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USAID/ENERGY POLICY PROGRAM

ANNUAL REPORT

OCTOBER 1, 2013 – SEPTEMBER 30, 2014



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USAID/ENERGY POLICY PROGRAM

ANNUAL REPORT

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Cover Photo: Work in Progress at Guddu Thermal Power Plant

DISCLAIMER

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ACRONYMS

| | |
|-------|---|
| AEAI | Advanced Engineering Associates International, Inc. |
| AEDB | Alternate Energy Development Board |
| BOM | Bill of Material |
| CFW | Corporate Finance Wing |
| CNG | Compressed Natural Gas |
| COR | Contracting Officer Representative |
| CPPA | Central Power Purchasing Agency |
| DGPC | Director General Petroleum Concessions |
| DBDP | Diamer Bhasha Dam Project |
| DISCO | Distribution Company |
| EAD | Economic Affairs Division |
| EETPL | Elengy Terminal Pakistan Limited |
| ECC | Economic Coordination Committee |
| EPP | Energy Policy Program |
| ERP | Enterprise Resource Planning |
| FARA | Fixed Amount Reimbursable Agreement |
| FATA | Federally Administered Tribal Areas |
| FESCO | Faisalabad Electric Supply Company |
| FGD | Focus Group Discussion |
| FY | Fiscal Year |
| GENCO | Generation Company |
| GEPCO | Gujranwala Electric Power Company |
| GOP | Government of Pakistan |
| GTPS | Guddu Thermal Power Station |
| G2G | Government to Government |
| gW | Gigawatt, unit of electrical power, 1 billion watts |
| HB | Hagler Bailly |
| HESCO | Hyderabad Electricity Supply Company |
| IESCO | Islamabad Electricity Supply Company |
| ISGS | Inter State Gas Systems |
| LESCO | Lahore Electricity Supply Company |
| LLM | Live-Line Maintenance |
| LNG | Liquefied Natural Gas |
| LSA | LNG Services Agreement |
| MEO | Mission Environment Officer |
| MEPCO | Multan Electric Power Company |
| MOF | Ministry of Finance |

| | |
|----------|--|
| MPNR | Ministry of Petroleum and Natural Resources |
| MTPS | Muzaffargarh Thermal Power Station |
| MVA | Megavolt Ampere |
| MW | Megawatt, unit of electrical power, 1 million watts |
| MWP | Ministry of Water and Power |
| NEPRA | National Electric Power Regulatory Authority |
| NOC | No Objection Clearance Certificate |
| NPCC | National Power Control Center |
| NTDC | National Transmission and Dispatch Company |
| OGDCL | Oil and Gas Development Company, Ltd |
| OHTL | Overhead Transmission Line |
| O & M | Operations and Maintenance |
| PESCO | Peshawar Electric Supply Company |
| PIL | Project Implementation Letter |
| PMO | Project Management Office |
| PowerSIM | Power Sector Simulated Model |
| PPIB | Private Power and Infrastructure Board |
| PSO | Pakistan State Oil Company |
| PQA | Port Qasim Authority |
| QESCO | Quetta Electricity Supply Company |
| REA | Rapid Environmental Analysis |
| ROR | Run-of-River |
| RTDS | Real Time Digital Simulator |
| SAN | Storage Area Network |
| SEPCO | Sukkur Electric Power Company |
| SCADA | System Control and Data Acquisition, transmission line supervisory equipment |
| SNGPL | Sui Northern Gas Pipeline Company, Ltd |
| SSGC | Sui Southern Gas Company |
| TPS | Thermal Power Station |
| USAID | United States Agency for International Development |
| USG | United States Government |
| WAPDA | Water and Power Development Authority |

EXECUTIVE SUMMARY

This Annual Report covers deliverables, outcomes, challenges faced, and steps forward from the period October 1, 2013 to September 30, 2014 for the Energy Policy Program (EPP). From Fiscal Year (FY) 2013 to FY2014, EPP has made dramatic gains in MW production, transmission support, and policy influence.

EPP's growing staff continues to focus on strengthening Pakistan's power generation, transmission systems, and fuel services promoting relevant policy reform. As of FY2014, EPP added 1,368.1 MW through generation and transmission improvements, advised on critical energy sector governance policy, provided capacity building activities to all stakeholder organizations, and further developed the oil and petroleum sector support to increase the energy supply. EPP supported the monitoring and implementation of government to government (G2G) projects while working in close collaboration with the Government of Pakistan (GOP) counterparts and continued with due diligence for potential energy projects. EPP highlights of the reporting period include:

- Optimized G2G procedures that facilitated GOP procurements resulting in additional 1,013 MW of energy, which is enough energy to supply 9.3 million people. As of FY2014, out of the US\$ 291.71 million of United States Government (USG) committed funding, US\$ 146.82 million has been disbursed.
- Supported completion of three multipurpose hydropower dam projects (Gomal Zam, Satpara, and Tarbela dams) and the repair and rehabilitation of three thermal power plants (Jamshoro, Muzaffargarh, and Guddu) through Energy Policy Program (EPP) monitoring and implementation.
- Improved the transmission system at Peshawar Electric Supply Company (PESCO) through installation, replacement, and rehabilitation of equipment saving 368.6 MW (362.6 MW of throughput capacity; 6 MW added/saved), which is enough energy to supply to about 4.7 million people.
- Supported development of an interactive, computer-based Power Sector Integrated Model (PowerSIM), an analytical tool for showing the various financial impacts of policy reforms and efficiency enhancements in the power sector. Ministry of Water and Power (MWP) and Ministry of Petroleum and Natural Resources (MPNR) employees were trained in how to use the Power SIM model for policy decision making.
- Provided advice and review to the MWP on the second Draft Policy Framework for Private Transmission Line Projects and provided technical advisory support to improve governance. Advisory support was provided to MPNR in the review of the Draft Supplemental Agreement for Policy Conversions and the Draft Flare Gas Policy.
- Assisted the GOP in preparation of tenders for Liquefied Natural Gas (LNG) imports. EPP is also supporting GOP on shale gas exploration and formulation of upstream oil and gas policy. EPP facilitated the final negotiations between the stakeholders ISGS, Sui Southern Gas Company (SSGC), and (ETPL) for the LNG Service Agreement for a "Fast Track" LNG terminal. With EPP's direct support, the LNG Service Agreement was signed between SSGC and ETPL on April 30, 2014.
- Supported the Generation Companies (GENCOs) I, II, and III in conducting heat- rate testing and meter calibration in order for them to acquire revised tariff through the

National Electric Power Regulatory Authority (NEPRA) and improve their financial performance.

- Conducted thermal operations and maintenance (O&M) training for GENCOs I, II, and III, as well as Storage Area Network training for the National Transmission and Dispatch Company (NTDC) Central Power Purchasing Authority (CPPA). In addition, EPP successfully completed on-the-job training of 127 graduates in the energy sector through the internship program in November 2013; 36% of the graduates have already secured jobs.
- Conducted technical audits of the primary plant at each grid station and overhead transmission line (OHTL). All of PESCO's 84 grid stations have been audited by EPP's Transmission Team. Seven circuit breakers were installed at six different grid stations within PESCO, which will enhance the safety and reliability of PESOC's network. 195 out of 211 power transformer oil sample tests have been received, indicating required maintenance to increase transformer life.
- Supported NTDC through the completion of 30 out of the 41 (73%) technical audits and the selection and implementation of a Real Time Digital Simulator (RTDS), resolving pre-deployment issues related to Secured Metering Systems (SMS), Enterprise Resource Planning (ERP), renewable energy, continuous capacity building, and the removal of bottlenecks.
- Acquired the remaining tools and trucks to deliver Live-Line Maintenance (LLM) kits to each of the nine Distribution Companies (DISCOs). EPP will deliver training courses with the new tools to each DISCO in FY2015.

Across all activities, EPP **has procured approximately US\$ 17 million** in equipment for generation and transmission facilities as well as services with a dramatic increase in activity during FY2014. By the end of FY2014, EPP successfully achieved and exceeded in five of the 15 monitoring and evaluation indicators from the Development Results Framework and is on target to complete all life-of-program targets by FY2015.

BACKGROUND

Energy Policy Program (EPP) is a multi-year, United States Agency for International Development (USAID)-funded initiative to increase power generation and to improve transmission capacity and reliability. EPP works with selected energy enterprises to assist the Government of Pakistan's (GOP) sector reform efforts. The program supports the joint goals of the United States Government (USG) and the Government of Pakistan in reforming the power sector and is designed to address Pakistan's chronic electricity shortage.

While there is a continued and ongoing focus on due diligence and successfully implementing the Government to Government (G2G) effort, EPP has begun integrating work on technical upgrades, policy reform implementation, fuel diversification, and transmission-related activities. All of these efforts represent a comprehensive approach to help Pakistan expand its indigenous production capacity, eliminate the need for subsidies, and mitigate pressures contributing to the country's current energy crisis. At the conclusion of this important program, EPP will have contributed substantially toward both reducing the immediate energy shortages and helping the country build longer term energy sufficiency.

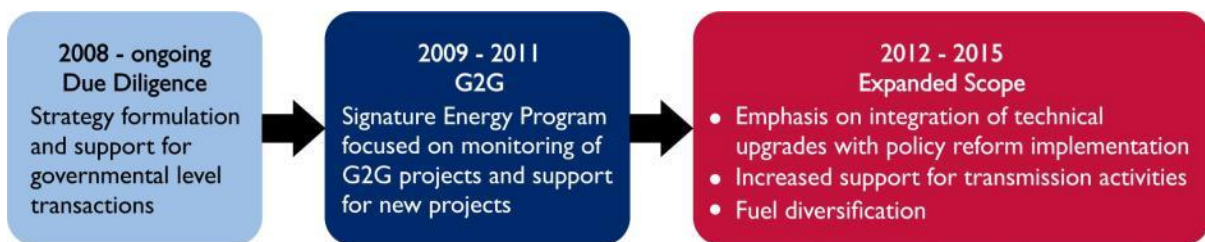


Figure 1: EPP Phases

EPP activities are located throughout Pakistan and detailed locations are identified in **Annex V: Where We Work**. EPP encompasses interrelated activities and targeted interventions that meet the objectives of the program's four components:

Component I – Monitoring and Support of Project Implementation. EPP proactively advises and supports USAID and counterparts in the monitoring, implementation, and compliance of Fixed Amount Reimbursement Agreements (FARA) with the GOP. This includes monitoring and supporting timely counterpart compliance with all of the terms and conditions of FARAs, and inspection and certification of deliverables.¹ Specifically, EPP provides monitoring and implementation support for seven signature energy projects; four repair and maintenance projects --three Generation Companies (GENCOs) and Tarbela; two multipurpose dam completion projects (Gomal Zam and Satpara); and one dam rehabilitation project (Mangla).

Component II – Advice and Support of Energy Sector Policy Reform. EPP actively supports energy sector reform by undertaking activities that are requested by one or more GOP entities and by the direct assignment of staff to work in the offices of the requesting

¹ C.4.2, Component One, pg. 8 of 46, Contract No: AID-EPP-I-00-03-00004

entity as advisors and specialized support staff.² In achieving the objectives of this component, EPP supports generation- and transmission-related studies and policy reform activities assigned by USAID with the support of the GOP.

Component III – New Projects, Planning and Development. Based on frequently changing priorities and schedules of USAID and USG entities, EPP undertakes due diligence of projects and activities that are candidates for USG support.³ Specifically, EPP conducts and prepares due diligence reports on new projects under consideration for USG support in order to provide detailed information, reduce USG risk, and set a basis for creating Project Implementation Agreements for the selected projects.

Component IV – New Activities. As a result of Modification Number 2⁴ to EPP's Task Order Award, EPP provides policy assistance to improve energy sector governance and technical assistance to improve the transmission system and the petroleum sector.

