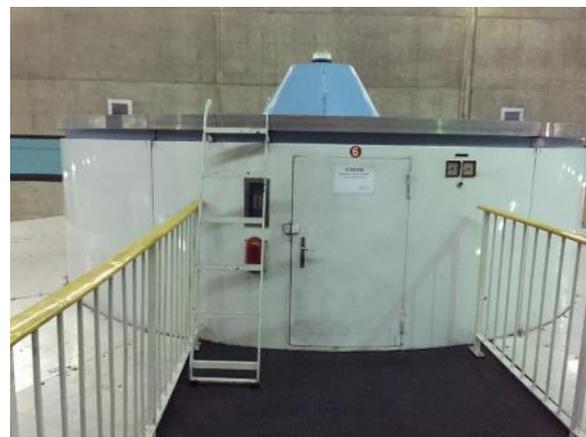
Subsequent to the opening of WAPDA/Tarbela Operation and Maintenance Account and Special Assignment Account for Tarbela phase II, EPP provided additional information to USAID regarding the account, fulfilling the conditions precedent set forth in Activity Agreement, which will expedite signing of the PIL.

MANGLA DAM REHABILITATION PROJECT

Subsequent to the site visit, EPP submitted the environmental monitoring and audit report to USAID. The visit was conducted to ensure that the work under Mangla agreement is in compliance with the GOP and USG regulations as recommended in the approved EMMP.

GUDDU THERMAL POWER STATION REHABILITATION PROJECT

Subsequent to the site visit, EPP submitted environmental monitoring and audit report to USAID. The visit was conducted to ensure that the on-going rehabilitation work under FARA is in compliance with the GOP and USG regulations as recommended in the approved EMMP. EPP also facilitated USAID in visiting Guddu Thermal Power Station. The visit was critical to expediting the installation of the remaining equipment.



Turbine Generator of Unit 6 at Mangla Power Station



USAID visit to Guddu Thermal Power Station

JAMSHORO THERMAL POWER STATION REHABILITATION PROJECT

Subsequent to the site visit, EPP submitted an environmental monitoring and audit report to USAID. The visit was conducted to ensure that the on-going rehabilitation work under FARA is in compliance with the GOP and USG regulations as recommended in the approved EMMP. EPP facilitated USAID in visiting Jamshoro Thermal Power Station. The visit was critical to expediting the installation of the remaining equipment.

SATPARA MULTIPURPOSE DAM PROJECT

EPP facilitated USAID in the completion ceremony of Satpara Multipurpose Dam Project. The project is now capable of generating 17.6 MW of electricity and also irrigating 15,500 acres of land.



Mission Director of USAID with Gilgit Baltistan and WAPDA officials

COMPONENT 2: POLICY AND REFORM

SUPPORT TO MINISTRY OF WATER AND POWER

During the month, EPP met with senior management at Ministry of Water and Power (MWP) to discuss the on-going and proposed activities with the Ministry. The major activities undertaken during the month include the Connection Agreement, Thermal Power Purchase Agreement, and the Energy Sector Case Study.

Connection Agreement. The EPP team is currently in process of developing a Connection Agreement as required under the NTDC's Grid Code. Currently, new PPAs developed under the 1994 Policy do not have all the necessary the requirements for a connection. A Connection Agreement will be required for each connection point on the NTDC's system. EPP is meeting with MWP get additional direction on the proposed connection code agreement before it can be implemented.

Thermal Power Purchase Agreement. The final draft of Thermal PPAs was delivered to MWP. Following acceptance by the WB/IMF for the template, the Power Purchase Agreement (PPA) was forwarded to all the GENCOs for review and signature. The EPP team visited Jamshoro Power Company Limited (JPCL) to work with the PPA review committee in order to collect and verify company specific information and to finalize the schedules. The PPAs are awaiting signatures.

Energy Sector Case Study. During the month, EPP worked on a report for MWP highlighting the energy sector of Turkey. The report will include an overview of the energy sector, sector organization, and outlook. Reviewing the energy sector of different countries is useful for determining how Pakistan can benefit from the experiences of other countries.

