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ENERGY POLICY PROGRAM MONTHLY PROGRESS REPORT DECEMBER 2013



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ENERGY POLICY PROGRAM

MONTHLY PROGRESS REPORT: DECEMBER 2013

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Cover photo: Group photograph of live line trainees from FESCO, GEPCO and HESCO:

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ACRONYMS

AEAI	Advanced Engineering Associates International
CEO	Chief Executive Officer
CFW	Corporate Finance Wing
CPGCL	Central Power Generation Company Ltd
CPPA	Central Power Purchasing Authority
DISCO	Distribution Company
DGPC	Directorate General Petroleum Concessions
EMMP	Environmental Mitigation and Monitoring Plan
EPP	Energy Policy Program
FARA	Fixed Amount Reimbursable Agreement
FATA	Federally Administered Tribal Areas
FESCO	Faisalabad Electric Supply Company
FY	Financial year
GE	General Electric
GENCO	Generation Company
GEPCO	Gujranwala Electric Supply Company
GHCL	GENCO Holding Company Limited
GOP	Government of Pakistan
GTPS	Guddu Thermal Power Station
HEC	Heavy Electric Complex
HESCO	Hyderabad Electric Supply Company
JTPS	Jamshoro Thermal Power Station
KPK	Khyber Pakhtunkhwa
kV	Kilovolts, 1000 volts, unit of electric potential (voltage)
LC	Letter of Credit
LNG	Liquefied Natural Gas
LSA	LNG Services Agreement
MOF	Ministry of Finance
MPNR	Ministry of Petroleum and Natural Resources
MTPS	Muzaffargarh Thermal Power Station
MW	Megawatt, unit of electrical power, 1 million watts,

MWP	Ministry of Water and Power
NEPRA	National Electric Power Regulatory Authority
NPCC	National Power Control Center
NTDC	National Transmission and Despatch Company
O & M	Operations and Maintenance
PC	Planning Commission
PESCO	Peshawar Electricity Supply Company
PIL	Project Implementation Letter
PO	Purchase Order
Power-SIM	Power Sector Integrated Model
PPA	Power Purchase Agreement
PQA	Port Qasim Authority
PTF	Power Transformers
QESCO	Quetta Electric Supply Company
RFP	Request for Proposal
RPC	Reactive Power Compensation
SBP	State Bank of Pakistan
SCADA	Supervisory Control and Data Acquisition
SMS	Secured Metering System
SOW	Scope of Work
SSGC	Sui Southern Gas Company
TAPI	Turkmenistan-Afghanistan-Pakistan-India pipeline
TOR	Terms of Reference
ToU	Time of Use
TPS	Thermal Power Station
USAID	United States Agency for International Development
USD	United States Dollar, US\$
WAPDA	Water and Power Development Authority

PROGRAM OVERVIEW

The Energy Policy Program (EPP) is a multiyear USAID funded initiative to increase power generation, improve transmission and enhance cost recovery by working with selected energy enterprises and to assist the Government of Pakistan reform efforts. EPP supports the joint goals of USG and the Government of Pakistan in the power sector, and is designed to address Pakistan's chronic electricity shortage. The program is currently in the Integration Phase which continues the due diligence and G2G program focus while emphasizing an integration of technical upgrades with policy report implementation and introduces transmission activities.

Figure 1: EPP Phases



EPP comprises of interrelated activities and interventions built around four major components:

Component I - Monitoring & support of Project Implementation: EPP is providing monitoring and implementation support for six signature energy projects: four repair and maintenance projects (3 GENCOs and Tarbela) and two multipurpose dam completion projects (Gomal Zam and Satpara)

Component II – Advice and Support of Energy Sector Policy Reform: EPP supports generation and transmission-related studies and policy reform activities assigned by USAID with the support of the Implementing Partners.

Component III – New Projects, Planning and Development: EPP conducts and prepares due diligence reports on new projects under consideration for USG support in order to provide detailed information on the projects, reduce USG risks, and set a basis for creating Project Implementation Agreements for selected projects.

