



**USAID**  
FROM THE AMERICAN PEOPLE



# USAID ENERGY POLICY PROGRAM ANNUAL REPORT

OCTOBER 1, 2014 – JANUARY 31, 2016



**January 2016**

*This program is made possible by the support of the American people through the United States Agency for International Development (USAID)*

# USAID ENERGY POLICY PROGRAM

## ANNUAL REPORT

OCTOBER 1, 2014 – JANUARY 31, 2016

Submission Date: January 31, 2016

Contract No: AID-EPP-I-00-03-00004

Order No: AID-391-TO-12-00002

COR Name: Saeed Anwar

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

**Cover Photo:** Power Tranformer at Shahi Bagh, Crane Mounted Trucks, and Mangla Power House

### DISCLAIMER

The contents of this report are the sole responsibility of Advanced Engineering Associates International, Inc. (AEAI) and do not necessarily reflect the views of USAID or the United States Government.

# CONTENTS

ACRONYMS.....	III
EXECUTIVE SUMMARY .....	I
BACKGROUND .....	3
COMPONENT I: MONITORING AND SUPPORT OF PROJECT IMPLEMENTATION .....	5
Monitoring and Implementation Support.....	5
Support to GENCOs.....	8
Support to Hydels .....	8
COMPONENT II: POLICY SUPPORT.....	9
Energy Sector Reform Advisory Support .....	9
COMPONENT III: SELECTION, PLANNING, AND DESIGN OF NEW PROJECTS.....	17
Kurram Tangi/Kaitu Weir Project.....	17
Golen Gol Project .....	17
Other Projects .....	18
Environmental Compliance and management.....	18
COMPONENT IV: NEW ACTIVITIES.....	20
Peshawar Electric Supply Company (pescO) .....	20
Technical Support to NTDC .....	21
Live Line Maintenance .....	23
OVERALL PROGRAM SUPPORT .....	24
Increased Public Awareness on Energy Sector Reform .....	24
Energy Sector Capacity Building .....	24
Gender Activities.....	26
Monitoring & Evaluation.....	26
FINANCIAL AND ADMINISTRATION REPORTING.....	28
Financial Review .....	28
Procurement.....	28
Level of Effort.....	29
ANNEXES .....	30
ANNEX I: PERFORMANCE MONITORING INDICATOR TRACKER SHEET .....	31
ANNEX II: FY2015 EPP STAFF .....	33
ANNEX III: QUARTERLY FINANCIAL REVIEW .....	35
ANNEX IV: PROCUREMENT DETAILS .....	36
ANNEX V: WHERE WE WORK.....	46

## LIST OF TABLES

Table 1: Summary of G2G Projects for Hydro and Thermal Power Plants .....	5
Table 2: Due Diligence – Transmission Projects .....	18
Table 3: Total Financial Review for FY2015 .....	28

## LIST OF FIGURES

Figure 1: EPP Phases.....	3
Figure 2: Monthly Procurement Flow in FY2015 .....	29

# 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	Directorate General of 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 Electric Supply Company
IESCO	Islamabad Electric Supply Company
ISGS	Inter State Gas Systems
LESCO	Lahore Electric 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 Despatch 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 Electric 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, conclusions, tasks and accomplishments, and follow up phases during the period October 1, 2014 through December 31, 2015 for the Energy Policy Program (EPP). EPP has made substantial gains in megawatt production, transmission support, and policy influence during the reporting period of FY 2014 to FY2015.

The program was to closeout by October 15, but was extended consequent to time lost due to political agitation by a major political party that brought Islamabad to a standstill during the months of August and September 2015. As per USAID directive this annual report encompasses activity reporting beyond October to include accomplishments up to end January 2016 (15 months).

The EPP team continued its steadfast focus on strengthening Pakistan's power generation, transmission systems, and fuel services while promoting relevant policy reform. As of FY2014, EPP helped added 2,088.2 megawatts through significant improvements in generation and transmission, advised on critical energy sector governance policy, and provided for capacity building activities/trainings to employees of all stakeholder organizations. Moreover, greater emphasis was put on further development of the oil and petroleum sector support to increase 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. Key EPP highlights of the reporting period include but are not limited to:

- Optimized G2G procedures that facilitated GOP procurements resulting in additional 1,013 megawatts of energy, which is sufficient enough energy to benefit 9.3 million people. As of FY2015, out of the US\$ 316.71 million of United States Government (USG) committed funding, US\$ 153.49 million has been disbursed.
- Supported completion of three multipurpose hydropower dam projects (Gomal Zam, Satpara, and Tarbela dams) and 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, thereby saving 1075.2 megawatts (1061 megawatts of throughput capacity; 14.2 megawatts added/saved), which is enough energy to supply to approximately 13.7 million people.
- Milestone-6 report covering the regulatory and legal aspects is finalized and the final report has been forwarded to USAID and Directorate General of Petroleum Concessions (DGPC).
- Shale gas guidance document finalized after improvements by AEAI to match the scope, and shall be subsequently shared with USAID and DGPC.
- EPP started developing a Fuel Supply Agreement (FSA) between JPCL and Pakistan State Oil Company (PSO) in February 2015.
- Provided support to PSO on follow-up related to Qatargas LNG Sales Purchase Agreement (SPA) regarding utilization of conventional LNG vessels for delivery of LNG instead of larger Q-flex vessels.
- Supported PSO in amending and finalizing the Master Sales Purchase Agreement (MSPA) and confirmation notices for issuance of tenders for procuring another five LNG spot cargoes during October – December 2015.
- 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.
- Twenty-one percent females (15 of 71 participants) from NTDC were trained in 'Best Practices in Hydro Operations and Maintenance' training program; 14% females (1 of 7 participants) were trained in 'Storage Area Network' training program; 25% females (6 of 24 participants) were

trained in 'Real Time Power System Simulator' training program at NTDC in Lahore, and 26% females (12 of 47 participants) were trained in 'Design Center'.