- **Improve Governance.** EPP provides targeted assistance to the National Transmission and Dispatch Company (NTDC) and the Natural Power Control Center (NPCC) to mitigate unscheduled shortages and assist the generation companies (GENCOs) in improving baseline efficiency measurements and improving (O&M) procedures.
- **NTDC Support.** Through rehabilitation, installation, participant training, and introduction of new management systems, EPP provided assistance to NTDC to develop improved efficiency, standardized systems, and assist in the removal of transmission bottlenecks.
- **Turnaround DISCO.** EPP support for PESCO includes substation audits, power transformer and equipment procurement and rehabilitation, and the development of best practices in O&M. These measures will add throughput capacity to PESCO's grid, which will in turn result in improved revenue collection and delivery.
- **Live-Line Maintenance.** EPP will develop live-line crews on 132 kV and 66 kV transmission lines to improve reliability and decrease maintenance disruptions. All nine DISCOs will receive modern live-line kits and crew training to conduct live-line maintenance nationwide.
- **Petroleum Sector Support.** To assist the GOP in expanding fuel supply, EPP will lend support to Ministry of Petroleum and Natural Resources (MPNR) and other stakeholders in developing a supply chain for the importation of LNG. This assistance includes developing resource technology and a policy framework of unconventional gas, developing an overall upstream oil and gas regulatory framework, and implementing policy with particular reference to conventional gas.

² C.4.3, Component Two, pg. 11 of 46, Contract No: AID-EPP-I-00-03-00004

³ C.4.4, Component Three, pg. 12 of 46, Contract No: AID-EPP-I-00-03-00004

⁴ C.4.5.1, Component Four, pgs. 3-9 , Amendment/Modification No. 2 of Contract No: AID-EPP-I-00-03-00004

COMPONENT I: MONITORING AND SUPPORT OF PROJECT IMPLEMENTATION

MONITORING AND IMPLEMENTATION SUPPORT

EPP continued to provide advice and support to USAID and GOP counterparts for the monitoring and implementation of the seven G2G projects. Two of the seven signature power generation projects were completed in FY2013. USG funding projects totals US\$ 291.71 million (per revised agreements) that will result in an estimated gain of 953 MW for Pakistan's national grid⁵. As of September 30, 2014, the total amount disbursed to the GOP implementing partners was US\$ 146.82 million, or 50% of total funding, with 1,013 MW achieved in generation for FY2014, benefitting 9.3 million people. Results achieved through the G2G projects are illustrated in table below:



Heat Rate Test at Muzaffargarh TPS

Table 1: Summary of G2G Projects for Hydro and Thermal Power Plants

| Projects | USG Funding (USD Millions) | Paid (US\$ Millions) | Completion Date | MW Gains/Benefits | |
|--------------|----------------------------|----------------------|-----------------|-------------------|-----------------|
| | | | | Target | Achieved FY2014 |
| Tarbela | 16.50 | 13.95 | 12/31/14 | 128 MW | 128 MW |
| Jamshoro | 19.32 | 16.39 | 12/31/14 | 150 MW | 270 MW |
| Guddu | 19.12 | 17.34 | 12/31/14 | 75 MW | 80 MW |
| Muzaffargarh | 15.77 | 15.14 | 12/31/14 | 475 MW | 500 MW |
| Gomal Zam | 45.00 | 45.00 | 09/30/13 | 17.4 MW | 17.4MW |
| Satpara | 26.00 | 26.00 | 12/31/13 | 17.6 MW | 17.6 MW |
| Mangla | 150.00 | 13.00 | 12/31/17 | 90 MW | In Progress |
| Total | 291.71 | 146.82 | | 953 MW | 1,013 MW |

For effective monitoring and control, EPP technical experts visited the project sites on a regular basis, verified deliveries, inspected equipment and ensured environmental compliance, instituted performance tests, verified results, and advised USAID for the disbursement of funds. Overall, Component I's largest challenge in FY2014 was the delay of procurements as a result of the design of the G2G mechanism and Reimbursement

⁵ Figures taken from the 7 G2G Agreements.

Agreement.; however, the projects are currently on track for completion or were completed shortly after the G2G mechanism was aligned with GOP practices.

Tarbela Hydropower Plant Rehabilitation

Rehabilitation Project – Phase I. The replacement of the generator windings at Units 1, 3, and 4, and the installation of relief valve seals, guides, and pumps are now complete. Digital governors have also been installed and commissioned at Units 3, 4, 5, 6, 7, and 9. Shutdown for the installations of the remaining four digital governors will take place during the “lean flow period” in November 2014. EPP team is working closely with the Water and Power Development Authority (WAPDA) to complete the remaining works within the completion date of December 2014. The remaining replacement and repair work will increase the reliability and sustainability of the power plant but not support the restoration of additional megawatts. Of the US\$ 16.5 million committed for Tarbela, the total disbursement as of September 2014 was US\$ 13.95 million (84% complete), and 20 engineers from Tarbela were trained on Operations and Maintenance (O&M) practices to enhance capacity of plant engineers for ensuring sustainable operations at the power plant.

Rehabilitation Project – Phase II. In FY2014, WAPDA signed the Activity Agreement for Tarbela Repair and Maintenance Phase II Project and now the Agreement is in process of signing with the Economic Affairs Division (EAD). USAID is considering funding US\$ 25 million for the Phase-II of Tarbela Repair and Maintenance Project, out of which US\$ 10 million will be sub-obligated under an Activity Agreement and the remaining amount will be provided under separate Activity Agreement or relevant PILs. An additional 20 megawatts (about 60 GWh) of energy per annum and oil savings of US\$ 12 million per annum is also expected as a result of this replacement.

Gomal Zam Multipurpose Dam Project

In September 2013, the Gomal Zam Multipurpose Dam Project was completed with EPP facilitation and inaugurated by the U.S. Ambassador. The project added 17.4 MW of generation capacity to the national grid, sufficient to supply electricity to 161,000 individuals. With the main dam completion, downstream areas of Federally Administered Tribal Areas (FATAs) are protected from floods and irrigate 191,000 acres of land. EPP certified US\$ 45 million invoices upon completion of major milestones (100% complete).

Satpara Multipurpose Dam Project

The Satpara dam, power houses, and irrigation canals were completed in December 2013, and the dam has added 17.6 MW to the Skardu grid and capable of storing 0.09 million acre ft. that will control flooding and irrigate 15,500 acres of land. WAPDA completed the remaining canal work all project targets have been achieved. The addition of 17.6 MW to the local Skardu grid supplies enough electricity to assist 161,158 individuals. By the end of the project, EPP certified US\$ 26 million invoices upon completion of major milestones (100% complete).

Muzaffargarh TPS Rehabilitation Project

Rehabilitation work to date has resulted in the addition of 500 MW of generation capacity added at Muzaffargarh Thermal Power Station (TPS), which exceeds the target of 475MW. EPP has worked closely with Muzaffargarh TPS to complete the rehabilitation of major equipment, including boiler super heater tubes and air pre-heater elements, and the

overhauling and replacement of ID fans and ducts and other major equipment. Major equipment has been installed and rehabilitated, and the procurement of remaining equipment required is in process. EPP also supported in processing tax exemption from USAID for equipment worth US\$ 948,145. As of FY2014, out of the obligated amount of US\$ 15.77 million, the total amount disbursed to the GOP stands at US\$ 15.14 million (96% complete). Frequent changes in Muzaffargarh TPS senior management and decision-making staff and the extensive GOP procurement procedure created initial challenges; however the deadline was met.

Jamshoro TPS Rehabilitation Project

EPP worked with the GENCO to rehabilitate major engineering equipment that included economizers, air-preheaters, and control systems, which resulted in 270 MW generation capacities added to the national grid thus far. On September 26, 2014, the Senior Energy Engineering Specialist from USAID energy office visited the Jamshoro power station. The visit was critical to expedite the procurement of remaining equipment and to complete rehabilitation by December 2014; however, EPP anticipated that the completion of the outstanding procurements will go beyond the project completion date mentioned in Agreement. EPP received a claim of US\$ 958,500 against Project Implementation Letter (PIL) item#11: Purchasing of fuel oil additives to prevent slag formation and cooling water treatment chemicals to prevent scale buildup for Units 1, 2, 3, and 4. EPP is scrutinizing the claim to ensure that the technical specification of equipment is as per the PIL. To date, out of the obligated amount of US\$ 19.32 million, the total amount disbursed to the GOP stands at US\$ 16.39 million (84% complete).

Guddu TPS Rehabilitation Project

Rehabilitation work at the Guddu Thermal Power Station (GTPS) began on March 13, 2014. To date, rehabilitation work to upgrade three turbines (GT-7, GT-8, and ST-5) has been completed, and all were commissioned and have undergone test runs to ensure reliability. Rehabilitation of GT-7 and GT-8 led to the restoration of 80 MW exceeding the target of 75 MW. EPP also supported in the processing of tax exemption from USAID for equipment worth US\$ 19,349,766. Guddu TPS requested additional funding of US\$ 9.64 million from USAID for the rehabilitation of an additional turbine (GT-9), which will add 150 MW to the national grid. EPP facilitated the meeting between USAID and Guddu CEO to discuss the request. The total amount disbursed to the GOP as of September 2014 is US\$ 17.34 million (90% complete).

Mangla Rehabilitation Project

USAID is providing US\$ 150 million to GOP for the Mangla Dam Rehabilitation Project, out of which US\$ 72 Million was sub-obligated under an Activity Agreement signed on August 15, 2013. USAID will upgrade units 5 and 6 as the two units are in the worst condition; USAID will also fund the balance of the plant that will improve efficiency and life of all 10 units. In September 2014, EPP met WAPDA to discuss the bottlenecks and to expedite the progress. WAPDA completed the evaluation report for the procurement of major equipment (turbine and generators for units 5 and 6), and a contract is expected to be awarded by



Mangla PIL signing ceremony at the EPP office Islamabad by USAID Mission Director and Chairman

USAID Energy Policy Program

November 2014 with model testing to be complete by August 2015 that will trigger a disbursement of US\$ 7.614 million. As per Activity Agreement, the project completion date is December 31, 2017 and the total amount disbursed to GOP as of September 2014 is US\$ 13 million.

SUPPORT TO GENCOS

In FY2014, EPP completed more heat-rate tests and meter calibrations for the GENCO partners. The heat-rate tests and meter calibrations are critical to filing a new tariff petition with the National Electric Power Regulatory Authority (NEPRA) to more accurately reflect the cost of generating electricity and resolve the current gap.

In FY2014, EPP completed the heat-rate tests for Muzaffargarh and Jamshoro and achieved US\$ 70 million in annual fuel savings. With EPP support, a revised tariff petition has been filed with NEPRA for Jamshoro. EPP is facilitating the GENCOs' filing of a tariff petition with NEPRA to get a revised tariff that would reflect the actual cost of energy generation and close the gap.

The procurement of the flow meters for the three GENCOs was completed. These meters were critical in ensuring that accurate instruments are in place prior to conducting NEPRA-compliant heat-rate tests. Regarding Guddu, all workable units have undergone meter calibration and remaining equipment for heat-rate tests and meter calibrations have been procured. Heat-rate testing for Guddu TPS is scheduled to commence in November 2014.

SUPPORT TO HYDELS

Diamer Bhasha Conference

In FY2014, EPP was asked by the Office of Afghanistan and Pakistan Affairs (OAPA) and USAID Pakistan's Energy Office to organize a one-day business forum featuring the Diamer Bhasha Dam Project (DBDP). Once completed, the GOP expects that the DBDP will provide 4,500 MW of power generation capacity, help alleviate acute electricity shortages, provide a storage capacity of 8.1 million acre-feet, and expand the GOP's ability to address chronic water shortages in the Indus Basin Irrigation System. The U.S.-Pakistan Energy Sector Business Opportunities Meeting is scheduled to be held on October 2014 with participation from USAID Administrator Rajiv Shah, GOP Finance Minister Mohammad Ishaq Dar, USEXIM, OPIC, USTDA, and the U.S. Department of State, etc.