SUPPORT TO NATIONAL TRANSMISSION AND DESPATCH COMPANY

NTDC Amended Transmission License. The Policy Group assisted the NTDC Board in filing with National Electric Power Regulatory Authority (NEPRA) for an Amended Transmission License. The filing documents were prepared by Policy Group staff, who attended a Special Board Meeting to provide advice to the board on the filing. Advice was also provided on the proposed Board Resolution to approve filing the Application for Amendment of the NTDC Transmission License with NEPRA. The filing was made by NTDC on May 8, 2015.

NTDC Strategic Business Plan. The final draft of the Strategic Plan was completed in April and no additional comments have been received. The Board of Directors Chairman has started the implementation of several initiatives identified in the NTDC Plan. These include meeting the Strategic Plan Performance Targets for (1) Frequency Response; (2) Operating Reserve Margin; (3) SCADA System Functionality; (4) Addressing Network Overloading Conditions; (5) Development of HVDC Training Program; and (6) CPPA Separation. Planned May meetings with NTDC management for reviewing the Strategic Plan Performance Measures were cancelled twice due to problems associated with Visa and No Objection Clearance Certificate documents. A meeting is now scheduled for June 2015. The start of developing Part II of the Strategic Plan was also delayed to June 2015.

The remaining objectives focus on achieving excellence in transmission and dispatch services to build customer confidence in NTDC's operation of the transmission network; implementing commercial business and financial practices; and implementing a commercial governance model to transform NTDC into a successful commercial entity.

Business Transfer Agreement. At the request of the NTDC Board Chairman, the Policy Group prepared a white paper describing the major concerns the NTDC Board and management have with the proposed Business Transfer Agreement. The white paper was reviewed by NTDC Board and forwarded to the Joint Secretary MWP by the NTDC Board Chairman. At a meeting held in the office of the Joint Secretary MWP on May 16, 2015, the recommendations included in the white paper were accepted by MWP, and the Business Transfer Agreement was approved by the NTDC Board at the Special Board meeting on May 23, 2015.

Support to Ministry of Planning and Development

EPP continued to provide advisory support to the Energy Wing throughout the month on a variety of tasks as requested by Member Energy and Secretary Planning.

Implementation of E-Governance. During the month, EPP continued working with the Technical Staff of Planning Commission for development and implementation of the Local Area Network (LAN) at Energy Wing, Planning Commission.

Technical Assistance. Through its seconded staff, EPP continued to provide general technical assistance, and system and network administration to the offices of Member Energy and provided support for routine tasks. EPP also updated the daily power supply demand scenario and short fall in the NTDC system based on the daily data received from NPCC.

Policy Analysis and Planning. EPP assisted in organizing the Second Round Table Conference on Geographical Information System (GIS) in Physical Planning, Resource Management, Governance and Business in Planning Commission. Several high ranking officials from public and private sector participated in the daylong conference. EPP also assisted in finalizing the Report of the First Conference and shared with the participants a presentation for Member Energy on the topic, which covered background, outcome, and way forward to formulate GIS policy that allows sharing of information among public and private entities.

During the month, EPP continued to assist Planning Commission in implementation of PowerSIM as a policy tool.

SUPPORT TO MINISTRY OF FINANCE

The PowerSIM model, which was introduced in the Energy Reforms Unit of Ministry of Finance, was well received and acknowledged for its capability to project the cash flows of the power sector. EPP's team updated the model with 2013-14 data and demonstrated the capabilities of the model to MOF officials. The trainings on Power SIM have started and will be continued through the next month.

- Ministry of Finance, Corporate Finance Wing was assisted in finalizing the budgetary estimates of Tariff Differential Subsidy of Distribution Companies for the next financial year 2015-16.
- A briefing was provided to Senior Joint Secretary Corporate Finance (CF) regarding Gas Infrastructure Development Surcharge, which is to be discussed in the Provincial Coordination Committee meeting held on June 5, 2015.
- Ministry of Finance, Corporate Finance Wing was assisted in preparing a revised mechanism for timely payment of subsidy to distribution companies (DISCOs) by amending various rules and procedures.
- Corporate Finance Wing, Ministry of Finance was assisted in finalizing the revised subsidy claim for current financial year 2014-15.
- Corporate Finance Wing, Ministry of Finance was assisted in preparation of their views and comments on the summary for Economic Coordination Committee (ECC) submitted by Ministry of Water and Power regarding Rationalization of Power Tariff. The summary was considered by the ECC in its meeting held on May 22, 2015.