- Successfully completed all 82 audit reports for PESCO sub-stations. Moreover, EPP finalized the comprehensive report highlighting shortcomings, bottlenecks, recommendations, and preventative corrective measures to improve PESCO's capabilities; final summary report to this effect was submitted to CEO PESCO.
- Completed the repair work on 150 MVA and 160 MVA transformers. Factory Acceptance Tests (FAT) of the 160 MVA transformer is underway to be followed by the 150 MVA transformer after which these will be delivered to their respective sites.
- After augmentation with a new 250MVA transformer, the replaced transformer was removed from Mardan 220 kV GS and installed and energized at the Shahi Bagh 220kV grid station. The Commissioning of this transformer helped add 160 MVA throughput capacity to the NTDC network.
- 

Across all activities, EPP **has procured approximately US\$ 18,382,845 million** in equipment for generation and transmission facilities as well as services with a dramatic increase in activity during FY2015. By the end of FY2015, 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 FY2016.



# 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 (GOP) 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 been 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.

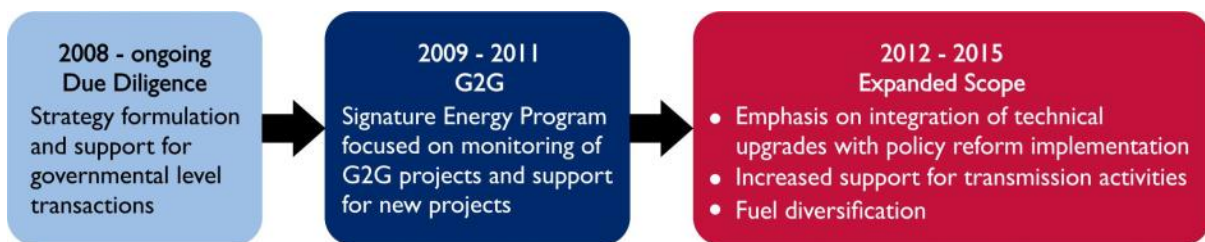


Figure 1: EPP Phases

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.<sup>1</sup> 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 entity as advisors and specialized support staff.<sup>2</sup> 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

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

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

activities that are candidates for USG support.<sup>3</sup> 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 2<sup>4</sup> 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 Despatch 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 the PESCO grid, which will in turn will 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.

---

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

<sup>4</sup> 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 expert visited Muzaffargarh Power Station to inspect the newly arrived equipment to ensure that it meets the technical specifications given in the PIL and to expedite the installation of the remaining equipment necessary to complete the project by March 2016. EPP also supported Jamshoro in obtaining a tax exemption certificate from EAD for equipment worth \$1.8 million. The team also visited Tarbela Power Station site to inspect the on-going installation of the System Control and Data Acquisition (SCADA) system. A visit to the Guddu Power Plant was conducted to facilitate the heat-rate tests that will assist Guddu in filing the required tariff petition. The project also supported Guddu in getting a tax exemption letter from EAD for equipment worth \$346,214 to expedite installation. Facilitation was also provided to WAPDA/Guddu in preparing the quarterly accrual report, which was submitted to USAID. EPP experts monitored the on-going overhauling of Unit-I at the Jamshoro Power Station, which will add to the Unit's sustainability. The project provided updates to USAID on the procurement of the remaining equipment at Jamshoro to finalize the time extension requested by Jamshoro for completion of the project.

Project's environmental expert visited Mangla, Jamshoro, and Guddu Power Stations to conduct environmental audits to ensure the implementation of the Environmental Monitoring and Mitigation Plans (EMMP) and subsequently submitted reports to USAID. The environmental expert also visited Tarbela and subsequently submitted the environmental monitoring report to USAID. On request of USAID, EPP provided its assessment on the WAPDA cost estimates for equipment under Tarbela phase II. EPP also provided environment-related lessons learned to USAID based on its environmental compliance monitoring.

Results achieved through the G2G projects are illustrated in table below:

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

Projects	USG Funding (U.S. \$ Million)	Disbursed (U.S. \$ Million)	Completion Date	MW Gains/Benefits	
				Target	Achieved (Jan 31, 2016)
Tarbela (Phase I)	16.50	15.55	12/31/16	128.0 MW	128.0 MW
Jamshoro	19.32	19.32	6/30/16	150.0 MW	270.0 MW
Guddu	19.12	18.91	12/31/15	75.0 MW	80.0 MW
Muzaffargarh	15.77	15.71	3/31/16	475.0 MW	500.0 MW
Gomal Zam	45.00	45.00	Completed	17.4 MW	17.4 MW
Satpara	26.00	26.00	Completed	17.6 MW	17.6 MW
Mangla	150.00	13.00	12/31/17	90 MW	In progress
Tarbela (Phase II)	25.00	PIL Signed	12/31/17	20 MW	In progress
<b>Total</b>	<b>316.71</b>	<b>153.49</b>		<b>973 MW</b>	<b>1,013 MW</b>

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's largest challenge in FY2015 was the delay of procurements as a result of the design of the G2G mechanism and Reimbursement 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

**Phase I.** EPP team visited the Tarbela Power Station site to inspect the on-going installation of the System Control and Data Acquisition (SCADA) system. The installation of the SCADA system will add to the reliability of the power plant operations. The EPP team also met WAPDA officials to expedite the procurement of equipment under the Tarbela Rehabilitation Project.

EPP also facilitated USAID in drafting the Amendment of Activity Agreement and Action Memorandum to extend the completion date to complete the procurement of remaining equipment (Rotor Poles). Rotor poles will ensure sustainability of the already achieved 128 MW and operations of the rehabilitated units. Further, EPP also facilitated WAPDA in preparing the quarterly accrual report for Tarbela phase I.