COMPONENT II: POLICY SUPPORT

EPP completed a number of significant policy achievements during FY2014 with the use of policy advisors to the GENCO Holding Company Ltd. (GHCL), MWP, Ministry of Finance (MOF), National Power Control Center (NPCC), and Planning Commission. Significant policy achievements in FY2014 include:

- EPP conducted full-day training session on the Power Sector Integrated Model (PowerSIM) for six key nominated Section Officers by the Ministry of Water and Power (MWP). The training covered all aspects of the model, including the generation, transmission, and distribution modules, and analysis of various financial impacts of policy reforms and efficiency enhancements in the power sector.
- EPP reviewed the second Draft Policy Framework for Private Power Transmission Line Projects. Concerns centered on capping the ROE, the exclusion of all costs in the tariff, and the differential roles of NTDC and the private transmission operator.
- EPP prepared first and second drafts of the Energy Chapter for the Eleventh, Five-Year Development Plan under “Pakistan Vision 2025” in support to the Acting Senior Chief (Energy) of Ministry of Planning and Development.
- EPP developed a Performance Efficiency Improvement (PEI) Plan in consultation with Jamshoro Power Generation Company Ltd. (JPGCL). An Action Plan focused on sustaining the megawatt gains achieved with USAID funding and to improving the plants operating life.

ENERGY SECTOR REFORM ADVISORY SUPPORT

GHCL

Performance Efficiency Improvement. Having achieved substantial and highly visible results through the replacement of equipment that resulted in increased power generation capacity and efficiency improvements, EPP is now focused on improving the commercial operations of the GENCOs. In FY2014, EPP continued working-level discussions with JPCL (Jamshoro TPS Board of Directors) regarding USAID support for improving the commercial and technical performance of GENCOs. Performance Efficiency Improvement (PEI) Plan is being finalized in consultation with JPCL as part of rapid assessment of the functional areas wherein support could be provided. EPP finalized a work plan for the PEI Program at Jamshoro power plant which focused on sustaining the 270 MW gains achieved with USAID funding, and to improve the plant’s operating life.

Business Plans. EPP developed the business plans for GENCOs I, II, and III; however, implementation of the business plans by the GENCOs has been delayed due to administrative changes and conflicting implementation methodologies. During FY2014, the JPCL board of directors was dissolved; EPP will continue to provide support at an advisory level for commercial assistance, technical assistance, and implementation of the business plans, which EPP anticipates to be implemented by FY2015.

MWP

During this reporting period, EPP continued to provide technical assistance to the GOP to support energy sector restructuring and reform, including more effective market policies,

better targeting of subsidies, and capacity building of key institutions (policy makers, planners, regulators, facility managers, and project implementers). EPP's efforts are geared toward improved policy implementation that will help ensure greater efficiency and higher quality customer service, better sector and business management, increased political support for reforms, and eventually full cost recovery leading to sustainability.

Power Purchase Agreements. At MWP's request of support to ensure complete execution of Power Purchase Agreements (PPAs) by the GENCOs, as well as, ensure better management of operations, EPP initiated a review of the NEPRA Act and agreements between the GENCOs and NTDC. EPP is working with the GOP-owned and operated power sector entities, NTDC, and the GENCOs to improve efficiency, operational and management functions, and to help them perform more autonomously from the MWP. EPP completed the draft PPA template for GENCOs, which has been circulated to the stakeholders for their comments. The new contracts are designed to mimic commercial contracts, providing greater transparency and accountability.

Fuel Supply Agreements. In FY2014, EPP started developing a Fuel Supply Agreements (FSA) template for the GENCOs. The FSA will support the financial development of the GENCOs and EPP will be interacting with Pakistan State Oil Company (PSO) to gain feedback in development of the template.

PowerSIM. The sector model was completed along with a user manual. In FY2014, MPNR and MWP were trained to use the model and given access; Planning Commission training was underway at the end of FY2014. EPP has initiated preparing papers to analyze critical issues in the power sector as a result of PowerSIM outputs. The first policy paper focused on the impact of increasing gas to the power sector has been submitted to the Joint Secretary, MWP. Subsequent policy papers will be prepared after consultation with senior management of MWP. These briefs will be used to demonstrate application of the PowerSIM model.

Private Transmission Line Projects. EPP provided support to MWP in reviewing the second Draft Policy Framework for Private Transmission Line Projects, and made a number of important suggestions to better reflect the reality that these sector entities face. Concerns center on capping the ROE, the exclusion of all costs in the tariff, and the differential roles of NTDC and the private transmission operator. EPP reviewed the NTDC/CPPA Business Transfer Agreement. Major concerns center on the misallocation of risk between parties, asset allocation, and liabilities.

MOF

EPP's Senior Energy Advisor worked with the MOF to prepare significant deliverables in the review of the re-emergence of Circular Debt and Draft Bill of the Pakistan Energy Efficiency and Conservation Act 2013.

Circular Debt Report. EPP advisors collaborated with the MWP and CPPA, Economic Reforms Unit (ERU) and Corporate Finance Wing (CFW) of MOF to work out the stock of Power Sector Circular Debt and devise mechanism for its settlement. EPP reviewed the payables and receivables position of power sector distribution companies and prepared an update for the Secretary Finance on the outlook of power sector circular debt position June 2014. As a result, the debt stock of Rs. 480 billion was cleared by MOF in two phases. The updated position of re-emerged circular debt will help to a formulate policy to settle it and to devise a mechanism to address its root causes for re-emergence.

Regulatory Framework for NEPRA. EPP supported MOF to carry out a diagnostic analysis and review of Regulatory Framework of NEPRA in pursuance of the decision of Council of Common Interest (CCI). EPP consultant provided professional support to carry out the Diagnostic Review of NEPRA. The detailed discussions were held with all stakeholders and their input was also obtained. A draft report is being prepared that will be submitted to CCI.

Nandipur Project Financing. EPP provided assistance to MOF for preparation of their views and comments on the draft summary for financing arrangement of Nandipur Project. The summary was approved to the Economic Coordination Committee (ECC) and financing arrangement amounting to Rs. 23 billion through local banks has been finalized. The EPC contractor was re-mobilized and the project is partially generating electricity and likely to be completed by the end of 2014 and introduce up to 425 MW of electricity into the system.

Pakistan Energy Efficiency and Conservation Act 2013. EPP supported MOF in review and comments on the draft bill of the Pakistan Energy Efficiency and Conservation Act 2013. The bill will provide legal support for the establishment of institutions, and it will stipulate mechanisms for the effective conservation and efficient use of energy in Pakistan. The draft bill was approved by the CCI in its meeting held on May 29, 2014. The draft bill will now be submitted to the Parliament for approval.

Solar Power Generation Projects. EPP helped MOF in preparation of their views and comments on the Draft Security Documents for Investment in Solar Power Generation Projects that were submitted by the Alternative Energy Development Board (AEDB). The Draft Standard Security Documents, i.e., Implementation Agreement and Power Purchase Agreement drafts, are under review by MOF.

Biomass and Bagasse Power Generation Project. EPP supported MOF, C.F. Wing in reviewing and prepared comments on the draft standard Energy Purchase Agreement (EPA) and Implementation Agreement (IA) prepared by AEDB regarding fast track power generation through Biomass and Bagasse. The standard documents were approved by the ECC. This action will help to attract investment in the power sector.

National Power and Subsidy Policy Guidelines. EPP seconded staff supported MOF in review of the Draft National Power and Subsidy Policy Guidelines 2014, submitted by MWP. The guidelines will serve as a credible tool for policy-makers, companies, regulators, and customers in achieving sustainability in the power sector. The draft is currently under review.

Private Sector Transmission Line Projects. EPP supported the CFW in preparation of comments on the draft policy framework for Private Transmission Line Projects. These comments will be included in a summary that will be submitted by the MWP to ECC. The current draft is under review and consultation with MWP and Private Power and Infrastructure Board (PPIB).

Shale Gas Policy Framework. EPP supported the MOF in preparation of their views and comments on the Shale Gas Policy Framework submitted by Ministry of Petroleum and Natural Resources for pilot projects. The draft policy framework was considered by the ECC and is being submitted to CCI for approval as per directions of the ECC.

Import of LNG by CNG Association. EPP provided professional support by reviewing and preparing comments on the ECC summary submitted by MPNR regarding import of Liquefied Natural Gas (LNG) by Compressed Natural Gas (CNG) Association. The proposal

was considered and approved by the ECC in principle. The tax exemption proposals contained in the ECC summary submitted by MPNR is now being considered by a committee directed by the ECC.

Planning Commission

EPP kicked off advisory support for the Planning Commission's five-year plan using PowerSIM inputs. The five-year plan will empower the Planning Commission as a central body for energy planning and support. In addition, EPP developed a file movement Management Information System for the Energy Wing to keep track of files sent to the Energy Wing from the Secretary's offices to improve efficiency.

SUPPORT TO PETROLEUM SECTOR

MPNR

Shale Gas. During FY2014, MPNR approved the shale gas program, and its designated entity, Directorate General Petroleum Concessions (DGPC), gave formal concurrence to commence the program. EPP completed the screening of well data and literature review focused on the lower and middle Indus basins as well as the physical review of core samples. With samples, EPP was able to conduct the petro-physical and rock mechanical analysis, modeling, and mapping with U.S. Analogues, Shale Gas Production Profile, and Estimated Ultimate Recovery (EUR) analysis. In August 2014, MPNR under EPP's support visited the NuTech laboratories in Houston, Texas to observe the well data analysis process.

Upstream Oil and Gas. EPP provided a broad range of advisory services for the DGPC via specialized consultants in policy, technical, legal, regulatory, and operational aspects of the upstream oil and gas sector. EPP assisted DGPC in streamlining activities by advising on more than 70 legal, regulatory, and commercial cases that lead to processing. In addition, EPP submitted a draft model Supplemental Agreement for conversion of current policies to DGPC for review. A notification for an amendment of the rules for disposal of pending cases for extension of leases has been published in the Gazette of Pakistan after vetting by the Law Division. Lastly, a draft framework for utilizing gas for short-term power generation from stranded discoveries and fields was submitted to DGPC for consideration.

LNG Import

Major milestones were accomplished in FY2014 to secure Pakistan's first LNG imports by FY2015. Accomplishments include:

- In February 2014, the "Fast Track" project was granted approval by ECC, which was a major milestone in guaranteeing the delivery of LNG to Pakistan.
- EPP directly supported and facilitated the negotiations between Sui Southern Gas Company (SSGC) and EETPL (Elengy Terminal Pakistan Limited) for the LNG Services Agreement (LSA) to deliver LNG.
- EPP support led to the signing of LSA between SSGC and EETPL in April 2014.
- Implementation Agreement (IA) was signed between PQA and EETPL in June 2014.
- The Option and Direct Agreements tied to the LSA were developed with EPP support.

EPP also provided legal support to SSGC for Subsequent Conditions to be met after LSA execution and provided consulting advisory services for LNG import terminals to PQA. Upon PQA request, EPP carried out a tender process for conducting a full Mission Bridge

Simulation Study. The study was put on hold upon learning that EETPL had also sponsored a similar study, results of which are awaited.

EPP conducted another tender process to provide commercial and legal support to GOP for the procurement of LNG. The following documents were developed for the procurement process:

- LNG Industry Perspective and Global Market Report
- LNG Procurement Strategy
- Draft Master LNG Sale and Purchase Agreement (MSPA)
- Qatargas HOA/SPA Review

The team of commercial and legal consultants is supporting the GOP in G2G negotiations with Qatargas and Petronas of Malaysia. In addition, EPP supported the LNG Supplier exhibition for the GOP, which was arranged in Singapore in September 2014.