SUPPORT TO MINISTRY OF PETROLEUM AND NATURAL RESOURCES

Liquefied Natural Gas Imports

Liquefied Natural Gas Procurement.

- LNG Services Agreement (LSA) Waiver Agreement and Time Charter Party Agreement with Elengy Terminal Pakistan. Ltd. (EETL) for transporting the next four LNG cargoes from Qatar on an FOB basis were concluded with support to PSO and Sui Southern Gas Company (SSGC).
- EPP provided support to the GOP in finalizing G2G agreement with Qatargas, including the LNG SPA negotiations with Qatargas in Islamabad May 7 and 8.
- EPP submitted various redrafts of LNG SPA, which were sent by PSO to Qatargas for review.
- The tender documents package (bid document, MSPA, Confirmation Notices for each of the four cargoes, Standby Letter of Credit (SBLC) and bank guarantee, and confidentiality agreement) were reviewed and finalized for procuring spot LNG cargoes by PSO. The tender was issued by PSO May 13.
- EPP's LNG Advisor participated in the Bidders' Conference held in Karachi on May 25 to support the GOP in answering bidders' queries on the spot LNG tender issued by PSO.
- EPP provided further inputs to frame responses to queries raised by bidders on the spot LNG tender. The finalized response was uploaded on the PSO website.

Support to Port Qasim Authority.

- Work continued on closing the open items under Action Register prepared by Qatargas. The Security Risk Assessment conducted during May 5-8 at Port Qasim was declared acceptable by Qatargas.
- Port tariff for LNG carriers calling at PQA was revised by EPP on the basis of additional inputs and parameters communicated by PQA. A draft gazette notification for port tariff for LNG carriers was also prepared and submitted to PQA. PQA approved the port tariff model for LNG vessels in a meeting held May 15. Port tariff is subject to further approval by Ministry of Ports and Shipping.
- A revised standard operating procedures (including Conditions of Use and Marine Services Certificate) for LNG vessels calling at Port Qasim to PQA was prepared and has been forwarded to Qatargas and uploaded on PQA website.
- PQA Direct Agreement was signed by PQA and forwarded to SSGC and EETL for their respective signatures before execution.
- Terminal regulations prepared by EETL were reviewed; PQA has forwarded the reviewed version to EETL for making necessary amendments before issuance.

Shale Gas

- The Draft report on Resource Assessment (Milestone - 4A) is planned to be submitted by June 1. A review meeting with EPP partners was held May 27 to discuss infrastructure, technology, and costs for Shale Gas production. Necessary directions were given regarding changes in the proposed financial model and the technical assumptions to be made to this effect.
- Response is awaited regarding the possibility of re-visiting the provisions of infrastructure, technology and costs for Shale Gas production (Milestones 5, 6, and 7) with a view to provide a proper pre-policy guidance document.

Upstream Oil and Gas

- Advisory work on day-to-day issues of Director General Petroleum Concessions (DGPC) continued, including advice on various regulatory, commercial, and legal issues.
- Weekly progress review meetings with Petroleum Technology Solutions (PTS) were held throughout the month.

- Meetings were held with Pakistan Petroleum Exploration and Production Companies Association (PPEPCA) for seeking input on draft standard operating procedures for DGPC office and standardization of oil and gas reserves.
- Model supplemental agreement for incentive for 10% incremental production under the 2012 Exploration and Production Policy in respect of tight gas, low BTU gas, and marginal/stranded gas has been prepared and is under EPP review.
- Process of finalization of Supplemental Agreements with E&P companies is in process. Majority of the conversions entailing no legal issues have been executed. Remaining applications that are legally problematic are under discussion with the E&P companies and their legal counsels for resolution.
- EPP participated in a meeting with an E&P company in Karachi May11 to discuss the formulation of guidance document for shale gas.
- A presentation was made to DGPC May13 for formulation of rules and model supplemental agreement for legally granting rights and incorporation of incentives for tight gas, low BTU gas pricing policies, and marginal/stranded gas-fields guidelines.
- A meeting was held with PPEPCA May 13 to discuss the financial model prepared for approval of field development plans by DGPC. This would facilitate approval process of field development plans.
- A presentation was made to DGPC May21 for Deliverable Number D-3 concerning the proposed changes in the existing E&P policies. DGPC officials will provide comments in due course.
- Petroleum Technology Solutions provided the necessary input regarding extension of a mining lease of an E&P company during various meetings held during the week.