Environmental expert of the project visited the site and subsequently submitted the environmental monitoring report to USAID. The visit was conducted to ensure that the rehabilitation works are in compliance with the EMMP. A detailed quarterly financial projections along with project briefer was also provided by EPP to USAID. The projections will help USAID in forecasting the expected disbursements.

**Phase II.** EPP experts met WAPDA/Tarbela to expedite the invoices of equipment that have already been installed and procured under Tarbela Phase II. The invoices will help in expediting disbursement of about \$3.5 million to WAPDA. EPP also facilitated WAPDA in preparing the quarterly accrual report for Tarbela phase II.

Upon USAID request, the program (EPP) provided its assessment on the WAPDA cost estimates for equipment under Tarbela Phase II. The project will add 20 MW to the national grid and add to the sustainability of the power plant operations.

## Satpara Multipurpose Dam Project

The dam has added 17.6 MW 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 163,011 individuals. As planned, WAPDA is pursuing a project to deviate Shatung Nalluh at Deosai Plains (12,000 feet above Sea Level) into Satpara Dam, which will further improve electricity generation and water availability around the year.

The inauguration of the dam was delayed several times due to poor weather conditions. In February-March, EPP provided support to the USAID/Office of Energy towards responding to audit queries conducted by the Office of Inspector General. Upon completion of the dam, EPP facilitated the USAID visit in May to the Satpara Multipurpose Dam Project.

## Muzaffargarh TPS Rehabilitation Project

EPP facilitated a meeting of USAID with the chief executive of GENCO Holding Company, Ltd. (GHCL) and executives of all the GENCOs. This meeting was critical in expediting the procurement of the remaining equipment at the Jamshoro, Guddu, and Muzaffargarh Thermal Power Stations. EPP also facilitated Muzaffargarh in preparing the quarterly accrual report, which was subsequently submitted to USAID.

EPP provided support to USAID on calculating the greenhouse gases (GHG) emission reduction at Muzaffargarh. The reduction in GHG of about 365,332 tCO<sub>2</sub>e is made possible after the improvement in heat rates due to the rehabilitation works.

Environmental expert of the project visited Muzaffargarh Power Station to ensure that the on-going rehabilitation work under FARA is in compliance with the GOP and USG regulations as recommended in the approved EMMP. The progress updates were provided to USAID on the remaining items at Muzaffargarh. These remaining items will add to the reliability of the power plant operations.

USAID was updated on the fire incident that took place in Unit 4 of the Muzaffargarh TPS. EPP submitted the inquiry report to USAID. Report indicated damages due to the fire to the tune of about \$24,000. Repair work on the unit is underway to recover its operating capacity of 270 MW.

EPP provided updates to USAID on the progress of installation of the remaining equipment, which would add to the sustainability and reliability of the power plant.

### Jamshoro TPS Rehabilitation Project

EPP's Environmental expert visited Jamshoro Power Station to ensure that the on-going rehabilitation work under FARA are in compliance with the GOP and USG regulations as recommended in the approved EMMP. Thereafter, EPP submitted an environmental monitoring and audit report to USAID. Audit was conducted to ensure the implementation of EMMP at Jamshoro and Guddu. EPP also facilitated Jamshoro in preparing the quarterly accrual report and submitted to USAID. EPP provided updates to USAID on the progress of remaining items at Jamshoro. This helped in finalizing the time extension request made by Jamshoro to complete the project. These remaining items will add to the reliability of the power plant operations.

A visit of the USAID to Jamshoro Thermal Power Station was facilitated by EPP for the purpose of expediting installation of the remaining equipment. Experts of EPP monitored the on-going overhauling of Unit-I. The overhauling will add to the reliability and sustainability of unit-I at the Jamshoro Power Plant.

JTPS was facilitated by EPP in getting tax exemption letter for equipment worth \$1.8 million, which will help in expediting the procurement and installation of the remaining equipment.

### Guddu TPS Rehabilitation Project

Updates were provided to USAID on the progress of remaining items at Guddu. These remaining items will add to the reliability of the power plant operations. Subsequent to the site visit, EPP submitted an environmental monitoring and audit report to USAID. EPP also facilitated USAID in visiting Guddu Thermal Power Station for the purpose of expediting the installation of the remaining equipment. In preparing the quarterly accrual report EPP facilitated Guddu Thermal Power Station, which was submitted to USAID.

A draft heat rate test report regarding tests conducted at Units GT-7, GT-8, and ST-5, which were rehabilitated under USAID funding was also submitted by EPP to the Guddu management for their review and comments. The tests were conducted by an independent engineering firm (Pakistan Engineering Services) and will help Guddu to obtain a revised tariff from the National Electric Power Regulatory Authority (NEPRA).

### Mangla Rehabilitation Project

Experts from EPP met with WAPDA officials to discuss the procurement of major equipment for Units 5 and 6 of the Mangla Dam Power Project, including turbines and generators, funding arrangements for an additional four units, and impacts of the completion of these units. The project will add 90 MW to the national grid. Subsequently, EPP provided USAID with updated procurement status of major equipment, including turbines and generators for the said units and also advised WAPDA on negotiating a fast-track schedule with the vendor to complete the project by December 2017.

The EPP environmental expert also visited the power station to ensure that the works are in compliance with the GOP and USG regulations as recommended in the approved EMMP. The

Environmental Monitoring and Audit (EMA) report was submitted to USAID. The audit was conducted to ensure the implementation of EMMP at Mangla. EPP also facilitated WAPDA/Mangla in preparing the quarterly accrual report, which was submitted to USAID.

## SUPPORT TO GENCOS

In FY2015, EPP supported Muzaffargarh in getting a tax exemption letter from EAD for equipment worth \$713,000. Supported Guddu in getting a tax exemption letter from EAD for equipment worth \$346,214. EPP continued to support Jamshoro in filing a tariff petition to the National Electric Power Regulatory Authority (NEPRA). As a result of USAID involvement, the rehabilitation of Jamshoro added 270 MW to the national grid.