Component IV – New Activities: EPP focuses on strengthening Pakistan's transmission network as well as fuel-mix diversification through support to energy import efforts. Complementing these activities will be EPP's capacity building program to facilitate sustainability by enhancing local capability in critical areas.

The current phase of the EPP will conclude in October 2015 with the aim of adding 1,263 MW to the energy sector for an overall megawatt addition of 4200 MW¹ by 2017.

¹ Assumes 50% of the LNG import is allocated to the power sector (equivalent of 2500 MW)

MONTHLY HIGHLIGHTS

- Installation of digital governor at Unit 7 of Tarbela Power Station was completed. Digital governors at unit 7 and 9 were commissioned.
- EPP supported USAID in issuing custom/GST exemption letters to the GENCOs. The letter will aid GENCOs avail tax exemption from the Economic Affairs Division (EAD).
- Flow meters delivered, installed and commissioned at Muzaffargarh Thermal Power Station
- Heat rate test of MTPS started on December 30, 2013. Test completed on unit 2 of MTPS.
- With EPP's facilitation, PC I of Mangla rehabilitation submitted by WAPDA was approved by the Executive Committee of National Economic Council (ECNEC)
- Nominations of 120 potential trainees received from the GENCOs and WAPDA for the O&M training
- Trained four section officers of MWP on Power-SIM
- Non-Disclosure Agreement (NDA) on shale gas program signed by DGPC
- Brief prepared on re-emergence of Power Sector Circular Debt for Ministry of Finance
- Technical audit conducted of 9 PESCO grid stations and 6 NTDC grid stations
- 86 cooling fans delivered to PESCO under the power transformer program
- Live line training completed for 21 crew members of FESCO, GEPCO and HESCO
- To complement its activities for the institutional strengthening of NTDC, EPP opened a regional office at Lahore.

PROGRESS IN NUMBERS

Item	Achieved or Completed	Targets LOP	% Completion
Generation MW	913	863	105.8
Transmission MW	48	400	12
Policy Reform and Governance input	2	9	22.2
Due Diligence/Studies completed	2	NA	NA
G2G Funding \$ million	\$132.08	\$141.7	93
Procurement contracts \$ million	\$10.16	\$25.9	39