COMPONENT 3: NEW PROJECTS, PLANNING, AND DEVELOPMENT

KURRAM TANGI/KAITU WEIR PROJECT

Evaluation of previously received bids for construction of the Kaitu Weir feeder tunnel linking the Kaitu River to Kurram Tangi Reservoir, two power houses with installed capacity of 18.4 MW, two irrigation canals (Spaira Ragma and Sheratella), and associated structures remained with Project Consultant Mott Macdonald Pakistan (MMP) and Central Contract Cell of WAPDA. The bid is from the consortium led by Frontier Works Organization (FWO) and Descon. The technical proposal was opened and evaluated by WAPDA consultants (MMP) and reviewed by Central Contract Cell of WAPDA. A number of shortcomings found in the proposal were discussed with bidder. The financial proposal contained in the second envelop will be opened and evaluated during the first week in June based on the approval of technical proposal by WAPDA Authority. A successful contract is expected to be finalized during June with work by the contractor beginning in July 2015.

WAPDA, FATA, USAID, and EPP held meetings on May 11 and 20, 2015 to finalize the project cost, land acquisition process, and resettlement action plan in line with guidelines indicated by USAID. WAPDA General Manager North and his Project Director for Kaitu Weir, MMP Consultants, Assistant Political Agent of FATA, Deputy Director, USAID/Peshawar Office, Program Director, USAID/Islamabad, USAID Mission (A) Environmental Officer, representative from USAID Finance Office attended meetings. Many issues were discussed and information deliverables were identified.

USAID is working with WAPDA to identify eligible costs of works and develop project construction schedules to draft a completion milestone and associated payment schedule for the proposed \$81 million USAID funding. A Planning Commission PC-1 of the project amounting to \$126 million is already approved by GOP. It consists of the USAID funded \$81 million for Kaitu Weir and associated structures, and the irrigation command development to be financed out of a \$45 million loan under discussion with the Economic Affairs Division and the Italian Government.

GOLEN GOL PROJECT

EPP completed and submitted the Due Diligence Report on the Golan Gol Project to USAID in January 2015. USAID accordingly indicated that \$36 million funding for civil works of the power house (Lot 3.1 of contract) and power house equipment (Lot 3.2 of contract) is available. The total cost of these items is \$75.5 million. The Kuwait Fund is providing a loan of \$37 million for construction of the power plant civil works and Electrical & Mechanical equipment with a short fall of almost \$38.5 million.

The Saudi Fund is providing a soft loan of almost \$97 million for all the civil works and structures at the intake and tunnel (Lot 2 of contract), while the OPEC Fund is lending \$30 million for transmission lines and grid stations (Lot 4.1 & Lot 4.2). Still there is funding gap of \$71 million in overall project cost.

EPP is finalizing line items to be included for \$36 million USAID funding and a disbursement mechanism and schedule of payment in line with already available Kuwait Funding. The Project is expected to be completed by June 2017 and provide 438 GWh of low cost energy annually to the National Grid. Revenue from Golen Gol will be over \$33 million a year and this power will replace electricity production from thermal plants using costly imported fuel oil of about \$65 million per annum.



Golen Gol Project Chitral

COMPONENT 4: NEW ACTIVITIES

PESHAWAR ELECTRIC SUPPLY COMPANY

To date, 505.2 MW of transmission throughput capacity have been added to PESCO's network as a result of EPP's assistance.

Bucket Trucks. The registration process is underway for the four telescopic bucket trucks delivered to the Peshawar Electricity Supply Company (PESCO) warehouse on April 28, 2015. This will help PESCO in effective and efficient maintenance of their facilities.



Newly Procured Bucket Truck for PESCO

Technical Audits. Individual audit reports have been sent to PESCO. The reports highlight shortcomings and bottlenecks found and recommend preventive and corrective measures. Work is being done on final summary report, and it will be hand delivered to PESCO's CEO.