Heat-rate tests at Guddu Thermal Power Station were conducted at turbine-7, gas turbine-8, and steam turbine-5. Support was also provided by EPP to USAID on responding to queries regarding Fuel Oil Additive, which was procured and utilized at Jamshoro and Muzaffargarh Power Stations.

EPP provided updates to USAID on the progress of remaining items at Jamshoro. These remaining items will add to the reliability of the power plant operations.

The environmental expert of the project (EPP) visited Muzaffargarh, Jamshoro and Guddu Thermal Power Stations to ensure that the on-going rehabilitation work under FARA is in compliance with the GOP and USG regulations as recommended in the approved EMMP.

## SUPPORT TO HYDELS

EPP supported the Water and Power Development Authority (WAPDA) in processing a tax exemption request for the Supervisory Control and Data Acquisition (SCADA) system to improve reliability and sustainability of the power station.

In May, EPP facilitated the USAID visit to Satpara Multipurpose Dam Project upon its completion. The project is now capable of generating 17.6 MW of electricity and also irrigating 15,500 acres of land. EPP environmental expert visited the Tarbela, Mangla and Satpara power stations to ensure that the work is in compliance with the GOP and USG regulations as recommended in the approved EMMP. The environmental monitoring and audit report was submitted by EPP to USAID.

## COMPONENT II: POLICY SUPPORT

Significant number of policy achievements were achieved during FY2015 with the assistance of policy advisors to the GENCO Holding Company Ltd. (GHCL), MWP, Ministry of Finance (MOF), National Power Control Center (NPCC), and the Planning Commission. Significant policy achievements in FY2015 include:

- Followed up with the Joint Secretary, MWP on stakeholders' comments on the revised draft PPA, which had been submitted to MWP as well as by the Ministry to the GENCOs.
- Worked on the Connection Agreement to be executed between users of the grid, including generators, BPC, and DISCOs, and National Transmission and Despatch Company (NTDC).
- Submitted final contracts to MWP after drafting these individually with the generation companies (GENCOs) and GENCO Holding Company. The performance contracts set targets and established key performance indicators for MWP to monitor the GENCOs.
- Finalized the Milestone-6 report covering regulatory and legal aspects; final report has been forwarded to USAID and DGPC.
- Finalized the shale gas guidance document after improvements by AEAI in order to match the scope. The document will be shared with USAID and DGPC shortly.
- Initiated development of a Fuel Supply Agreement (FSA) between JPCL and Pakistan State Oil Company (PSO).
- Continued providing support to PSO on follow-up related to Qatargas LNG Sales Purchase Agreement (SPA) regarding utilization of conventional LNG vessels for delivery of LNG instead of larger Q-flex vessels.
- EPP consultants supported PSO in amending and finalizing the Master Sales Purchase Agreement (MSPA) and Confirmation Notices for issuance of tenders for procuring another five LNG spot cargoes during October – December 2015.
- The Corporate Finance Wing was assisted by EPP in preparation of their views and comments on the draft summary for the ECC submitted by Ministry of Petroleum and Natural Resources for allocation of gas, i.e., 44 mmcdf from Mari Deep and 60 mmcdf from Mari Shallow Gas Fields to the Guddu Power Plant.

## ENERGY SECTOR REFORM ADVISORY SUPPORT

### Support to GENCOs

**Generation Company Performance Contract.** At the end of January 2016, EPP submitted final contracts to MWP after drafting these with individual generation companies (GENCOs) and the GENCO Holding Company. The performance contracts set targets and established key performance indicators for MWP to monitor the GENCOs. Review of the performance of the power sector for the financial year 2014-15 continued in collaboration with the Corporate Finance Wing and Economic Reform Unit of MOF.

### Support to Ministry of Water and Power

EPP continued providing technical assistance to the GOP for the support of energy sector restructuring and reforms, including more effective market policies, better targeting of subsidies, and capacity building of the key institutions. 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.** Work continued closely with Jamshoro Power Company Ltd. (JPCL) and MWP in development of the PPA to be signed between CPPA and JPCL. Based on the request from MWP, a revised PPA is prepared, that would recognize the complete legal removal of

CPPA from within NTDC. The EPP team has hired a consultant to work with JPCL to determine precisely what is required by JPCL to operate and meet the conditions set forth in the PPA.

EPP followed up with the Joint Secretary, MWP on stakeholders' comments on the revised draft PPA, which had been submitted to MWP as well as by the Ministry to the GENCOs. The final version of the executed Power Purchase Agreement between JPCL and Central Power Purchasing A-G was forwarded to EPP by Joint Secretary, Power. The final PPA largely draws upon the draft of the bifurcated PPA developed by EPP with changes incorporated as per meetings between JPCL and MWP. This PPA will be used as a template for other GENCOs.

**Connection Agreement.** EPP continued to develop a Connection Agreement, which is required under the NTDC Grid Code, including generators, BPC, and DISCOs, and National Transmission and Despatch Company (NTDC). EPP held meetings with MWP, NTDC, and EPP legal consultants (CLM) to move forward on the Connection Agreement. The new PPA does not include Grid Code requirements for connection of a customer (i.e., a DISCO). A connection agreement will be required for each connection point on the NTDC's system.

A working paper on the Connection Agreement was shared with MWP and NTDC to get their feedback on the conceptualization and outline proposed by EPP. NTDC's lawyer discussed the current status of power sector reforms and regulatory compliance with respect to the Connection Agreement. CLM has provided EPP with the first drafts of three separate Connection Agreements.