Where We Work

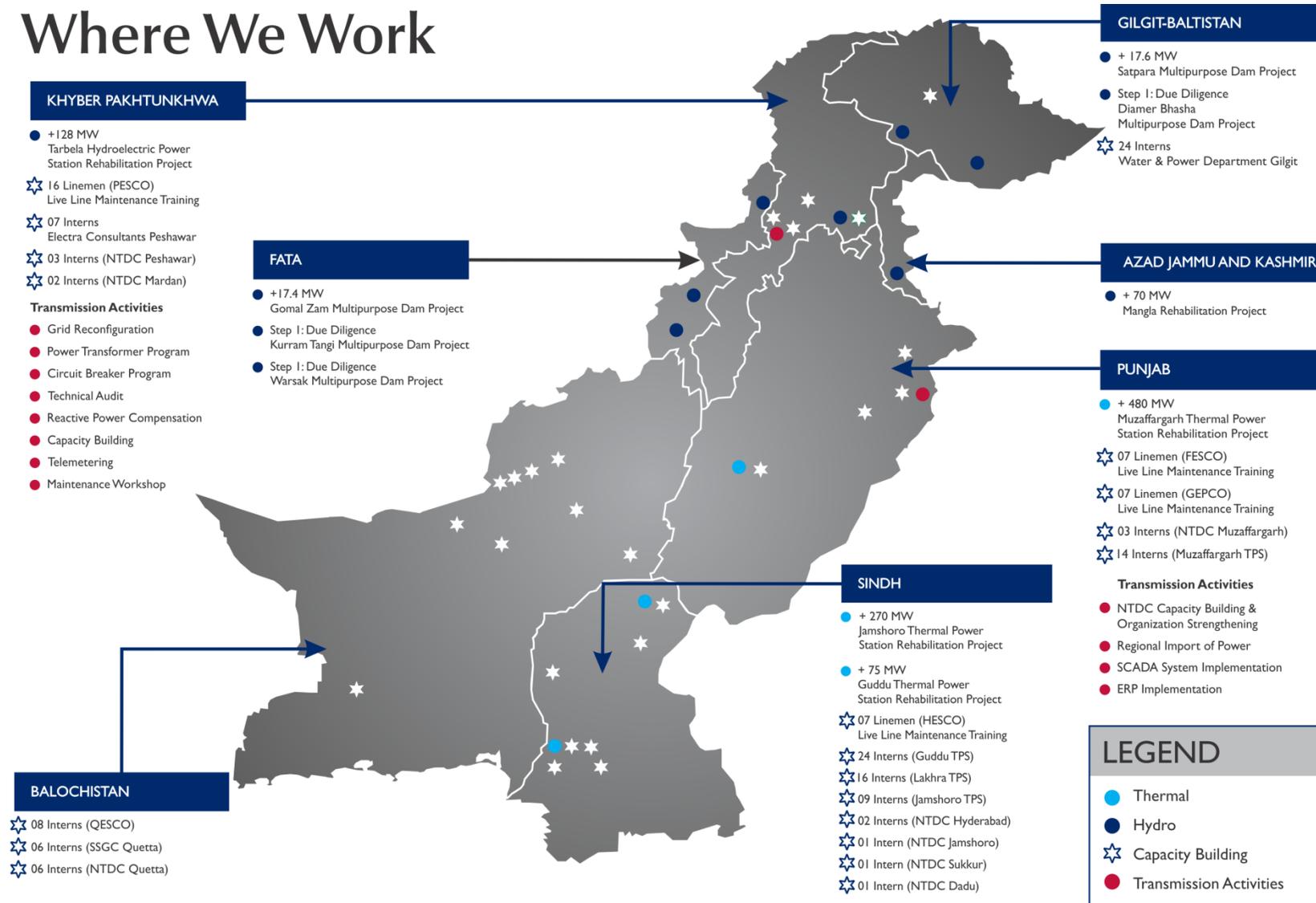


Figure 2: Map of EPP Activity Areas

COMPONENT I: PROJECT MONITORING & IMPLEMENTATION

The Energy Policy Program is providing monitoring and implementation support for the six Government-to-Government signature energy projects. These projects include rehabilitation of three thermal power plants (Muzaffargarh, Guddu and Jamshoro), and one hydropower plant (Tarbela Dam); and construction of two new multipurpose dams (Gomal Zam Dam and Satpara Dam). Total USG funding for these projects is US\$ 141.7 million (per revised agreements) and the estimated gains in generation were 863MW. As of December 2013, \$ 132.08 million or 93% of total funding has been disbursed to GOP implementing partners and 913 MW have been added to Pakistan's national grid. Results achieved through the G2G projects are illustrated in the table below:

Table I: Results Achieved through G2G Projects

Projects	USG Funding (Million)	Paid (Million)	Completion Date	MW Gains/Benefits	
				Target	Achieved (Dec 31, 2013)
Tarbela	\$16.50	\$13.95	12/31/14	128	128
Jamshoro*	\$19.32	\$15.96	03/31/14	150	270
Guddu*	\$19.12	\$17.34	12/31/13	75	-
Muzaffargarh*	\$15.77	\$13.83	12/31/13	475	480
Gomal Zam	\$45.00	\$45.00	Completed	17.4	17.4
Satpara	\$26.00	\$26.00	Completed	17.6	17.6
Total	\$141.71	\$132.08		863	913

* Amendment to Activity Agreement(s) underway to extend the project completion date to 12/31/14

During the reporting month, EPP technical experts visited the project sites regularly, verified deliveries, inspected equipment, and monitored work progress.

Rehabilitation of Tarbela Hydropower Plant

The rehabilitation work to date has resulted in the restoration of 128 MW at Tarbela hydropower plant. Replacement of generator windings at units 1, 3 & 4, and installation of relief valve seals, guides and pumps are complete. The remaining replacement/repair work will increase the reliability and sustainability of the power plant, but not support restoration of additional megawatts.