COMPONENT III: SELECTION, PLANNING, AND DESIGN OF NEW PROJECTS

In FY2014, EPP continued due diligence of projects and activities that are candidates for USG support based on the frequently changing priorities and schedules of USAID/USG entities. The due diligence process ensures that the criteria under technical feasibility, cost, and overall effect elements are met.

Table 2: Due Diligence – Generation Projects

| Due Diligence Project | USG Funding (US\$) | Total Project Cost (US\$) | MW Potential | Timeline |
|----------------------------|---|---------------------------|--------------|----------|
| Generation | | | | |
| Kurram Tangi | 57 million | 700 million | 83 MW | 4 years |
| Diamer Basha Dam | | 14 billion | 4,500 MW | 10 years |
| Run-of-River: Jinnah | 46.15 million (funding under consideration) | 255 million | 96 MW | <1 year |
| Run-of-River: Khan Khwar | | 138 million | 72 MW | |
| Run-of-River: Allai Khawar | | 190 million | 121 MW | |
| Run-of-River: Dubair | | 290 million | 130 MW | |

DIAMER BASHA MULTIPURPOSE DAM

EPP completed the official due diligence step 1 for the Diamer Basha Multipurpose Dam in 2011. EPP continues to provide updates and requested information regarding the Diamer Basha project to USAID. EPP also provided detailed information on overall project cost, schedules, development approach and financial plan of Diamer-Basha Dam Project for the conference held in Washington D.C on October 8, 2014.

KURRAM TANGI MULTIPURPOSE DAM

EPP completed the official due diligence step 1 for the Kurram Tangi Multipurpose Dam in 2011. In FY2014, EPP was successful in securing a preliminary Milestone and Payment Schedule from WAPDA for the Kaitu Weir Project. The schedule is needed to complete a PIL for the G2G transfer of USAID funds. EPP also advised USAID that they may consider asking WAPDA to establish a Project Office at Spin Wam, close to the Kaitu Weir site, to demonstrate their commitment to the project.

RUN-OF-RIVER

During FY2014, EPP continued to advise and assist USAID in the evaluation request from WAPDA to support four run-of-river (RoR) hydropower projects: Duber, Allai, Khan Khwar, and Jinnah. EPP received revised cost estimates from WAPDA for the projects and shared this data with USAID for review. EPP continued its close monitoring of the ongoing Rapid Environmental Analysis (REA) for RoR projects – 121 MW Alai Khwar and 130 MW Duber Khwar – and provided management oversight and guidance throughout this reporting

period of FY2014 to enable Hagler Bailly (HB) to develop a credible report. A draft final report by HB on the REA for the Allai Khwar and Duber Khwar RoR was discussed with USAID. HB will incorporate missing items and resubmit the report for final review before it is submitted to USAID. The REA report for the Allai Khwar and Duber Khwar RoR projects were completed and submitted to USAID.

OTHER PROJECTS

Hydropower

In FY2014, EPP provided advice and support to USAID in a month-long operational audit of WAPDA. The audit is a USAID requirement in anticipation of the US\$ 250 million that USAID has indicated it may disburse for hydropower projects being implemented by WAPDA. The scope of the audit covered various operational aspects, including all phases and results of procurement of goods and services, contract monitoring, financing and funding of projects, audit procedures, and compliance with international best practice and GOP guidelines.

Transmission

In FY2014, EPP completed step-I due diligence for USAID on the following three projects:

- Dispersal of power from wind power plants at Jhimpir and Gharo;
- Dispersal of power from Quaid-e-Azam Solar Park at Lal Sohanra; and
- Dispersal of power from Patrind Hydropower Project.

Transmission projects currently undergoing the due diligence process with EPP are listed in Table 3.

Table 3: Due Diligence – Transmission Projects

| Due Diligence Project | Total Project Cost (US\$) | MW Potential | Timeline |
|-----------------------|---------------------------|--------------|----------|
| Quaid-e-Azam Solar | 38.8 million | 1000 MW | 2 years |
| Sind Wind Projects | 132 million | 1750 MW | 4 years |
| Patrind Hydel | 8.4 million | 147 MW | 3 years |
| PESCO Reactive KPK | 33 million | 250 MW | 4 years |

ENVIRONMENTAL COMPLIANCE AND MANAGEMENT

During the reporting period, EPP continued to ensure that activities carried out under the USG funding comply with the GOP and U.S. environmental policies and procedures. Where there is a conflict between U.S. and Pakistani environmental requirements, those that are more protective of health and the natural environments have been used.

G2G Audits. EPP is providing monitoring and implementation support to USAID for the G2G projects. The purpose of environmental compliance monitoring is to assess the performance of the implementation team of the projects. EPP undertook environmental audits on a quarterly basis and shared the audit reports with USAID. The most recent quarterly reports were shared with USAID in June 2014. EPP's Environmental Compliance Manager is also making site visits and drafting remaining reports.

Environmental Mitigation and Monitoring Plan. The Environmental Documentation Form (EDF) and Environmental Mitigation and Monitoring Plan (EMMP) have been developed and approval has been obtained by USAID for the following projects:

- Mangla Dam (EDF and EMMP) completed and approved by the USAID Mission Environment Officer (MEO) and Contracting Officer Representative (COR)
- Tarbela Phase 2 (EDF and EMMP) completed and approved by the MEO and COR
- Transmission activities under EPP (EDF and EMMP) completed and approved by the MEO and COR
- LNG activities under EPP (EDF and EMMP) completed and approved by the MEO and COR

RoR Environmental Assessments. As per the USAID advice, EPP conducted the REA of two RoR projects (Allai and Duber Khawar). The two reports have been approved by USAID.

COMPONENT IV: NEW ACTIVITIES

PESCO TURNAROUND DISCO

Rehabilitate Existing System

Power Transformer Program. 94.5 MWs of throughput capacity were added in FY2014 through the repair and commissioning of the following power transformers at PESCO's system:

Supply, Installation, and commissioning of new 40 MVA power transformer at D.I. Khan 132 kV GS along with ancillaries; restoring 40 MWs of throughput capacity to PESCO's grid station.

- Supply, Installation, and commissioning of new 40 MVA power transformer at Hattar 132 kV GS along with ancillaries; restoring 14 MWs of throughput capacity to PESCO's grid station.
- Provision of ancillaries, transportation, and inspection of commissioned 20/26 MVA transformer at Khwaza Khela 132 kV GS from Hattar 132 kV GS; restoring 13.5 MW of throughput capacity to PESCO's Grid Station.
- Repair, installation, and commissioning of 20/26 MVA, 132/11 kV Ansaldo Power Transformer at Gadoon Amazai 132kV GS PESCO, KPK; restoring 13 MWs of throughput capacity to PESCO's grid station.
- Supply, Installation, and commissioning of new 40MVA power transformer at Jamrud 132 kV GS along with ancillaries; restoring 14 MWs of throughput capacity to PESCO's grid station.



New 40 MVA Power Transformer installed at 132 kV Jamrud Grid Station

As of FY2014, EPP has supported PESCO in adding 134.5 MWs of throughput capacity through the repair and commissioning of five transformers at PESCO's Shahi Bagh (40 MW), D.I. Khan (40 MW), Hattar (14 MW), Khwaza Khela (13.5 MW) Gadoon Amazai (13 MW), and Jamrud (14 MW) grid stations. EPP also plans to replace two 20/26MVA power transformers at Chakdara 132kV GS, which will result in improving reliability of PESCO's system.

Circuit Breaker Repair Replacement. As of FY2014, EPP supported the replacement of seven defective circuit breakers for PESCO at 132 kV Shabqadar, Banu, Kohat, Mansehra, Balakot, and Nowshetra industrial grid stations. EPP has, on the basis of its technical audits and the request of PESCO, initiated the procurement of 20 additional 132kV circuit breakers. The circuit breakers protect electrical circuits from damage under fault conditions and enhance the safety and reliability of PESCO's network.

Capacitor Bank Rehabilitation. PESCO has nine 132 kV capacitor banks in their network, six of which were out of service at the start of technical audit activities. EPP identified the required equipment and services to have the capacitor banks back in service. Three capacitor banks were commissioned using existing spares and resources at PESCO and EPP's technical assistance. The ancillary equipment for the rehabilitation of the remaining three capacitor

banks has been delivered to PESCO. EPP is currently in the process of hiring a contractor to provide the installation services of this equipment.

New Equipment

Transformer Cooling Fans. The cooling fans installation was completed during the second quarter of FY2014. At PESCO's request, EPP procured and installed 348 cooling fans on 75 Power Transformers (PTFs) at 45 PESCO's grid stations. The installations helped recapture 192.1 MWs of transmission throughput capacity on PESCO's grid, benefitting 2,458,496 individuals.

Telemetry. The telemetry project was completed and operations turned over to PESCO in FY2013. The meters and interruptible power supplies have been installed at 143 common delivery points that will measure the net power used on the PESCO system. The data received, through meters, is stored in a database that can further be used for load forecasting, generation planning, and load flow studies. Further testing and replacement of telemeters at PESCO's Grid Stations are underway.

Transmission Maintenance Workshop. PESCO requested EPP to provide them with a fully equipped maintenance workshop. The site was finalized and EPP hired services of an architectural firm to deliver the conceptual design; however, PESCO retracted this request citing a shortage of staff and asked that the funds be diverted to other activities.

Best Practices

Oil Sampling. EPP has hired the services of a testing lab for determining the health of oil in PESCO's power transformers. In FY2014, results from 195 out of 211 power transformers have been received. The oil in a PTF is critical to its safe and reliable functioning, and helping in the cooling of internal parts. The oil should be periodically tested in order to timely identify any faults or issues inside a transformer affecting its health.

Oil Purification Plants. EPP has initiated the procurement of power transformer oil purification plants at the request of PESCO. Analysis of the results received from the oil sampling activity suggested that PESCO's transformers required dehydration and removal of sludge from their oil. EPP conducted a needs assessment and recommended providing PESCO with two plants, the RFP for which has been proposed.

Reactive Power Compensation Study. The EPP conducted Reactive Power Study concluded a total of 1,368 MVAR existing and newly proposed capacitors by 2015. The addition of capacitors at the locations identified in the study will reduce the loading of transmission lines resulting in decreased losses of 35.7 MW and increase transformer throughput capacity by



Parts and Equipment at the Guddu Thermal Power Plant



Fuel sample collection at MTPS during the Heat Rate Test

373 MVA. Initial EPP calculations indicate a payback of approximately seven months for implementing the proposed recommendations.

Technical Audit of Grid Stations. EPP's Transmission Team has conducted detailed technical audits of PESCO grid stations and overhead transmission lines (OHTL). The audit findings identified system improvements and include a detailed priority action plan, Bill of Material (BOM), and cost estimates to bring faulty equipment back into service as well as areas for system expansion. As of FY2014, all 84 PESCO grid stations have been audited and the reports are being compiled.

TECHNICAL SUPPORT TO NTDC

New Equipment

Secured Metering System. In FY2014, EPP delivered Secured Metering System (SMS) equipment and training to NTDC staff. Equipment included the provision of SMS Panels (14 meters) and communication modules (12 modules) to cover Common Delivery Points where meters were missing. In addition, EPP provided basic information technology equipment (including servers, storage area network (SAN) and other allied equipment) to support the database with DISCO inputs. NTDC staff also received training on operation and maintenance of the system. The training included a technical overview of SAN, corrective and preventative maintenance of the system, and performance statistics.