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

**Policy Analysis.** MWP requested EPP to analyse the changes in cost of generation by switching fuels. The EPP developed Power Sector Integrated Model (PowerSIM) was used as the policy analysis tool in this task and is being used by GOP in the scenario analysis of the power sector. Member Energy was assisted in preparing a presentation on *Emerging Energy Scenario: Issues and Challenges*. Moreover, support was provided to the Planning Commission in organizing a roundtable conference on Geographical Information Systems (GIS). The conference will include participation from various public and private sector entities. Support was also provided in policy scenarios by updating the power supply demand scenario and shortfall in the NTDC system based on daily data received from the National Power Control Center (NPCC).

**PowerSIM.** During the reporting period, EPP continued to provide trainings at the Energy Wing, including providing the participants with details of the PowerSIM model's structure, limitations, input sheets, and policy analysis. EPP conducted a series of on-site training sessions for three officials of the Energy Wing for the Power Sector Integrated Model (PowerSIM). The Energy Wing continues to use PowerSIM to run policy scenarios in the energy sector and improve analysis capabilities.

The PowerSIM model, was introduced in the Ministry of Finance, and was acknowledged for its capability to project cashflows of the power sector.

**Power Generation Policy 2015.** EPP reviewed the Power Generation Policy 2015 and provided comments to MWP. The main items included recognizing the separation of Central Power Purchasing Authority (CPPA) from the NTDC, ensuring consistency with the Grid Code, and ensuring that new power generation coming online is consistent with the official NTDC Least Cost Development Plan.

## Support to Ministry of Finance

Senior Energy Advisors of EPP worked on significant deliverables with the MOF to prepare 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 team submitted a draft of an internal paper describing short-term solutions to significantly reduce circular debt to MWP.

**Tariff Differential Subsidy.** Corporate Finance Wing was assisted by EPP experts in working out the amount of additional Tariff Differential Subsidy (TDS) for K-Electric, in pursuance of the NEPRA's decision of July 2, 2015 regarding quarterly adjustments of K-Electric for the second, third, and fourth quarters of financial year 2013-14 and the first quarter of financial year 2014-15.

**Tariff Differential Claims.** In August the tariff differential claims of the distribution companies for the month of June 2015 submitted by the Office of the Engineering Advisor, Ministry of Water and Power were reviewed. The claims submitted by the DICSOs were further discussed in a meeting with the representatives of Engineering Advisor, Ministry of Water and Power, held on August 6, 2015 at the Corporate Finance Wing; more information was requested to substantiate the claims.

**Gas Infrastructure Development Surcharge.** EPP team provided a briefing to Senior Joint Secretary Corporate Finance Wing regarding Gas Infrastructure Development Surcharge, which was discussed in the Provincial Coordination Committee meeting held on June 5, 2015. EPP provided assistance in preparing a revised mechanism for timely payment of subsidy to DISCOs by amending various rules and procedures, and it also assisted in preparation of comments on the summary for Economic Coordination Committee (ECC) submitted by the Ministry of Water and Power vis-à-vis Rationalization of Power Tariff. The summary was considered by the ECC in its meeting.

**Energy Purchase Agreement.** The Corporate Finance Wing was assisted in preparation of their views and comments on the amendments proposed by Ministry of Water and Power in the draft standard Energy Purchase Agreement (EPA) and draft Energy Purchase Agreement prepared for Biogas and Biomass projects with independent power producers.

**RLNG.** EPP assisted in preparation of comments on the proposal submitted by the Government of Punjab and Ministry of Water and Power to mitigate the risk in case of non-supply of RLNG to proposed new power plants to be established in the public sector. It also assisted in preparation of the proposals for financing of the South-North Gas Pipeline, which is proposed to be constructed by Sui Southern Gas Company Limited (SSGCL) and Sui Northern Gas Pipeline Limited (SNGPL) for supply of RLNG to existing as well as proposed power plants to be established in the public sector.

Corporate Finance Wing of Ministry of Finance (MOF) is negotiating a loan amounting to PKR15 billion with the consortium of local banks for partial financing of the North-South Gas Pipeline to be used for imported RLNG. Work continued on the review of the performance of the power sector for the financial year 2014-15 in collaboration with Corporate Finance Wing and Economic Reform Unit.

EPP advised the Ministry of Finance (MOF) and provided professional support and prepared comments for the Corporate Finance Wing regarding the following items:

- Assisted the Corporate Finance Wing, MOF in preparation of their views/ comments on the Standard Revolving Account Agreement to be signed between CPPA/NTDC and IPPs investing in power generation using RLNG as fuel. This account will be equivalent to 22% of total monthly invoices of RLNG based IPPs.
- Assisted in the clearance of tax exemption proposals from FBR in respect of four (04) Hankook Lori Cranes forwarded by Economic Affairs Division.
- Assistance was provided to Corporate Finance (CF) Wing of MOF in order to workout financial arrangements for North-South Gas Pipeline to be constructed for supply of RLNG to be imported from Qatar.
- Assistance was provided to CF Wing of MOF to scrutinize and settle the arrears claims of tariff differential subsidy submitted by K-Electric through Ministry of Water and Power for the year 2013-14.
- Assistance was provided to CF Wing of MOF to settle the arrears claims of LESCO, GEPCO and PESCO pertaining to supply of electricity to AJK government. In this regard, a meeting was

also attended by EPP representative, which was chaired by Additional Finance Secretary (CF) on December 16, 2015. Joint Secretary (Power), Ministry of Water and Power also attended.