In December, installation of digital governor at unit # 7 was completed; EPP visited the site to oversee the commission of digital governors installed at units 7 and 9. Of the \$16.5 million funding amount committed for Tarbela, total disbursement as of December 2013 has reached to \$13.5 million.

Gomal Zam Multipurpose Dam Project

With a funding of \$45 million USAID supported WAPDA in the completion of the main dam, powerhouse, and switchyard and transmission line.

The dam has added 17.4 MW to the national grid and is capable of storing 1.14 million acre feet of water that will control flooding and irrigate 191,000 acres of land. The project stands completed and was inaugurated by US Ambassador in September 2013.

Satpara Multipurpose Dam Project

EPP has successfully achieved the project objectives ahead of the project completion date of December 31, 2013. The dam, four powerhouses, and irrigation canals are complete. The entire funding amount of \$26 million committed for Satpara has been disbursed to GOP.

The dam has added 17.6MW to the Skardu grid and is capable of storing 0.09 million acre feet of water that will control flooding and irrigate 15,500 acres of land. The power generated by the dam is enough to meet the electricity consumption needs of 280,000 individuals.

Severe weather conditions created challenges for the project but EPP ensured completion of the project before the deadline.

Muzaffargarh Thermal Power Station Rehabilitation Project

Rehabilitation work to date has resulted in the addition of 480 MW of generation capacity at Muzaffargarh TPS which exceeds the target of 475MW. The 480 MW added to the national grid is sufficient to supply electricity to 7.6 million beneficiaries. Major equipment has been installed and rehabilitated at MTPS and procurement of remaining equipment is in process.

During the reporting period EPP continued to support MTPS in the procurement process to expedite procurement of the remaining equipment and minimize delays in the rehabilitation work. Amendment to the Activity Agreement is underway to extend the project completion date to December 31, 2014.

EPP supported USAID in the issuance of a custom/GST exemption letter NPGCL². The letter will aid NPGCL avail tax exemption from the Economic Affairs Division (EAD).

As of December 2013, the total amount disbursed to GOP stands at \$13.83 million.

Jamshoro Thermal Power Station Rehabilitation Project

EPP supported USAID in the issuance of a custom/GST exemption letter Jamshoro Power Company Limited³ (JPCL). The letter will aid JPCL avail tax exemption from the Economic Affairs Division (EAD).

Amendment # 1 to the Activity Agreement revised the project completion date to March 31, 2014 and obligated the incremental funding to cover the insurance and freight. A second amendment to the Activity Agreement is underway to extend the project completion date to December 31, 2014. Total amount disbursed to the GOP as of December 2013 is \$15.96 million.

Rehabilitation of Guddu Thermal Power Station

EPP continued the inspection of equipment delivered by General Electric (GE). The inspection carried out in coordination with the representatives of GE and Central Power Generation Company Limited⁴ (CPGCL). Rehabilitation is scheduled to commence in Q2 FY14 and will take a period of three months to completion.

EPP supported USAID in issuing a custom/GST exemption letter CPGCL. The letter will aid CPGCL avail tax exemption from the Economic Affairs Division (EAD).

² NPGCL was established as a public limited company in 1998. It comprises of eight generating blocks situated at Muzaffargarh, Faisalabad, Multan and Lahore.

³ JPCL was incorporated in 1998 and manages the Jamshoro and Kotri Thermal Power Stations

⁴ Established in 1998, CPGCL manages the operations of Guddu Thermal Power Station

In response to CPGCL's extension request, EPP is supporting USAID to review the Activity Agreement and extend the project completion date to December 31, 2014. Total amount disbursed to the GOP as of December 2013 is \$17.34 million.

Mangla Dam Rehabilitation Project

EPP team held meetings with WAPDA and USAID to discuss the payment mechanism for disbursement of funds under the Mangla dam rehabilitation project. EPP assisted USAID draft the payment schedule.

EPP facilitated WAPDA in the approval of PC-I by pursuing the issue at ministerial level at both the ministries of Finance and Planning & Development. The PC I of Mangla rehabilitation was approved by the Executive Committee of National Economic Council (ECNEC) on December 29.