Best Practices

System Audits. As of FY2014, 30 of 41 (73%) audits of NTDC grid stations have been completed. These assessments have identified needed system improvement. The reports are being compiled and they include a prioritized action plan, BOM, and cost estimates to bring faulty equipment back into service and identify areas for system expansion.

LIVE LINE MAINTENANCE

New Equipment

Hot Tools. EPP received the hot tools in July 2014 and plans to distribute all equipment to two DISCOs (IESCO and PESCO) in the first quarter of FY2015. To support the equipment delivery, EPP will conduct a four-week refresher course as participants will not have worked with the live lines in more than 10 months.

Best Practices

Training. To supplement USAID's activities with the DISCOs in the energy sector, EPP launched Live-Line Maintenance (LLM) Training Program at NTDC Tarbela Training Center for nine DISCOs – Faisalabad Electric Supply Company (FESCO), Peshawar Electric Supply Company (PESCO), Hyderabad Electricity Supply Company (HESCO), Islamabad Electricity Supply Company (IESCO), Gujranwala Electric Power Company (GEPCO), Multan Electric Power Company (MEPCO), Sukkur Electric Power Company (SEPCO), Quetta Electricity Supply Company (QESCO), and Lahore Electricity Supply company (LESCO) in two phases. The LLM program is designed to provide each DISCO with a trained LLM crew dedicated to using specialized tools and equipment, maintenance techniques, personal protective equipment, and trailers to service energized 132 and 66 kV transmission lines. This eliminates the need to disrupt power to customers to perform routine maintenance, in turn, enhancing the

capability of Pakistan's power sector in increasing energy supply to the consumers with increased reliability.

LLM Training Audit. EPP has also hired the services of an international consultant to review NTDC's live line training program's capabilities and facilities. The review is due to complete by first quarter of FY2015. EPP will then implement the recommendations of the consultant to enhance the capabilities of NTDC and start Phase II of training.

OVERALL PROGRAM SUPPORT

INCREASED PUBLIC AWARENESS ON ENERGY SECTOR REFORM

During FY2014, the communications team organized and facilitated the following activities:

- A visit of USAID's Provincial Director for Sindh and Baluchistan, Mr. Leon Waskin, and USAID Islamabad's Energy Team was organized to observe the ongoing rehabilitation of the Guddu TPS. This was the first visit by USAID officials to Guddu since the 1980s.
- EPP organized and hosted certificate distribution ceremonies to mark the completion of the all three batches of training on Best Practices in Thermal Operation and Maintenance. For the final batch, EPP hosted participants including USAID's Energy Office Director, Mr. Tim Moore, EPP's COR and Senior Program Manager, Mr. Saeed Anwar, the General Manager – Thermal of the GENCOs Holding Company Ltd., Mr. Ghulam Rasool Akhund, and the Chief Executive Officer (CEO) of Muzaffargarh TPS, Mr. Shoaib Rasheed. The Certificate Distribution Ceremony was held on June 20, 2014 at the Serena Hotel in Islamabad and 20 engineers were awarded certificates as well as five graduate students.
- The communications team organized and managed the Mangla PIL Ceremony held at EPP's office on March 6, 2014. The event was covered both by print and electronic media.

To strengthen communications and outreach efforts, the Communications Team began collecting data that will help develop success stories and one-pagers. In addition, EPP launched a weekly e-news roundup that circulates among USAID staff, AEAI staff, and EPP contacts. EPP used the print and electronic media vehicles frequently for promoting the program's activities.

During the reporting period, some of the activities planned to be implemented during the reporting period were not executed due to security issues, access of media to project sites, and overall negative and hostile sentiments of the public towards the expanding energy crisis.

EPP developed a revised branding and marking plan to accompany the USAID/Pakistan branding and marking plan; however, the revised plan has not been submitted for approval to date.

ENERGY SECTOR CAPACITY BUILDING

| Training Activity | Beneficiary | Male | Female | Total |
|----------------------------|----------------|-----------|----------|-----------|
| Best Practices Thermal O&M | Jamshoro | 20 | - | 20 |
| | Guddu | 20 | - | 20 |
| | Muzaffargarh | 20 | - | 20 |
| | Air University | - | 1 | 1 |
| | NUST | - | 4 | 4 |
| | Total | 60 | 5 | 65 |
| PowerSIM | MWP | 6 | | 6 |
| | MPNR | 7 | | 7 |
| | Total | 13 | - | 13 |

| | | | | |
|---------------------|--------------|-----------|----------|-----------|
| Shale Gas | MPNR | 1 | - | 1 |
| | Total | 1 | - | 1 |
| SAN Training | CPPA | 6 | 1 | 7 |
| | Total | 6 | 1 | 7 |
| FY2014 Total | | 80 | 6 | 86 |

Generation

Best Practices in Thermal Operations and Maintenance Training. EPP delivered Best Practices in Thermal Operations and Maintenance (O&M) training to 65 participants in Islamabad between March and June, 2014. EPP trained staff from Muzaffargarh, Jamshoro, and Guddu thermal power stations, as well as select students from Air University Islamabad and National University of Science and Technology, Islamabad (NUST). The two-week training courses focused on increasing participant knowledge of modern techniques to improve thermal O&M, which will result in an increased energy supply. After the in-classroom training was completed, GENCO staff were given assignments to complete at their respective plants. EPP engineers followed up with training participants to ensure that the assignments have been completed in FY2014. As a result of the training, GENCO staff will be able to better implement O&M practices with EPP management support that will reduce plant operating costs and ultimately lead to increased sustainable energy supplied to the economy.



Thermal O&M trainee receiving certificate from Deputy Director Energy Office, USAID

Energy Sector Reform

PowerSIM Training. Six MWP and Power Seven MPNR employees were trained in how to use the PowerSIM model. The training was designed to effectively demonstrate the use of PowerSIM and implement a routine update to analyze the impact of policy interventions. EPP will continue to monitor and evaluate MPNR and MWP participants and the utilization of PowerSIM.

Shale Gas On-The-Job Training. One MPNR stakeholder completed the LMKR shale gas exploration software training. Through the on-the-job training, the participants developed the necessary skills to become resident shale gas experts at MPNR. EPP is working with MPNR management and Directorate Generals to ensure the trained staff remain in their respective roles and are offered incentives to stay at the Ministry; maintaining full time staff with expertise in petroleum is an ongoing issue.

Transmission

SAN Training. In September 15-19, 2014, EPP delivered a five-day training session on the SAN for CPPA's information technology department staff at EPP's Lahore office. SAN training will improve the effectiveness and productivity of CPPA executives in helping them perform internal maintenance. EPP continues to monitor SAN participant progress sine training.

GENDER EQUALITY

Assessment and Strategy

In April 2014, EPP collected baseline gender data from Oil and Gas Development Company, Ltd. (OGDCL), Sui Northern Gas Pipeline Company, Ltd. (SNGPL), Jamshoro TPS, Guddu TPS, NTDC, WAPDA, MPNR, and AEDB. EPP compiled all baseline data into a comprehensive report that will be reviewed by USAID. After the assessment, EPP will develop a gender strategy for the energy sector. In addition, EPP met with Samar Ihsan Beg Joint Secretary (Development), Ministry of Water and Power (MWP) regarding MWP gender assessment data. EPP anticipates receiving all remaining gender employment data in early October FY2015. Through an assessment and strategy, EPP will deliver the first ever analysis of energy sector employment based on gender in Pakistan, which will lead to future gender considerations in policy development.

Female Participation

To increase female participation, EPP reached out to Islamabad-based engineering universities to participate in the best practices in hydel O&M training. In addition, EPP mandated female participation when partner organizations provide nominations and have received large female participation increases for future training programs. In FY2013, female participation was 2% among EPP training programs; this jumped to 6% in FY2014 and 25% is anticipated in FY2015.

FINANCIAL AND ADMINISTRATION REPORTING

FINANCIAL REVIEW

Table 4: Total Financial Review for FY2014

| Description | Amount as of September 30, 2014 |
|-------------|---------------------------------|
| [Redacted] | |
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PROCUREMENT

In FY2014, EPP issued and completed a total of US\$ 7,532,693 purchase orders and issued purchase orders in the amount of US\$ 17,660,914. The charts below show the procurement orders arranged by component, as well as the growth in procurement orders since October 2013. **Annex IV: EPP Procurement Detail** further evaluates each purchase order issued during the reporting period.

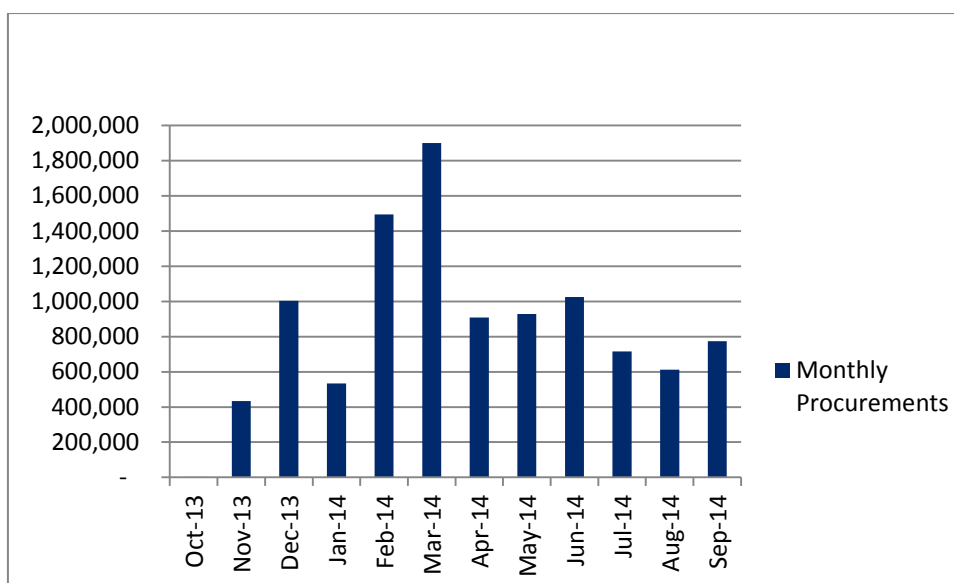


Figure 2: Monthly Procurement Flow in FY2014

LEVEL OF EFFORT

EPP has grown from a staff 90 from December 2013 to 102 October 2014 with significant growth in the hiring of local staff. The chart below shows the growth of EPP staff since March 2012 and staff increases in the past FY2014 as well. For a full list of staff changes and additions, see **Annex II: FY2014 EPP Staff**.

The staff fluctuated during the reporting period for both expatriates, local, and key personnel. EPP contract calls for the Pakistanization of EPP program staff, and in FY2014, EPP hired a significant number of Pakistani staff to fulfill this target.

SECURITY

During FY2014, the EPP has continued in the trend of increasing in staff numbers, both expat and local staff. Great emphasis has been placed on communications and accountability, which included initial induction process, issue of cell phones to all company staff, completion of correct, accountable movement and transportation control and movement documentation.

The physical security assessments of EPP's operating locations were continually reviewed as well as a holistic look into the overall physical security of buildings, facilities, and locations. The assessments included basic functions, such as an analysis, determination of critical assets; threats that may place individual or facility in danger; identifying the existing countermeasures; and recommended countermeasure improvements.

A detailed effort has been placed on mobile security, which has been reassessed and adjusted where necessary. The mobile security teams have completed approximately 200-250 daily moves with a vehicle road mileage of approximately 50,000 km covered on average per month. All security teams are fitted with Global Positioning System trackers and are monitored by both the security managers and the crisis room of the local security provider.

Also during this reporting period, EPP contracted a consultant to assist with No Objection Clearance Certificate (NOC) applications for all expatriate official moves and have a 100% success rate to date, which is in compliance with GOP rules and regulations for foreigners in Pakistan. Other duties conducted by the consultant are assistance with visa renewals, which we have successfully attained all renewals to date.