- Assistance was provided to the Corporate Finance Wing, MOF on the draft Request for Proposals (RFP) prepared by PPIB/Ministry of Water and Power regarding 1000 MW RLNG Based Power Projects.
- Draft Power Generation Policy 2015 submitted to MWP.
- NEPRA Equalization Surcharge Case to Lahore High Court.
- Amendment in Pakistan Petroleum Production Rules 1949 to Ministry of Petroleum and Natural Resources (MPNR) for the grant of extension in the existing leases.
- Energy Purchase Agreement and draft Implementation Agreement for Biomass Base Projects on IPP mode.
  - Import of Liquefied Natural Gas (LNG) through G2G contracts for the Economic Coordination Committee.
  - Draft Supplemental Agreement proposed by MPNR for revised pricing mechanism for old gas fields.
  - Secretary briefing for PESCO subsidy claims for 2012–2015.
  - Required funding for Neelum Jehlum Hydel project to be sent to MWP.
  - DISCO Power Purchase Agreement from on-site IPPs based on interim gas supply for MWP at guarantee for opening a standby letter for credit.
  - Azad Jammu and Kashmir provincial government outstanding electricity dues to IESCO, PESCO, and GEPCO presented to Supreme Court.
  - Gas Supply Financial Impact for PSO to GENCOs and IPPs.

### Support to Ministry of Planning Commission

EPP continued working with the Technical Staff of Planning Commission for development of the Local Area Network (LAN) at the Energy Wing, Planning Commission. The project also provided system and IT assistance to Member Energy in day-to-day activities. Seconded staff of EPP continued to provide general technical assistance, systems and network administration to the offices of Member Energy and also provided support for routine tasks. EPP also updated the daily power supply demand scenario and shortfall in the NTDC system based on the daily data received from NPCC. At the request of Member Energy, EPP updated the Power Generation Plan 2015-19 in coordination with officials from the Prime Minister Delivery Unit.

**Database:** EPP staff at the MWP Energy Wing continued work on the database developed for Energy Wing. The User Interface and general layout of the database were discussed with Member Energy who suggested modifications in the layout. Incorporation of all Excel-based documents into one index file for easy access is underway. All PPT (presentations), Word documents, and pdf files will be linked to the index file for access.

**Technical Assistance:** Through its seconded staff, EPP continued to provide system and network administration and general technical assistance to offices of Member Energy. EPP also provided IT application support through use of existing software to update the daily power supply demand scenario and shortfall in the power sector based on the daily information provided to the Planning Commission.

**GIS Mapping:** EPP staff participated in the meeting organized by Energy Wing, Planning Commission to discuss steps needed to provide access for the Energy Wing staff to the Geographical Information System (GIS) services of Pakistan Bureau of Statistics (PBS) in order to use the GIS services for project planning purposes. It was observed that even though PBS has the hardware capacity, lack of GIS experts in PBS will delay the process of information sharing with the Planning Commission.

**Policy Analysis and Planning:** EPP assisted Member Energy in preparing a presentation on Emerging Energy Scenario: Issues and Challenges. In addition, EPP provided support to the Planning

Commission in organizing a roundtable conference on Geographical Information Systems (GIS). The conference will include participation from various public and private sector entities. EPP also provided policy support by updating the power supply demand scenario and shortfall in the NTDC system based on daily data received from the National Power Control Center (NPCC).

## Support to Ministry of Petroleum and Natural Resources

**Shale Gas.** During the reporting period of FY2015 discussions were held with the two short-listed bidders on proposals submitted against the Request for Proposal (RFP) for shale gas policy and regulatory framework formulation. Review meeting with EPP partners was held to discuss infrastructure, technology, and costs for Shale Gas production. Necessary directions were given regarding changes in the proposed financial model and the technical assumptions to be made to this effect. Meetings were held with consultants to discuss the possibility of re-visiting the provisions of infrastructure, technology, and costs for shale gas production (Milestones 5, 6, and 7) and to provide proper pre-policy guidelines. Consultant's proposal for elaboration of Milestone-6 was finalized and the request for USAID consent is in process.

**Sample Testing.** EPP revised the progress of testing and evaluation work under Milestone-4A. LMKR indicated that testing of samples was in progress and would be followed by petro-physical analysis and mapping.

**Financial Model.** EPP drafted a proposed financial model for the determination of production costs for shale gas exploitation.

**Policy Framework.** Technical evaluation of proposals submitted against the RFP for shale gas policy and regulatory framework formulation was completed and a bidders' shortlist was established in March.

**Lower Goru Formation.** The Directorate General Petroleum Concessions (DGPC) requested for additional information for the potential of individual shale gas units in the Lower Goru formation; however, EPP noted that the additional area was outside of the current scope of work and could not be considered at this stage.

Milestone-4A report has been finalized after incorporating comments of Director General Petroleum Concessions (DGPC) and submitted to DGPC and USAID. The Final draft report on Milestone-5 report was submitted to DGPC and USAID.

**Upstream Oil and Gas.** EPP provided a broad range of advisory services for the DGPC on day-to-day issues continued including work on pending extension cases of licenses and leases. Weekly review meetings held with EPP consultants throughout the month. The consultant made a presentation to DGPC regarding the new reserves reporting system. Changes suggested by EPP consultant in the model Production Sharing Agreement (PSA) and model Petroleum Concession Agreement (PCA) have been reviewed. Necessary comments have been conveyed to the consultant for finalization of these documents for presentation to DGPC. Consultants have presented the recommended changes with rationale to DGPC professionals.

The draft report on the granting of sub-surface rights to landowners to have access to the areas with security concerns has been received and is under review. Changes were also received in the Exploration and Production Policies from the consultant for finalization. Inferences report has been forwarded by EPP consultant.

The process of finalization of Supplemental Agreements with Exploration and Production (E&P) companies commenced during the Quarter. The progress on execution of Supplemental Agreements was reviewed in meetings held with USAID in April. The majority of the conversions entailing no legal issues have been executed. Remaining applications that are legally problematic are under discussion with the E&P companies and their legal counsels for resolution. After discussions with DGPC in June, it was agreed to take up the matter with E&P companies to expedite the submission

of draft Supplemental Agreements. Subsequent to these discussions, a draft letter was submitted to DGPC requesting the E&P companies to expedite the submission of draft Supplemental Agreements.