Power Transformer Program. All 213 samples of transformer oil have been tested with results showing potential transformer damage. This damage increases the likelihood of an outage which can cause loss of customer loads. EPP is in the process of procuring two oil filtration plants for PESCO's operations and maintenance staff to reduce the potential damage.

NATIONAL TRANSMISSION AND DESPATCH CENTRE

Technical Audits

- Technical audits and final reports of all 45 grid stations have been compiled. Copies of the report and backup data for the original 39 stations has been provided to the Managing Director. The reports propose steps necessary for carrying out both preventive and corrective maintenance and also recommend infrastructure upgrades and augmentation.
- Work is being done on the final report of six newly commissioned grid stations.

NTDC System Studies. The purchase order was executed and work begun on integration of intermittent renewable resources with the national grid; expected completion is mid-July 2015.

Real Time Digital Simulator. The purchase order was awarded to M/s. OPAL-RT; advance payment has been made and the vendor has started production work. Factory Acceptance Tests started May 25 and will be completed during the first week of June 2015.

Auto-Transformer Program

- Factory acceptance testing of two JHSP 250MVA, 220/132kV Auto-Transformers has successfully been carried out and these are being shipped. Delivery is expected by mid-June 2015.
- The Fire Protection System has been shipped by M/s. Xuming. Delivery expected by mid-June 2015.
- Circuit breakers, conductors, connectors, and other ancillaries are to be delivered by the end of June 2015.

Hardware and Software for NTDC Design

- The vendor has delivered all the hardware items for NTDC's Design Department.
- Software and Training for NTDC's Design Department began on April 20 and will be process through June 19.

Advisory Services to NPCC

- EPP experts, at the request of the NTDC Board of Directors, are working at NPCC advising the General Manager on Grid Code compliance, Grid Code enforcement, and proper operations.
- EPP experts are working with NPCC authorities on integrating generating units with new SCADA system.

Live-Line Maintenance

- The live-line refresher course for PESCO linemen was conducted from April 13 through May 8.
- The live-line refresher course for FESCO linemen started on May 26 and will run through June 19.
- The live-line training for twenty linemen from SEPCO and MEPCO started on February 2, 2015 and was completed on May 15.
- The live-line training for twenty linemen from LESCO and QESCO started on May 18 and will be completed on October 02, 2015.

PROGRAM SUPPORT ACTIVITIES

NTDC Exchange. The EPP conducted a debriefing session on May 12 with participants of the NTDC Commercial Operations exchange and a focus group discussion session with Grid Operations participants on May 13. Debriefing and focus group discussion reports will be distributed to USAID once concluded. General findings were that the exchanges were very successful and lead to many on-site improvements.

Live-Line Maintenance. The EPP met with Live-Line Maintenance participants for MEPCO and SEPCO on May 15 at NTDC Tarbela and compiled a report based on the feedback given by the principal, trainers, demonstrator, and linemen. EPP started live-line maintenance training for QESCO and LESCO on May 18 with scheduled completion within the first week of October. EPP completed the two of five refresher courses at IESCO and PESCO on May 8. The third refresher course at FESCO started on May 26 for completion before Ramadan.

HYDRO O&M Training. Focus group discussion was conducted on May 15 at Tarbela Power Station to monitor the progress made on the techniques learned and challenges highlighted during the post-training interviews. Participants highlighted the improvements made in the optimal operations of the plant where the categorization is in process based on different departmental criteria. The discussion session included the participants, senior engineers, and shift engineers. Post-training findings will assist in the planned on-site program scheduled for the fourth quarter.

NTDC Design Center: The EPP started Design Center training on April 20 at NTDC, Lahore in five different courses: 45 participants are taking Microsoft Project Management, 29 participants are taking Bentley, 14 participants are taking ARC GIS, 39 participants are taking Power Line Module, and 25 participants are taking AutoCAD. EPP will monitor all participants and training to ensure sustainability of the Design Center rehabilitation with completion scheduled for mid-June.