With a future intent of an increased signature presence of operations planned for locations in Karachi and Lahore, specific security location reports will be reassessed and updated. The reports cover detailed aspects, such as, location, specific threat assessment, route assessment, military and security presence, and security recommendations.

MONITORING AND EVALUATION

In FY2014, EPP Monitoring Evaluation (M&E) department reviewed and monitored the 15 indicators from the Results Framework to develop quarterly and annual performance monitoring reports. (See **Annex I: Performance Monitoring Indicator Tracker Sheet**). EPP engineers are providing support for streamlining the procurement procedures and schedules are developed for tracking and controlling the key milestones. EPP experts visits the sites, verify deliverables, check quality control, ensure environmental compliance, institute performance tests, and verify designs and work packages for the on-going projects. Issues are quickly brought to the attention of decision makers, and corrective actions are taken and documented. Lessons learned are applied to the on-going and future activities. On a regular basis EPP provides monthly reports on projects' financial and physical progress.

By the end of FY2014, EPP successfully achieved and exceeded in five indicators, of the 15 monitoring and evaluation indicators from the Development Results Framework and is on target to complete all Life of Program targets by FY2015.

Furthermore, retrieving confidential supporting documents, which come under the jurisdiction of the GOP, cannot be shared without GOP's consent. Some feedback on implementation progress depends on the availability and veracity of input from other GOP stakeholders (factors beyond EPP's control).

DATA QUALITY ASSESSMENT

EPP completed its first round of an independent data quality assessment in FY2014 Q3 with MSI; however, the data quality verification is still underway going into the next fiscal year.

SITE VISITS

EPP conducted post-O&M training evaluations at GENCO I, II, and III by engaging the participants in Focus Group Discussion (FGD) sessions. The purpose of the FGDs was to follow-up on the previously trained 60 participants from the Best Practices in Thermal O&M Training on any improvements made and challenges faced in completing training assignments. FGD findings were detailed in the post-training assessment report. EPP will conduct the second round of the FGDs session in mid FY2015; six months from the commencement of the training program.

In addition, EPP collected acknowledgement letters from GENCOs, hydels, PESCO, and policy stakeholders that clearly identify EPP accomplishments and verify on-going work. These acknowledgement letters will be used as additional supporting documentation for EPP's work.

ANNEXES

ANNEX I: PERFORMANCE MONITORING INDICATOR TRACKER SHEET

| Indicator | Component | Unit | LOP Target | Target FY2014 | FY2014 Q1 | FY2014 Q2 | FY2014 Q3 | FY2014 Q4 | Total Achieved FY2014 | Total LOP | LOP % Achieved |
|---|----------------------------------|-------------|-------------------|------------------|-----------|------------------|------------------|----------------|-----------------------|-------------------|----------------|
| 1.a: GWh of energy sold | TOTAL | GWh | 7,880 | 1,703 | 0 | 1,459 | 567.65 | 655 | 2,682 | 8,224 | 104% |
| | Generation | | 4,796 | 638 | 0 | 113 | 0 | 560.64 | 674 | 5,642.29 | 117% |
| | Transmission Throughput Capacity | | 2999.42 | 1,065 | 0 | 1,346 | 567.65 | 94.60 | 2,008 | 2,541 | 85% |
| | Transmission Added/Saved | | 84 | 0 | 0 | 0 | 0 | 0 | 0 | 42 | 50% |
| 1.1.a: Number of beneficiaries with improved energy services due to United States Government assistance | TOTAL | Individuals | 13,624,226 | 2,825,186 | 0 | 2,643,736 | 1,036,638 | 913,733 | 4,594,107 | 14,099,749 | 103% |
| | Generation | | 7,993,106 | 879,890 | 0 | 185,240 | 0 | 740,960 | 926,200 | 9,382,406 | 117% |
| | Transmission Throughput Capacity | | 5,477,544 | 1,945,296 | 0 | 2,458,496 | 1,036,638 | 172,773 | 3,667,907 | 4,640,555 | 85% |
| | Transmission Added/Saved | | 153,576 | 0 | 0 | 0 | 0 | 0 | 0 | 76,788 | 50% |
| 1.1.b: GWh of energy availability | TOTAL | GWh | 7,880 | 1,703 | 0 | 1,459 | 567.65 | 655 | 2,682 | 8,224 | 104% |
| | Generation | | 4,796 | 638 | 0 | 113 | 0 | 560.64 | 674 | 5,642.29 | 117% |
| | Transmission Throughput Capacity | | 2999.42 | 1,065 | 0 | 1,346 | 567.65 | 94.60 | 2,008 | 2,541 | 85% |
| | Transmission Added/Saved | | 84 | 0 | 0 | 0 | 0 | 0 | 0 | 42 | 50% |
| 1.1.c: MW available to meet power | TOTAL | MW | 1,303 | 247 | 0 | 212.1 | 81 | 93.5 | 386.6 | 1,381.6 | 106% |
| | Generation | | 863 | 95 | 0 | 20 | 0 | 80 | 100 | 1,013 | 117% |

| Indicator | Component | Unit | LOP Target | Target FY2014 | FY2014 Q1 | FY2014 Q2 | FY2014 Q3 | FY2014 Q4 | Total Achieved FY2014 | Total LOP | LOP % Achieved |
|--|----------------------------------|------|------------|---------------|-----------|--------------|-----------|-----------|-----------------------|--------------|----------------|
| sector demand as a result of USG assistance | Transmission Throughput Capacity | | 428 | 152 | 0 | 192.1 | 81 | 13.5 | 286.6 | 362.6 | 85% |
| | Transmission Added/Saved | | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 50% |
| 1.1.1a: MW of electrical power added or saved as a result of USG improvements | TOTAL | MW | 875 | 247 | 0 | 212.1 | 81 | 80 | 373.1 | 1,019 | 116% |
| | Generation | | 863 | 95 | 0 | 20 | 0 | 80 | 100 | 1,013 | 117% |
| | Transmission Added/Saved | | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 50% |
| 1.1.1.b: Efficiency of thermal power plant tests completed | Generation | No. | 3 | 3 | 0 | 1 | 0 | 0 | 1 | 2 | 67% |
| 1.1.1.c: Number of USG supported installations and operations and maintenance improvements | TOTAL | No. | 181 | 104 | 4 | 76 | 14 | 0 | 94 | 105 | 58% |
| | Generation | | 25 | 7 | 2 | 1 | 3 | 0 | 6 | 6 | 86% |
| | Transmission | | 156 | 97 | 2 | 75 | 11 | 0 | 88 | 88 | 91% |
| 1.1.1.d: Number of transmission bottlenecks resolved | Transmission | No. | 121 | 0 | 0 | 75 | 4 | 0 | 79 | 83 | 68% |

| Indicator | Component | Unit | LOP Target | Target FY2014 | FY2014 Q1 | FY2014 Q2 | FY2014 Q3 | FY2014 Q4 | Total Achieved FY2014 | Total LOP | LOP % Achieved |
|---|---------------------|------|---------------|---------------|-----------|-----------|-----------|-----------|-----------------------|--------------|------------------|
| 1.1.4.a: Public and private funds leveraged by the USG for energy infrastructure projects | Generation & Policy | US\$ | 193.5 million | 15 million | 0 | 0 | 5 million | 0 | 0 | 38.5 million | 19% ⁶ |
| 1.2.b: Percent Change in the Gross Annual Accumulation of circular debt | Policy | % | 140% | 140% | 0 | 0 | 0 | 0 | 0 | 0 | 0% |
| 1.2.1.a: Number of key policies and regulations in various stages | Policy | No. | 12 | 5 | 0 | 0 | 3 | 1 | 4 | 11 | 92% |
| 1.2.2.a: Number of policies following international best practices | Policy | No. | 6 | 5 | 0 | 1 | 1 | 0 | 2 | 2 | 33% |
| 1.2.2.b: Number of board recommendations following international best practices | Policy | No. | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0% |

⁶ EPP recently changed the 1.1.4.a Life of Program target from US\$ 48.5 million to US\$ 193.5 million as per recommendation of MSI's data quality assessment. This consists of Gomal Zam funds (US\$ 33.5 million), Mangla funds (US\$ 15 million), and LNG fund (US\$ 145 million) which consists of the 6 month charter for tugboats (US\$ 5 million), FSRU charter (US\$ 20 million), and infrastructure of jetty and pipelines (US\$ 120 million).

| Indicator | Component | Unit | LOP Target | Target FY2014 | FY2014 Q1 | FY2014 Q2 | FY2014 Q3 | FY2014 Q4 | Total Achieved FY2014 | Total LOP | LOP % Achieved |
|--|-----------|------|------------|---------------|-----------|-----------|-----------|-----------|-----------------------|-----------|----------------|
| 1.2.3.a: Number of best practice-driven systems created, improved, and implemented | Policy | No. | 10 | 3 | 0 | 1 | 0 | 0 | 1 | 5 | 50% |
| 1.2.4.b: Number of public forums resulting from USG assistance in which government officials and citizens interact | Policy | No. | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 42% |

ANNEX II: FY2014 EPP STAFF

[illegible]

ANNEX III: QUARTERLY FINANCIAL REVIEW

[illegible]

ANNEX IV: PROCUREMENT DETAILS

| No. | Component | Purchase Order # | PO Approval/ Start Date | Delivery Date / End Date | Description of Goods/Services | Supplier / Vendor Name | Purchase order Value (US\$) | Payments Made | Status as of Sep. 30, 2014 |
|-----|-----------|------------------|----------------------------|--------------------------------|---|---|--------------------------------------|------------------|----------------------------------|
| 1 | C1 | A012-HBP-004 | 28-Mar-12 | 28-Jun-14 | Environmental Compliance Monitoring and Auditing for the Thermal and Hydropower Plants. EMMP, Resettlement survey report. | Hagler Bailey Pakistan Pvt. Ltd. (HBP) | 27,212 | 75% | PO is Open |
| 2 | C2 | A018-001 | 04-Dec-12 | 15-Oct-15 | LNG Import Consultancy Services | (QED) Quality Energy Developments Consulting Ltd. | 1,954,875 | 100% | Completed |
| 3 | C4 | A012-PPI-002.01 | 16-Feb-13 | 30-Nov-13 | Implementing of automated metering system | Power Planners International | 62,340 | 100% | Completed |
| 4 | C4 | A012-PPI-002.01 | 16-Feb-13 | 01-Nov-13 | Reactive Power Compensation study for PESCO | Power Planners International | 44,999 | 100% | Completed |
| 5 | C1 | A012-SGS-003 | 22-Feb-13 | 30-Jun-14 | Services for Calibration RFO & Gas Flow Meters at Thermal Power Plants located in Muzaffargarh, Jamshoro & Guddu | SGS Pakistan Pvt. Ltd. | 36,616 | 100% | Completed |
| 6 | C3 | A013-HBP-001 | 28-Mar-13 | 26-Dec-13 | Power System Integrated Modeling | Hagler Bailly Pakistan Pvt. Ltd. (HBP) | 104,314 | 100% | Completed |