## LNG Import

In FY2015 major milestones were accomplished to secure Pakistan's first LNG imports by FY2016. Accomplishments include:

- EPP continued providing support to the GOP team for concluding the LNG Sales Purchase Agreement (SPA) with Qatargas, including meetings with Qatargas in Doha on April 1-2, following which another redraft of the LNG SPA was submitted. EPP provided support to the GOP in finalizing G2G agreement with Qatargas, including the LNG SPA negotiations with Qatargas in Islamabad May 7 and 8.
- The LNG Services Agreement (LSA) Waiver Agreement and Time Charter Party Agreement with Elengy Terminal Pakistan Ltd. (EETL) for transporting the next four LNG cargoes from Qatar were concluded with support to PSO and Sui Southern Gas Company (SSGC). EPP's team provided further inputs to frame responses to queries raised by bidders on the spot LNG tender. EPP's team supported PSO in the bid review process for spot LNG tender in Karachi from June 15-18, and PSO has now finalized the bid evaluations.
- The GOP team was also supported in finalizing the Floating Storage and Regasification Unit (FSRU) sub-charter agreement between PSO and EETL, tripartite agreement among PSO, SSGC, and SNGPL inter-linked with Qatargas SPA, and LNG Services Agreement (LSA) waiver agreement among PSO, SSGC, and EETL to cover the terminal commissioning process vis-à-vis the provisions in the LSA, as well as for transporting four LNG cargoes from Qatar on an FOB basis in the interim period.
- The tender documents package (bid document, MSPA, Confirmation Notices for each of the four cargoes, Standby Letter of Credit (SBLC) and bank guarantee, and confidentiality agreement) were reviewed and finalized for procuring spot LNG cargoes by PSO. The tender was issued by PSO on May 13.
- EPP's LNG Advisor participated in the Bidders' Conference held in Karachi on May 25 to support the GOP in answering bidders' queries on the spot LNG tender issued by PSO.
- EPP submitted the amended Master Sales Purchase Agreement (MSPA) to PSO during June revised in light of the bidders' comments received in response to the recently published tender for procuring spot LNG cargoes.
- EPP consultants submitted the updated short-term Master Sales Purchase Agreement (MSPA) based on bidder's comments and other general improvements to Pakistan State Oil Company (PSO).

EPP experts support to PSO continued on follow-up related to Qatargas LNG Sales Purchase Agreement (SPA) regarding the utilization of conventional LNG vessels for delivery of LNG instead of larger Q-flex vessels. EPP's consultant prepared reports for PSO on global crude oil prices in relation to Pakistan's LNG imports and monthly LNG import prices for East of Suez countries covering the last two years.

EPP's consultants supported PSO in amending and finalizing the Master Sales Purchase Agreement (MSPA) and Confirmation Notices for issuance of tenders for procuring another five LNG spot cargoes during October – December 2015. The tender documents (including MSPA) for the medium term have been developed and submitted to PSO.

**Support to Port Qasim Authority (PQA).** EPP facilitated a Full Mission Bridge Simulation (FMBS) study at Siptor21 facilities in Madrid, Spain. A detailed report on the simulation results of bringing in the Q-Flex ship and other smaller vessels to the EETPL LNG Terminal at PQA was submitted by Siptor21. The report has been forwarded to PQA for review and consideration.

EPP continued its assistance to PQA in closing the items pertaining to PQA on the Action Items Register prepared by Qatargas. The register included 92 port-related items needing resolution by

the stakeholders. A response to Qatargas was drafted regarding the open items following the due diligence meetings held in March.

EPP's LNG advisors held a series of meetings with EETL to review issues arising out of various gap studies conducted for LNG terminal design and quality. After submission of the pending required documentation by EETL, the EPP team resumed its review for closing of issues arising out of the studies.

Accomplishments include:

- EPP sponsored the four-day visit of the second batch of two PQA pilots to Doha to receive training on Q-Flex maneuvering from Qatargas.
- Work continued on closing of open items under the Action Register prepared by Qatargas. EPP and Director General, Operations, PQA participated in meetings with Qatargas in Doha on April 7-8 to discuss port-related items pertaining to the Qatargas SPA.
- EPP submitted a revised version of the standard operating procedures and Conditions of Use for LNG carriers calling at PQA for inclusion in PQA Port Regulations and Operations Manual of EETL, which was forwarded to PQA and EETL.
- Port Tariff prepared by EPP was approved by PQA Board for one month effective April 16, 2015.
- EPP prepared the draft Security Plan for LNG vessels calling at Port Qasim and EETL, which was shared with PSO, PQA, and EETL. The Security Risk Assessment by Qatar Gas conducted during the first week of May 2015 at Port Qasim was declared acceptable by Qatargas.
- Draft gazette notification for port tariff for LNG carriers was also prepared and submitted to PQA. PQA approved the port tariff model for LNG vessels in a meeting held May 15. Port tariff is subject to further approval by Ministry of Ports and Shipping.
- Revised Standard Operating Procedures (including Conditions of Use and Marine Services Certificate) for LNG vessels calling at Port Qasim to PQA was prepared and forwarded to Qatargas and uploaded on PQA's website. These were further revised in light of additional comments provided by Qatargas and forwarded to PQA, and have been provided to PSO for transmission to Qatargas.
- PQA Direct Agreement was signed by PQA and forwarded to SSGC and EETL for their respective signatures.
- During June, the final revised version of Terminal Regulations prepared by EETL was reviewed and forwarded to PQA for acceptance.
- EPP team prepared the draft response for consideration of PQA regarding the recent ECC decision on waiver to follow Society of International Gas Terminals and Tankers Association (SIGTTO) guidelines for LNG carriers calling at Port Qasim.

PQA's response to Qatargas minutes of meetings held between PQA, PSO, and Qatargas on August 10-11 in Dubai and an updated version (no. 7) of standard operating procedures for LNG carriers calling at Port Qasim developed subsequent to the Dubai meetings were submitted to PQA.