LNG Business Management Certificate. EPP arranged visas, travel, and final schedules for the LNG business management certificate training, which will host 14 participants from OGRA, SSGCL, and PQA in Kuala Lumpur starting June 1. The program will focus on improving SSGCL, PQA, and OGRA's commercial capacity and port operations standards.

GENDER ACTIVITIES

Increased Female Participation. Staff training in NTDC exchange visits conducted by EPP included 27% female participants. The EPP currently has an 18% female participation rate across all training up from 4% in January 2014.

MONITORING & EVALUATION

Post-Training. EPP hosted multiple post-training sessions for participants from Hydro Operations and Maintenance, NTDC exchange visits, and live-line maintenance.

Confidential information redacted

Confidential information redacted

PROGRESS IN NUMBERS

Table 3 below provides the EPP indicators, targets, and achievements for May 2015. **Table 4** presents EPP Indicators by component for May 2015.

Table 3: EPP Indicators and Achievement for May 2015

Indicator	Unit	LOP Target	Achieved in May FY2015	Total Achieved as of May FY 2015	LOP % Achieved as of May FY2015
I.a: GWh of energy sold	GWh	7880	0	9,182	117%
I.1.a: Number of beneficiaries with improved energy services due to United States Government assistance	Individuals	13,624,226	0	15,847,956	116%
I.1.b: GWh of energy availability	GWh	7880	0	9,182	117%
I.1.c: MW available to meet power sector demand as a result of USG assistance	MW	1,303	0	1,518.2	117%
I.1.1.a: MW of electrical power added or saved as a result of USG improvements	MW	875	0	1,027.2	117%
I.1.1.b: Efficiency of thermal power plant tests completed	No.	3	0	2	67%
I.1.1.c: Number of USG supported installations and operations and maintenance improvements	No.	181	1	157	87%
I.1.1.d: Number of transmission bottlenecks resolved	No.	121	3	121	100%
I.1.4.a: Public and private funds leveraged by the USG for energy infrastructure projects	U.S. \$	193.5 million	0	58.5 Million	30%
I.2.1.a: Number of key policies and regulations in various stages	No.	12	0	27	225%
I.2.2.a: Number of policies following international best practices	No.	6	0	3	50%
I.2.2.b: Number of board recommendations following international best practices	No.	4	0	0	0%
I.2.3.a: Number of best practice-driven systems created, improved, and implemented	No.	10	0	6	60%
I.2.4.b: Number of public forums resulting from USG assistance in which government officials and citizens interact	No.	12	0	5	42%

Table 4: EPP Indicators by Component May 2015

Indicator	Unit	Component	LOP Target	Achieved in May FY2015	Total Achieved as of May FY 2015	LOP % Achieved as of May FY2015
I.I.a: Number of beneficiaries with improved energy services due to United States Government assistance	Individuals	Total	13,624,226	0	15,847,956	116%
		I-Generation	7,993,106	0	9,382,406	117%
		IV-Transmission Throughput Capacity	5,477,544	0	6,283,818	115%
		IV – Transmission Added/Saved	153,576	0	181,732	118%
I.I.b: GWh of energy availability	GWh	I & IV	7880	0	9,182.1	117%
		I-Generation	4,796	0	5,642.29	118%
		IV-Transmission Throughput Capacity	2999.4	0	3,440.926	115%
		IV – Transmission Added/Saved	84	0	99.506	118%
I.I.c: MW available to meet power sector demand as a result of USG assistance	MW	I & IV	1,303	0	1,518.2	117%
		I-Generation	863	0	1,013	117%
		IV-Transmission Throughput Capacity	428	0	491	115%
		IV – Transmission Added/Saved	12	0	14.2	118%
I.I.Ia: MW of electrical power added or saved as a result of USG improvements	MW	I & IV	875	0	1027.2	117%
		I-Generation	863	0	1,013	117%
		IV – Transmission Added/Saved	12	0	14.2	118%

ANNEXES

ANNEX I: SUCCESS STORY

Empowering National Transmission and Despatch Company (NTDC)

National Transmission and Despatch Company (NTDC) Limited was incorporated on 6th November 1998 and commenced its commercial operation on 24th December 1998. It was organized to take over all the properties, rights and assets obligations and liabilities of 220KV and 500KV Grid Stations and Transmission Lines/Network owned by Pakistan Water and Power Development Authority (WAPDA). NTDC operates and maintains twelve 500 KV and twenty-nine 220 KV Grid Stations, 5077 km of 500KV transmission line and 7359 km of 220KV transmission line in Pakistan.