GENCOS PERFORMANCE EFFICIENCY IMPROVEMENT PROGRAM

Having achieved substantial results through the replacement of equipment in terms of power generation capacity and efficiency improvements, EPP is now focusing on improving the commercial side of the GENCOs. In this regard, EPP is providing support to the GENCOs to conduct NEPRA compliant Heat Rate tests in order to obtain revised tariff from NEPRA which is reflective of the actual cost incurred by GENCOs for producing electricity.

Procurement and Calibration of Flow Meters

During the reporting period, SGS⁵ continued with the calibration of gas flow meters at Guddu TPS. 50% of the meters at Guddu have been calibrated while procurement of orifice plates is in process to complete the calibration of remaining meters.

EPP team conducted an inspection of the new flow meters delivered at MTPS. Meters were installed on all the units and calibrated on NPGCL's request.

Heat Rate and Dependable Capacity Testing

EPP coordinated with PES (independent engineering firm) to conduct heat rate tests at MTPS. The testing schedule was finalized in consultation with NEPRA and NPGCL. Heat rate test on Unit 2 of MTPS was conducted on December 30 in the presence of NEPRA, CPPA, PES, EPP and MTPS representatives. The tests on the remaining units are scheduled to be completed by mid- January.

Capacity Building at GENCOs and WAPDA

The O & M training program has been designed to develop the capacity of 120 technical staff of GENCOs and WAPDA. The training will be carried out in batches of 20 trainees, with each training session spread over a period of two weeks.

In December, the EPP made progress with the GENCO Thermal and Hydro Training Series programs and selected tentative dates for the upcoming quarter. A meeting was held with the selected training service provider (TSP) for thermal training to discuss the logistics, curriculum and training schedule.

⁵ EPP has contracted the services of SGS for calibration of flow meters at the three GENCOs located at Jamshoro, Muzaffargarh and Guddu

COMPONENT 2: POLICY AND REFORM

SUPPORT TO THE MINISTRY OF WATER AND POWER

EPP is supporting the MWP in implementing the GOP's Power Sector Reform Program in generation, transmission, fuels, policy and finance.

Power Sector Integrated Model (Power SIM)

EPP conducted training of four Section Officers of MWP on the usage of Power SIM. The training covered all aspects of the model including the generation, transmission, distribution modules, and analysis of various financial impacts of policy reforms and efficiency enhancements in the power sector.

Power Purchase Agreements (PPAs)

On MWP's request, EPP initiated the review of agreements between GENCOs and NTDC to revise to the PPAs. Currently EPP is reviewing the Jamshoro and Muzaffargarh PPAs in consultation with MWP.

SUPPORT TO MINISTRY OF FINANCE

EPP drafted a brief on the re-emergence of Power Sector Circular Debt. Keeping in view the continuous increase in payable of power sector by provincial governments and other government entities, EPP seconded staff at MoF is reviewing the adjustment at source mechanism through federal adjuster.

SUPPORT TO PLANNING COMMISSION

EPP staff seconded at the Planning Commission provided support in drafting minutes of CDWP meeting on establishment of Hydropower Training Institute (HPTI) at Mangla, Mangla Dam Rehabilitation Project, 40 MW Dowarian hydropower project, evacuation of power from solar park at Lal Suhanra and Harpo hydropower project.

EPP staff backed up data from Member Energy's official computer and shared it with the Chief of Part and Deputy Chief of Party as directed by Member of Energy. EPP also provided routine system and network trouble shooting and general technical assistance to the office of Member (Energy) and Minister of Planning and Development to carry out routine assignments smoothly.

COMPONENT 3: NEW PROJECTS, PLANNING & DEVELOPMENT

EPP continued to advise and assist USAID evaluate the request from WAPDA for support to four run-of-river hydropower project namely Duber, Allai, Khan Khawar and Jinnah. The projects will add 419 MW cheap and clean hydroelectric power to the national grid. EPP received revised cost estimates from WAPDA for the projects and shared with USAD for review.

COMPONENT 4: NEW ACTIVITIES

This component encompasses activities focused on strengthening the power transmission network, institutional strengthening of power sector entities, power imports and provision of technical assistance to MPNR for diversification of fuel mix to increase the supply of natural gas for power generation.