| No. | Component | Purchase Order # | PO Approval/ Start Date | Delivery Date / End Date | Description of Goods/Services | Supplier / Vendor Name | Purchase order Value (US\$) | Payments Made | Status as of Sep. 30, 2014 |
|-----|-----------|------------------|----------------------------|--------------------------|---|--|-----------------------------|---------------|----------------------------|
| 7 | C4 | A012-PWF-002 | 28-Mar-13 | 30-Jun-14 | Complete Rewinding of 40 MVA, 132/66 kV Power Transformer | Pakistan WAPDA Foundation (WPF) | 180,495 | 100% | Completed |
| 8 | C1 | AO12-PES-001 | 11-Apr-13 | 31-Dec-14 | Heat Rate Testing Thermal Power Plants, GENCOs 1,2, and 3 at Muzaffargarh, Jamshoro and Guddu | Pakistan Engineering Services | 206,343 | 66% | PO is Open |
| 9 | C4 | A013-FESCO-001 | 20-May-13 | 31-Dec-13 | Live-Line Training to FESCO Crew | Faisalabad Electric Supply Company Ltd. | 14,268 | 100% | Completed |
| 10 | C4 | A013-HESCO-001 | 20-May-13 | 31-Dec-13 | Live-Line Training to HESCO Crew | Hyderabad Electric Supply Company Ltd. | 14,442 | 100% | Completed |
| 11 | C4 | A013-GESCO-001 | 20-May-13 | 31-Dec-13 | Live-Line Training to GEPCO Crew | Gujranwala Electric Supply Company Ltd. | 14,420 | 100% | Completed |
| 12 | C4 | EPP-C4-PO-004 | 14-Jun-13 | 31-Dec-13 | Supply of Cooling Fans and Fan Motor Circuit Breakers | Heavy Electrical Complex Pvt. Ltd. (HEC) | 136,748 | 100% | Completed |
| 13 | C4 | EPP-C4-PO-005 | 26-Jun-13 | 30-Apr-14 | Supply of 7 x 132kv Circuit Breakers | ALSTOM Grid Pakistan (Pvt.) Ltd. | 218,651 | 100% | Completed |
| 14 | C1 | EPP-C2-SC-001 | 26-Jun-13 | 30-Dec-14 | Advisory Service for Unconventional Shale Gas | LMK Resource Pakistan Pvt. Ltd. | 1,805,855 | 44% | PO is Open |

| No. | Component | Purchase Order # | PO Approval/ Start Date | Delivery Date / End Date | Description of Goods/Services | Supplier / Vendor Name | Purchase order Value (US\$) | Payments Made | Status as of Sep. 30, 2014 |
|-----|-----------|---------------------|----------------------------|--------------------------|--|--|-----------------------------|---------------|----------------------------|
| 15 | C4 | EPP-C4-PO-006 | 08-Jul-13 | 18-Oct-13 | Secured Metering Panels | TMA International Pvt. Ltd. | 219,910 | 100% | Completed |
| 16 | C1 | EPP-C1-PO-007 | 31-Jul-13 | 23-Oct-13 | RFO Flow Meters for GENCOs | Speedy Automation | 129,256 | 100% | Completed |
| 17 | C4 | EPP-C4-PO-008 | 19-Sep-13 | 19-Oct-13 | Dismantling, Loading, Transportation and Unloading of ANSALDO 20/26 MVA Power Transformer at HEC | Heavy Electrical Complex Pvt. Ltd. (HEC) | 12,912 | 100% | Completed |
| 18 | C4 | EPP-C4-PO-009 | 23-Sep-13 | 23-May-14 | CIF Import of 3 Nos. Toyota Hiace High Roof Long Vehicles | Toyota Islamabad Motors, Islamabad. | 73,632 | 100% | Completed |
| 19 | Admin | EPP-Legal-PO-010 | 30-Sep-13 | 29-Sep-14 | Legal Services | Hassan Kaunin Nafees | 30,000 | 17% | Completed |
| 20 | C4 | EPP-C4-PO-011 | 31-Oct-13 | 20-May-14 | Live-Line Tools and Equipment for 9 DISCO's | KOBEECOUSA LLC | 1,021,470 | 100% | Completed |
| 21 | Admin | EPP-Security-SC-002 | 7-Nov-13 | 15-Oct-15 | Mobile Protection Security Services | Haris Enterprises (Pvt.) Ltd. | 717,353 | 44% | PO is Open |
| 22 | C2 | EPP-C4-PO-013 | 8-Nov-13 | 8-Dec-13 | Customs Clearance of RFO Flow Meters and delivery at Muzaffargarh | United Professional Movers | 5,705 | 100% | Completed |
| 23 | C4 | EPP-C4-PO-014 | 20-Nov-13 | 15-May-14 | New Power Transformers 40MVA/132/11.5kV Power | Pak Elektron Limited | 1,726,426 | 100% | Completed |

| No. | Component | Purchase Order # | PO Approval/ Start Date | Delivery Date / End Date | Description of Goods/Services | Supplier / Vendor Name | Purchase order Value (US\$) | Payments Made | Status as of Sep. 30, 2014 |
|-----|-----------|------------------|----------------------------|--------------------------|--|--|-----------------------------|---------------|----------------------------|
| 24 | C4 | EPP-C4-PO-015 | 20-Nov-13 | 30-Jun-14 | Repair of 26/26MVA Power Transformer for Jamrud PESCO | Heavy Electrical Complex Pvt. Ltd. (HEC) | 134,300 | 100% | Completed |
| 25 | C4 | EPP-C4-PO-017 | 2-Dec-13 | 17-Dec-13 | 15,000 Ltrs. Power Transformer Oil | Orient Oils (Pvt) Ltd. | 20,879 | 100% | Completed |
| 26 | C2 | EPP-C1-SC-003 | 4-Dec-13 | 15-Jul-14 | O & M Training Thermal Power Plants | Dinsons | 260,040 | 100% | Completed |
| 27 | C4 | EPP-C4-PO-018 | 10-Dec-13 | 15-Oct-14 | Power Transformers Oil Testing | Orient Oils (Pvt) Ltd. | 32,617 | 83% | PO is Open |
| 28 | C4 | EPP-C4-PO-012 | 11-Dec-13 | 11-Jun-14 | Circuit Breakers, Current Transformer, and Capacitor Banks | ALSTOM Grid Pakistan (Pvt.) Ltd. | 254,358 | 97% | PO is Open |
| 29 | C2 | EPP-C2-PO-019 | 13-Dec-13 | 13-Jan-14 | Orific Plates | M. Ramzan Engineering | 972 | 100% | Completed |
| 30 | C1 | EPP-C4-PO-020 | 19-Dec-13 | 29-Dec-13 | Loading, Transportation, and Unloading of Radiators | Safe Ways Goods | 2,019 | 100% | Completed |
| 31 | Admin | EPP-Admin-PO-021 | 20-Dec-13 | 20-Jan-14 | 50KVA Diesel Generator with Sound Proof Canopy and ATS | Synergy Corporation | 11,515 | 100% | Completed |
| 32 | C2 | EPP-C2-SC-004 | 31-Dec-13 | 15-Oct-15 | Upstream Oil & Gas Consultancy Services | Petroleum Technology Services | 2,508,468 | 15% | PO is Open |
| 33 | C4 | EPP-C4-PO-022 | 6-Jan-14 | 6-May-14 | Installation of Cooling Fans | Shine Power Technologies | 34,984 | 100% | Completed |

| No. | Component | Purchase Order # | PO Approval/ Start Date | Delivery Date / End Date | Description of Goods/Services | Supplier / Vendor Name | Purchase order Value (US\$) | Payments Made | Status as of Sep. 30, 2014 |
|-----|-----------|------------------|----------------------------|--------------------------|--|---|-----------------------------|---------------|----------------------------|
| 34 | Admin | EPP-Admin-PO-023 | 21-Jan-14 | 13-May-14 | CISCO Video Conferencing Equipment | Commтел Systems | 119,500 | 100% | Completed |
| 35 | C4 | EPP-C4-PO-024 | 21-Jan-14 | 12-May-14 | Testing Equipment for P&I Vans for PESCO | Ikram Corporation | 416,469 | 100% | Completed |
| 36 | C1 | EPP-C1-PO-027 | 4-Feb-14 | 30-Jun-14 | Accommodations and Event Management for O&M Trainings | Islamabad Serena Hotel | 112,378 | 100% | Completed |
| 37 | C4 | EPP-C4-PO-028 | 7-Feb-14 | 14-Feb-14 | Loading, Transpiration and, Unloading of 7 x 132kV Circuit Breakers | United Professional Movers International | 3,801 | 100% | Completed |
| 38 | C4 | EPP-C4-PO-029 | 25-Feb-14 | 15-Jun-14 | Supply and delivery of 11kV metal clad switchgear, incoming Panels. Supply & Delivery of total 4KM 1000 MCM. Indoor termination Kits for 1000 MCM. Outdoor termination Kits for 1000MCM. | Construction Project Management Services (CPMS) | 259,381 | 100% | Completed |
| 39 | C4 | EPP-C4-PO-030 | 26-Feb-14 | 30-Jun-14 | Custom Clearance & Freight Forwarding - 03 Nos Toyota HIACE Vans for EPP Islamabad and tools and equipment for PESCO. | Ocean Air International | 5,505 | 100% | Completed |
| 40 | C4 | EPP-C4-PO-031 | 28-Feb-14 | 3-Mar-14 | Removal of Power Transformer at Jamrud 20/26MVA | Pak Elektron Limited | 3,146 | 100% | Completed |

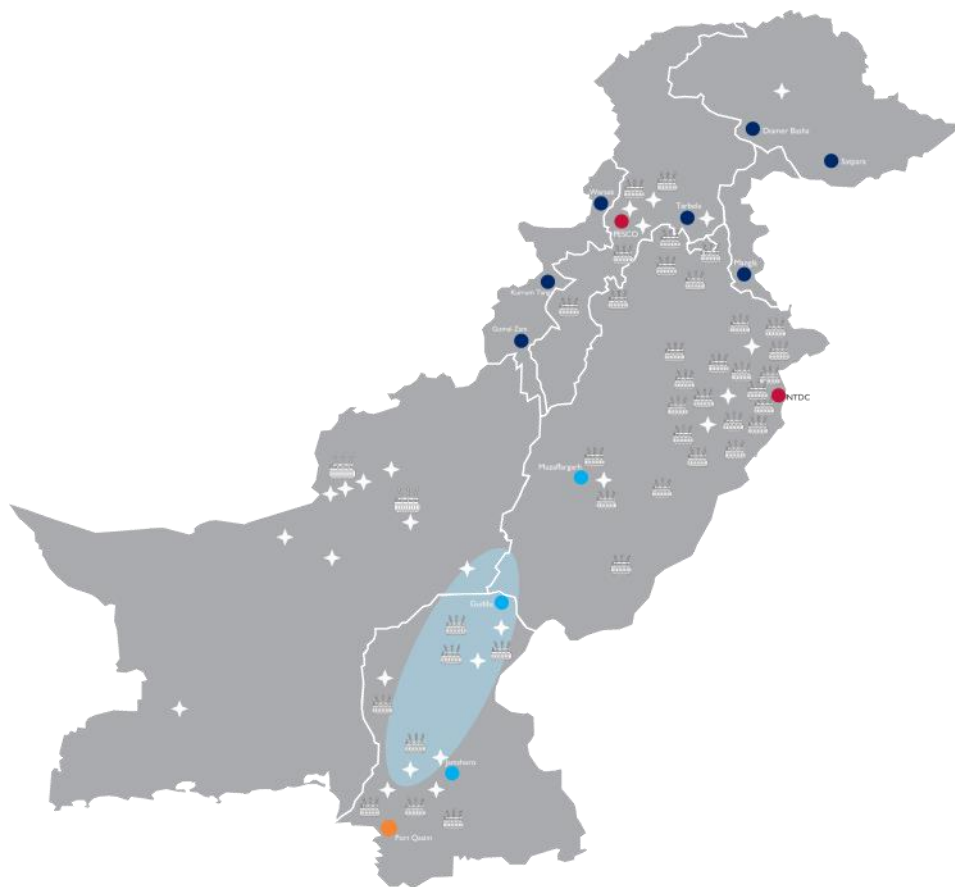
| No. | Component | Purchase Order # | PO Approval/ Start Date | Delivery Date / End Date | Description of Goods/Services | Supplier / Vendor Name | Purchase order Value (US\$) | Payments Made | Status as of Sep. 30, 2014 |
|-----|-----------|------------------|----------------------------|--------------------------|--|--|-----------------------------|---------------|----------------------------|
| 41 | C4 | EPP-C4-PO-032 | 5-Mar-14 | 30-May-14 | Dismantling of 11kv Power Transformer at Gadoon Amazai | Shine Power Technologies | 4,798 | 100% | Completed |
| 42 | C4 | EPP-C4-PO-033 | 13-Mar-14 | 16-Mar-14 | Removal of Power Transformer at Hattar 20/26MVA | Pak Elektron Limited | 3,000 | 100% | Completed |
| 43 | C4 | EPP-C4-PO-034 | 21-Mar-14 | 7-Apr-14 | Customs Clearance of and Testing Equipment's | United Professional Movers International | 1,574 | 100% | Completed |
| 44 | C4 | EPP-C4-PO-026 | 21-Mar-14 | 17-Oct-14 | Live Line Trailers for Tools and Equipment | KOBEECOUSA LLC | 399,582 | 57% | PO is Open |
| 45 | C4 | EPP-C4-SC-005 | 28-Mar-14 | 15-Oct-15 | Executive Exchanges to US for NTDC | United States Energy Association | 304,165 | 0% | PO is Open |
| 46 | C1 | EPP-C1-PO-036 | 2-Apr-14 | 30-Jun-14 | Run of River Hydro Electric Power Projects | Haigler Bailly | 25,384 | 100% | Completed |
| 47 | Admin | EPP-Admin-PO-037 | 14-Apr-14 | 25-Apr-14 | Procurement of Smart Phones | MAK International | 23,918 | 100% | Completed |
| 48 | C4 | EPP-C4-PO-040 | 28-Apr-14 | 15-Jun-14 | Repair of 31.5MVA Power Transformer Radiators | Multiworks | 10,606 | 100% | Completed |
| 49 | C4 | EPP-C4-PO-038 | 28-Apr-14 | 30-Sep-14 | Data Portal & Storage Area Networks | Commтел Systems | 273,596 | 67% | PO is Open |
| 50 | Admin | EPP-Admin-PO-039 | 28-Apr-14 | 30-Apr-15 | Group Health Insurance for AEAI Staff | Jubilee General Insurance | 87,513 | 75% | PO is Open |