The absence of state-of-the-art hardware as well as software equipment have been the grey area for NTDC to overcome the growing needs for designing new transmission lines and grid stations. Most of the transmission line design, drawings and bill of quantities for materials are prepared manually. These tasks take up a lot of time and effort from the NTDC employees. NTDC felt the need of a design department that could help save revenue, time, and thereby enhance the capacity of the National Transmission and Despatch Company.

While NTDC's Design Department generates revenue from consulting services, the department must outsource many engineering, procurement, and construction projects due to a lack of in-house capabilities. Due to the lack of technology and skills, NTDC's Design Department anticipated outsourcing many future projects, as well.

With multiple projects being executed in parallel, no tracking mechanism existed for proper coordination of projects between the departments. The software being provided will allow proper scheduling, budgeting, resource allocation and reporting for NTDC's projects.

USAID through its Energy Policy Program (EPP) have supported large-scale power generation projects that have added more than 1,200 megawatt to the power grid. To enhance the capacity building and to empower NTDC design department, USAID partnered with the National Transmission Dispatch Company (NTDC) at Lahore to fund and organize a seven-week classroom based training on contemporary software such as Auto CAD, Powerline, Tower, PLS Pole, SAPS, Caisson, and Bentley Staad Pro, Microsoft Project etc. USAID also funded the procurement of new hardware and equipment for the NTDC design department. As a cost share with USAID the NTDC bought all new furniture and workstations for their Design department.

The latest software will allow structural engineers to analyze and design virtually any type of structure through its flexible modeling environment, advanced features and fluid and seamless data collaboration. The training will help augment the performance of NTDC design department and make it easier to work with data in different survey coordinate systems including live coordinates from GPS.

The training extends the opportunity for engineers at NTDC to comfortably perform the previously difficult analysis of strain bus configurations in substations, providing the capabilities of a structural or electrical engineer to accurately analyze transmission and substation conductor systems.

The objective of strengthening the NTDC design department is to enhance, empower and make it self-sufficient to process and design activities in appropriate mode and to fulfill the energy infrastructure needs in a timely manner.

USAID Energy Policy Program initiated the Design Center training on April 20 at NTDC, Lahore in five different courses where 45 participants are being trained on Microsoft Project, 29 on Bentley software, 14 on ARC GIS, 39 on Power line Module, and 25 on AutoCAD courses. USAID EPP aims

to improve transmission capacities in Pakistan’s power sector while establishing professional relationships to draw upon after the conclusion of the program.



ANNEX III: LIST OF KEY MEETINGS

Annex Table 5: List of Key Meetings Conducted in May 2015

Meeting with	Date	Location	Purpose	Outcome/Result
Component 1: Project Monitoring & Implementation				
Mr. Khalid Alvi, CEO CPGCL Guddu	May 11	TPS Guddu	Accompanied USAID Project Manager to review the progress of remaining items	CEO was advised to expedite the progress of remaining items.
Mr. Iftikhar, CEO JPCL Jamshoro	May 12	TPS Jamshoro	Accompanied USAID Project Manager to review the progress of remaining items	CEO was advised to expedite the progress of remaining items.
Mr. Sher Afzal, Chief Engineer Tarbela	May 23	Tarbela Power Station	To inspect Phase I equipment received at site and discuss the progress of remaining equipment	De-watering pump was inspected and CEO was advised to expedite the procurement of remaining item.
Mr. Imran, CEO GHCL	May 27	EPP Islamabad Office	To review all the pending items of PIL at the GENCOS	CEO GHCL committed to expedite the progress of the remaining equipment.
Component 2: Policy and Reform				
NTDC Planning Department	May 4	NTDC Planning Conference Room	Discuss with Planning Department staff: <ul style="list-style-type: none"> • Status of outstanding data request • Planning comments of Strategic Plan • Provide copy of the latest Expansion Plan and discuss with staff 	<ul style="list-style-type: none"> • Review of Latest Expansion Plan and comments shared on Strategic Plan