TRANSMISSION

PESCO

EPP is focusing on strengthening the power transmission network and on capacity building for power sector entities involved in transmission, specifically the Peshawar Electric Supply Company (PESCO). Till date 48MW of generation capacity has been restored in PESCO's network with EPP's assistance.

Technical Audits

EPP engineers conducted technical audit of nine grid stations. Till date 77 out of 86 (approx. 90%) PESCO grid stations have been audited. The technical audits highlight problems and bottlenecks and prioritize proposed corrective measures.

In December, EPP held a coordination meeting with Chief Executive Officer of PESCO and apprised him of the work progress. The CEO PESCO are appreciative of EPP initiatives and regarded the technical audits and Reactive Power Compensation Study as projects that can provide highest opportunities for system improvement at PESCO

Power Transformer Program

EPP delivered 86 cooling fans to PESCO. A total of 348 cooling fans procured from HEC have been delivered to PESCO. The fans, once installed, will enhance the capacity of PESCO transformers by 183 MW and ensure reliable supply of electricity to over 2 million residents of Khyber Pakhtunkhwa (KP).

Transmission Line

EPP inspected the transmission towers on the 132kV Mardan-Dargai transmission line. Four towers were found to be severely damaged causing safety and reliability problems. EPP is developing a Scope of Work (SOW) for the repair of the damaged towers and work is expected to commence in Q2FY12.

Live Line Training

Live line training for 21 FESCO, GEPCO, and HESCO linemen was completed this month. During the 14 week long training course 7 crew members from each DISCO were provided classroom and hands-on training.

Through the training EPP is building the capacity of power distribution companies to carry out maintenance work on 132 & 66kV transmission lines while they are still energized. Each DISCO is expected to save 2GWh of energy annually by carrying out live line maintenance, which means uninterrupted power supply to the consumers.

NTDC/NPCC

EPP completed technical audits of 6 out of 41 NTDC grid stations (approx. 15% complete).

In a meeting held at NTDC, EPP team briefed NTDC's Audit Committee on the implementation of the Enterprise Resource Plan (ERP). It was decided that EPP will share the draft terms of engagement between NTDC and EPP, project timeline, and scope of work with NTDC in the coming month.

Due diligence on evacuation of power from wind power plants at Jhimpir and Gharo is underway. In this regard, EPP held a meeting with the Alternative Energy Development Board (AEDB) to discuss the upcoming wind power projects in Sindh. AEDB assured EPP to its support in facilitating due diligence visits to the sites and sharing of AEDB data on wind power.

EPP Transmission team finalized SOW for the procurement of equipment for the Smart Metering System in consultation with NTDC.

EPP experts held a meeting with NPCC's SCADA system provider to gain an insight about the installed SCADA system and its capabilities. This will aid EPP in developing capacity building activities for the NPCC dispatchers

SUPPORT TO MINISTRY OF PETROLEUM & NATURAL RESOURCES

LNG Imports

In December, EPP along with USAID held meetings with Port Qasim Authority (PQA) and ISGS at Karachi. The LNG program was discussed in depth with emphasis of challenges faced by the program and facilitation required from USAID. The team was also given a tour of the PQA facilities.

EPP coordinated regularly with the consultants on the program progress and monitored the achievement of deliverables.

Shale Gas

The Non-Disclosure Agreement (NDA) was signed by DGPC. Following the NDA signing, DGPC granted approval for the review and usage of its data for the program. Work has been started under milestone I of the Shale Gas program.

Work under the Shale gas program started with a delay of five months due to the bureaucratic approval process of GOP.

Upstream Oil and Gas support

The procurement request package is under preparation.

CAPACITY BUILDING & PARTICIPANT TRAINING

This is a cross cutting activity providing support to all components of EPP through strengthening the capacity building of the GOP partners.

During December 2013, EPP developed the first draft of the “EPP Capacity Building and Participant Training Plan”, secured dates for the upcoming GENCO Hydro and Thermal training series, and evaluated the EPP internship program to discover 33 of the 127 interns have gained full time employment.