| No. | Component | Purchase Order # | PO Approval/ Start Date | Delivery Date / End Date | Description of Goods/Services | Supplier / Vendor Name | Purchase order Value (US\$) | Payments Made | Status as of Sep. 30, 2014 |
|-----|-----------|------------------|----------------------------|--------------------------|---|---|-----------------------------|---------------|----------------------------|
| 51 | C4 | EPP-C4-PO-043 | 19-May-14 | 2-Jun-14 | Transportation of 31.5/40 MVA 132/66 PTF from PTESU Lhr to Grid Station Chakdara | SAKHI AMEER Goods Transport Co. | 8,925 | 100% | Completed |
| 52 | C4 | EPP-C4-PO-046 | 27-May-14 | 3-Jun-14 | Loading, Transportation and Unloading of Three (3) Nos Toyota Hiace | United Professional Movers (UPM) | 654 | 100% | Completed |
| 53 | C4 | EPP-C4-PO-045 | 27-May-14 | 30-Jun-14 | Custom Clearance & Transportation of Live-Line Tools & Equipment | Security Packers | 4,868 | 100% | Completed |
| 54 | C4 | EPP-C4-PO-048 | 30-May-14 | | Placement of 20/26 MVA Power Transformer at Gadoon Amazai | Nimra & Co Goods Transportation Company | 758 | 100% | Completed |
| 55 | C4 | EPP-C4-PO-049 | 3-Jun-14 | 13-Jun-14 | Civil Work at 132 kV Grid Station Jamrud | Amir Khan & Brothers | 1,467 | 100% | Completed |
| 56 | C4 | EPP-C4-PO-047 | 6-Jun-14 | 6-Jun-15 | Transit & Comprehensive Insurance for Vehicles and Live-Line Tools & equipment | East West Insurance Company Pvt. Ltd. | 7,180 | 100% | Completed |
| 57 | C4 | EPP-C4-PO-050 | 12-Jun-14 | 28-Sep-14 | Repair & Refurbishment of 9 Logistic Trailers | K Enterprises | 26,636 | 28% | PO is Open |
| 58 | C4 | EPP-C4-PO-051 | 13-Jun-14 | | Transportation of 20/26 MVA PTF from Hattar 132 KV Grid Station to 132 KV Grid Station KhowazaKhela | Nimra & Co Goods Transportation Company | 3,990 | 100% | Completed |

| No. | Component | Purchase Order # | PO Approval/ Start Date | Delivery Date / End Date | Description of Goods/Services | Supplier / Vendor Name | Purchase order Value (US\$) | Payments Made | Status as of Sep. 30, 2014 |
|-----|-----------|----------------------------------|----------------------------|--------------------------------|---|--|--------------------------------------|------------------|------------------------------------|
| 59 | C2 | EPP-C2-PO-052 | 20-Jun-14 | open | Power Sim Training | Hagler Bailly Pakistan | 4,500 | 25% | Remaining Part is Cancelled. |
| 60 | Admin | EPP-Admin-PO-053 | 24-Jun-14 | | Furniture for Guest House | Furnishing Pavilion | 8,540 | 100% | Completed |
| 61 | Admin | EPP-Admin-PO-054 | 24-Jun-14 | | Heat & Cool Split ACs for Guest House | Malik Sons | 15,558 | 100% | Completed |
| 62 | C4 | EPP-C4-PO-055 | 27-Jun-14 | 27-Jul-14 | Transportation of Radiators from Lahore to Chakdara | Nimra & Co Goods Transportation Company | 1,061 | 100% | Completed |
| 63 | C4 | EPP-C4-PO-056 | 27-Jun-14 | 26-Jun-15 | Comprehensive Insurance of 9 Nos. Toyota Hilux Pickups | East West Insurance Co. Ltd. | 8,002 | 100% | Completed |
| 64 | Admin | EPP-Admin-PO-057 | 27-Jun-14 | 13-Jul-14 | 45kVA Diesel Generator | Synergy Corporation | 16,043 | 100% | Completed |
| 65 | C4 | EPP-C4-PO-044 | 30-Jun-14 | 30-Sep-14 | Procurement of Hilux Pickups 9 Nos. | Toyota Islamabad Motors, Islamabad | 249,570 | 100% | PO is Open |
| 66 | C1 | EPP-C1-SC-007 (EPP-C1-DO-001) | 10-Jul-14 | 31-Mar-15 | O & M Trainings - Hydro | Energoconsult | 136,000 | 30% | PO is Open |
| 67 | C1 | EPP-C1-SC-008 | 15-Jul-14 | 31-Mar-15 | Legal Advisory Services for LNG Procurement | Watson, Farley & Williams LLP | 1,650,000 | 7% | PO is Open |

| No. | Component | Purchase Order # | PO Approval/ Start Date | Delivery Date / End Date | Description of Goods/Services | Supplier / Vendor Name | Purchase order Value (US\$) | Payments Made | Status as of Sep. 30, 2014 |
|-----|-----------|----------------------------------|----------------------------|--------------------------|--|--|-----------------------------|---------------|----------------------------|
| 68 | C1 | EPP-C1-SC-009 | 15-Jul-14 | 31-Mar-15 | Commercial & Technical Advisory Services for LNG Procurement | East West Consultants International Ltd. | 1,000,000 | 0% | PO is Open |
| 69 | C1 | EPP-C4-SC-006 (EPP-C1-DO-001) | 17-Jul-14 | 31-Dec-14 | Live-Line Consultancy Services | MITSA International | 44,700 | 50% | PO is Open |
| 70 | C4 | EPP-C4-PO-058 | 12-Aug-14 | 31-Mar-15 | 4 Nos. Telescopic Bucket Trucks | Javaid & Company Ltd. | 228,987 | 64% | PO is Open |
| 71 | C4 | EPP-C4-PO-059 | 18-Aug-14 | | Custom Clearance & Transportation with transit insurance of 09 AB Chance Live-Line Tool Trailers | Security Packers | 10,408 | 0% | PO is Open |
| 72 | C4 | EPP-C4-PO-064 | 15-Sep-14 | 03-Oct-14 | Replacement of 20/26 MVA PTF at 132kV Chakdara GS by 20/26MVA PTF | Shine Power Technologies | 23,000 | 0% | PO is Open |
| 73 | C2 | EPP-C1-PO-065 | 24-Sep-14 | | Hotel Accommodation and Training Management for HYDRO | Islamabad Serena Hotel | 137,358 | 50% | PO is Open |

ANNEX V: WHERE WE WORK



Gilgit-Baltistan

- 17.6 Satpara Multipurpose Dam Project
- Step 1: Due Diligence for Diamer Basha Dam Project
- 24 Interns Water and Power Department Gilgit

Azad Jammu and Kashmir

- 90 MW Mangla Rehabilitation Project

Punjab

- 500 MW Muzaffargarh Thermal Power Station Rehabilitation Project
- 10 Linemen (FESCO) Live-Line Maintenance Training
- 10 Linemen (GEPCO) Live-Line Maintenance Training
- 10 Linemen (IESCO) Live-Line Maintenance Training
- 10 Linemen (LESCO) Live-Line Maintenance Training
- 10 Linemen (MEPCO) Live-Line Maintenance Training
- 03 Interns (NTDC Muzaffargarh)
- 14 Interns (Muzaffargarh TPS)
- Shale Gas
- NTDC
 - NTDC Capacity Building and Organization Strengthening

- Regional import of Power
- System Control and Data Acquisition (SCADA) System Implementation
- Real Time Digital Simulator (RTDS)
- Smart Metering Systems
- NTDC Technical Audits
- Ministry of Finance Policy Support
- Ministry of Water and Power Policy Support
- Planning Commission – Energy Wing Policy Support
- Ministry of Petroleum and Natural Resources Policy Support

FATA

- 17.4 MW Gomal Zam Multipurpose Dam Project
- Step 1: Due Diligence for Kurram Tangi Multipurpose Dam Project
- Step 1: Due Diligence for Warsak Multipurpose Dam Project

Khyber Pakhtunkhwa

- 128 MW Tarbela Hydroelectric Power Station Rehabilitation Project
- 16 Linemen (PESCO) Live Line Maintenance Crews
- 07 Interns Electra Consultants Peshawar
- 03 Interns (NTDC Peshawar)
- 02 Interns (NTDC Mangla)
- PESCO
 - Grid Reconfiguration
 - Power Transformer Program
 - Circuit Breaker Program
 - Technical Audit
 - Reactive Power Compensation
 - Capacity Building
 - Telemetry
- NTDC Technical Audits

Balochistan

- 10 Linemen (QESCO) Live Line Maintenance Training
- 08 Interns (QESCO)
- 06 Interns (SSGC Quetta)
- 06 Interns (NTDC Quetta)
- Shale Gas
- NTDC Technical Audits

Sindh

- 270 MW Jamshoro Thermal Power Station Rehabilitation Project
- 75 MW Guddu Thermal Power Station Rehabilitation Project
- 10 Linemen (SEPCO) Live Line Maintenance Training
- 10 Linemen (HESCO) Live Line Maintenance Training
- 24 Interns (Guddu TPS)
- 16 Interns (Lakhra TPS)
- 09 Interns (Jamshoro TPS)

- 02 Interns (NTDC Hyderabad)
- 01 Intern (NTDC Jamshoro)
- 01 Intern (NTDC Sukkur)
- 01 Intern (NTDC Dadu)
- LNG Import
- Shale Gas
- NTDC Technical Audit