Meeting with	Date	Location	Purpose	Outcome/Result
WPPO	May 4	WPPO Offices Lahore	Discuss: <ul style="list-style-type: none"> Outstanding CPPA data request WPPO Organization Chart WPPO Responsibilities WPPO or WAPDA ownership of IPP 1994 Policy PPA; is there a formal administrative agreement Discussed the informal agreement; why informal and legal authority 	<ul style="list-style-type: none"> Received requested Org. charts for CPPA and WPPO Received directions for obtaining financial information previously requested Understanding of WPPO Responsibilities for Transfer to CPPA-G Employee Status WPPO concerns and consideration for transfer to CPPA-G
NTDC Board Sr. Management and ADB meeting	May 5	NTDC Conference Room at NPCC	Discuss, ADB reason for reducing certain project funding, NTDC proposed response due May 30. BOD Action on NTDC Application to NEPRA for Transmission License amendment	<ul style="list-style-type: none"> Chairman directed NTDC PMU office to have response to ADB by May30 Meeting provided valuable information for next phase of Strategic Plan on initiative to improve NTDC project execution
JPCL CEO & PPA Review Committee	May 7-8	JPCL Power Station	To review and finalize the schedules prepared by EPP	<ul style="list-style-type: none"> Discussed points regarding schedules with some referral to PPA, where requested by JPCL. The CEO said he would take the matters to the BOD based on the meeting.
CLM Legal Firm representatives	May 12	EPP Offices	Introductory meeting and briefing on contracted services	<ul style="list-style-type: none"> Agreement on process for ordering services to be performed.
ERU Unit, Ministry of Finance	May 14 & 19	Ministry of Finance	Introductory Presentation of PowerSIM	<ul style="list-style-type: none"> Initiated training of three ERU unit personnel. The follow up trainings sessions will be next month based on their availability.
Joint Secretary MWP	May 16	MWP Offices	Discuss: <ul style="list-style-type: none"> NTDC comments on proposed Business Transfer Agreement Plans for the approval of the NTDC Amended Transmission License 	<ul style="list-style-type: none"> Joint Secretary agreed NTDC letter comments on proposed BTA Suggested next steps in BTA process Discussed the time schedule and NEPRA process for amended NTDC transmission License

Meeting with	Date	Location	Purpose	Outcome/Result
Cornelius, Lane & Mufti	May 19	EPP Offices	Introduction meeting with the new attorneys for EPP Policy Group. Discuss operating procedures	<ul style="list-style-type: none"> • Agreement on process for requesting services • Point of contacts • Items on agenda for legal review
Cornelius, Lane & Mufti	May 27	EPP Offices	Discuss Requests for preparation of: <ul style="list-style-type: none"> • Administrative Agreement for PPAs • Legal review of proposed Hydel PPA • The ECC timeline for signing of new GENCO PPAs • Admin. Agreements for PPAs • Market Rules Development 	<ul style="list-style-type: none"> • Administrative Agreement to be developed by attorney • Delay Hydel PPA • Discuss with MWP the requested agreements related to CPPA-g and prioritize
NTDC Planning Department	May 4	NTDC Planning Conference Room	Discuss with Planning staff: <ul style="list-style-type: none"> • Status of outstanding data request, • Planning comments of Strategic Plan • Provide copy of the latest Expansion Plan and discuss with staff 	<ul style="list-style-type: none"> • Review of Latest Expansion Plan and comments shared on Strategic Plan
WPPO	May 4	WPPO Offices Lahore	Discuss: <ul style="list-style-type: none"> • Outstanding CPPA data request • WPPO Organization Chart • WPPO Responsibilities • WPPO or WAPDA ownership of IPP 1994 policy PPA, is there a formal administrative agreement • Discussed the informal agreement; why informal and legal authority 	<ul style="list-style-type: none"> • Received requested Org. charts for CPPA and WPPO • Received directions for obtaining financial information previously requested • Understanding of WPPO Responsibilities for Transfer to CPPA-G • Employee Status • WPPO concerns and consideration for transfer to CPPA-G

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Component 4: New Activities				

www.ep-ep.com.pk
info@ep-ep.com.pk