The “EPP Capacity Building and Participant Training Plan” outlines the EPP training impact goals, collaboration with other training programs currently in Pakistan, USAID compliance instructions and regimen, as well as past activities and planned activities with budget estimates. Additionally, EPP started a Trai-Net account in December 2013 and will begin monthly reporting of all training activities, including past program activities, in January 2013.

ADMINISTRATION/MANAGEMENT SUPPORT TO EPP

ACCOUNTING/FINANCE

Miscellaneous payments were made to vendors during the month. Payroll and financial reconciliations were completed.

Reviewed Payment Vouchers for the month to ascertain that adequate documentation has been gathered and that the working papers have been documented and provide an adequate basis for reporting. Reviewed Monthly Financial Report for December 2013 and analyzed the projected vs. actual expenditures for the month. EPP revised projections for the program for FY14-15 according to the procurements in pipe line and estimated completion.

LOGISTICS

Logistical support was provided for 77 trips made by project staff. International travel for expats was arranged, and regular follow up was maintained with the Ministry of Foreign Affairs for obtaining longer term visas for the expats.

HUMAN RESOURCES

In December, one staff member was inducted in the procurement department.

IT

Installation	Troubleshooting	Maintenance
<ul style="list-style-type: none"> • 5 internet devices for Lahore office • Installation of HP laserjet printer at Lahore office • 2 laptops for ERP team • 4 Additional CCTV Cameras Installation and 8 channels DVR configuration • Installation, configuration and e-mail setup on 4 laptops and 1 Desktop PCs • Networking survey for Electrical, Voice and Data nodes at Lahore office 	<ul style="list-style-type: none"> • EPP staff performed trouble shooting for IT equipment in the EPP office and guesthouse and for operations at the ministries • Time and attendance machine troubleshooting and centralized network management for EPP offices 	<ul style="list-style-type: none"> • QuickBooks support for Islamabad and Peshawar office • Tracking of 14 official eVo Internet devices monthly recharges • CCTV System Management for EPP offices Monthly attendant backup activity of official emails • EP-EP.COM.PK E-mail Server and BlackBerry services administration and support • Monthly payroll and official documents scanning • Assisting Admin & Finance to keep well-run database record on Travel Authorization & Leave Application Forms • Daily routine hardware, software, systems and network support to all EPP staff.

PROCUREMENT

Purchase Orders/Subcontracts Issued during December 2013:

Item	Amount (in US\$)
Supply of 15,000 Ltrs. Power Transformer Oil	19,842
Power Transformer Oil Testing	32,617
Orifice Plates	1,000
O&M Training- Thermal	260,040
Total	313,499

Completed Purchase Orders (Inspections and deliveries) during December 2013

Item	Activities Undertaken	Amount (in US\$)
RFO Flow Meters for GENCO's	Duty free customs clearance, transportation to MTPS	116,940
Cooling Fans for Power Transformers	Final lot delivered to PESCO	52,571
Total		169,511

LIST OF KEY MEETINGS

Meeting	Date	Location	Purpose	Outcome/Result
Member Power, GM Hydel	Dec 04	WAPDA house, Lahore	To discuss Mangla Rehab Project Payment Schedule, Opening of WAPDA Account for Project and O&M Training	<ol style="list-style-type: none"> 1. Draft Payment Schedule received from WAPDA 2. WAPDA issued request letter to open Account for Mangla 3. List of nominated candidates received from WAPDA for training
GM Thermal (CEO GHCL)	Dec 05	CEO GHCL Office, Lahore	To discuss O&M Training and NPGCL HR Test	<ol style="list-style-type: none"> 1. List of nominated trainees received from GHCL 2. Installation of flow meters expedited and Heat Rate testing schedule discussed
NPGCL FARA Project Manager	Dec 06	Muzaffargarh TPS	To expedite the installation of flow meters	Flow meters installed on all units
CE Tarbela	Dec 21	Tarbela Power Station	To discuss and expedite the procurement of remaining FARA equipment	WAPDA committed to complete the remaining procurements within the project completion date

Energy Policy Program

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