The review by EPP's team of consultants for closing of issues arising out of various gap studies conducted for LNG terminal design and quality is in process. A two-day workshop was held by Sellhorn regarding the review of LNG jetty design and channel upgrading options at Port Qasim.

## Support to National Transmission and Despatch Company

### Strategic Business Plan Update

The revised draft, with editorial changes in the Strategic Plan and Key Performance Indicator Scorecard was submitted to the NTDC Board Chairman on December 22<sup>nd</sup>. The submission was acknowledged by the Chairman who informed us that the previous version of the plan was circulated among board members and senior management of NTDC for review and feedback.

### Load Shedding Report

The report on Impact of USAID Intervention on Load Shedding Hours was shared with USAID. This report identifies the benefits of USAID interventions on both planned and unplanned load shedding. The calculations are based on the data obtained from NPCC. In the draft submitted, few additions pertaining to source of average annual load shedding hours and the benefits of additional throughput capacity were requested by USAID.

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

## KURRAM TANGI/KAITU WEIR PROJECT

During the FY2015, following the third open advertisement, a bid was finally received for the construction of the Kaitu Weir canals and power house. The sole bid, which was opened as scheduled on March 25, was received from the consortium of DESCON Engineering and FWO. The bid was later on evaluated by WAPDA consultants, Mott MacDonald. The technical and financial evaluation of the proposals received for construction of the Kaitu Weir feeder tunnel linking the Kaitu River to Kurram Tangi Reservoir, two power houses with installed capacity of 18.4 MW, two irrigation canals (Spaira Raha and Sheratella), and associated structure was completed. The bidder's (Joint Venture of FWO and Descon) proposed cost is much higher than estimated price. WAPDA has accordingly decided to obtain the Planning Commission's opinion through the Ministry of Water and Power on the bidder's offered price.

Prior to bidding, General Manager WAPDA, North and the Project Director for Kaitu Weir, supported by their consultants from Mott MacDonald, briefed the Deputy Director, USAID/Peshawar Office, Program Director, USAID/Islamabad, USAID Mission (A) Environmental Officer, representative from USAID Finance Office, and others from USAID on activities, status, and plans for the project. USAID is working with WAPDA to identify eligible costs of works and develop project construction schedules to draft a completion milestone and associated payment plan for the proposed \$81 million indicated by USAID for the almost \$130 million project. A \$40 million loan from the Government of Italy is also under discussion at the Economic Affairs Division of the GOP.

The Planning Commission PC-I for the project amounting to \$126 million had been approved by GOP. It consists of \$79 million for Kaitu Weir and associated structures and \$47 million for command area development. Since project cost has increased, WAPDA is revising the PC-I of the project based on the bidder's offered price including transmission line cost. Milestone dates for funding disbursement and associated payment schedule for the proposed \$81 million USAID funding will be finalized when the contract is awarded. Kaitu Weir and associated structures will be constructed by WAPDA, whereas the command area development works will be executed by the Federally Administered Tribal Area Government.

In FY2015, EPP prepared and submitted the Activity Agreement and PIL agreement of the project to USAID. USAID has signed Activity Agreement and forwarded it to WAPDA. Milestone dates for funding disbursement and the associated payment schedule for the proposed \$81 million USAID funding is under preparation for final PIL Agreement. The Planning Commission PC-I of the project amounting to \$126 million has been approved by the GOP. It consists of \$81 million for Kaitu Weir and associated structures and command area development to be financed by USAID and \$45 million in Italian loans under discussion by EAD with the Italian Government.

## GOLEN GOL PROJECT

During the reporting period in January FY2015, Due Diligence Report was submitted by EPP based on the Golen Gol Project, USAID has indicated \$36 million funding to WAPDA for the works related to power house electrical and mechanical equipment (Lot 3.2 of contract). The total cost of Lot 3.1 and Lot 3.2 of the contract is \$ 75.5 million. The Kuwait Fund is providing a \$37 million loan for construction of the powerhouse civil works and some portion of electrical and mechanical equipment.

The Saudi Development Fund is providing a soft loan of almost \$97 million for civil structures, i.e., intake structure, diversion weir, headrace tunnel, surge chamber, and pressure shaft (Contract Lot 2), whereas the OPEC Development Fund is providing \$30 million for two packages of transmission

lines and grid stations (Lot 4.1 and Lot 4.2). The overall funding gap of the project cost is approximately \$71 million.

The project is now 38% complete and expected to be fully completed by August 2017. 438 GWh of low cost energy will be contributed annually to the national grid. The revenue gain from Golen Gol will be over \$33 million a year, and will replace electricity production from thermal plants using costly imported fuel oil of about \$65 million per annum. Experts of EPP continue to monitor the project activities and note that owing to winter snows there was not much construction work at site. EPP team visited the project site for the second time during April.

The project will fulfill the power demand in Chitral, stimulate local businesses, provide job opportunities to locals, and stimulate cottage industry in the remote areas. In addition, Chitral will be connected to the national grid by a 300 MVA capacity 132 kV transmission line, strengthening the existing 33 KV transmission line connection that sends only 5 MW to Chitral. The major construction activity has neither displaced villagers nor adversely impacted the area. However, further delays and cost escalation can be expected until the revised PCI is approved by GOP and USAID.

Previously EPP submitted the Fixed Amount Reimbursement Agreement (FARA) 611(e) report, which is a USAID requirement for assessment and capabilities of beneficiary organization to effectively maintain and utilize USAID funding for the Golen Gol project. EPP responded to the queries raised by USAID on the draft, and resubmitted the 611(e) report.

Queries raised by USAID on the draft PIL Agreement for Golen Gol were addressed by EPP and resubmitted it to USAID. Three members of the EPP team visited Golen Gol Hydro Power Project during September 2-6, 2015 to assess flood impact as well as project physical progress and issues, and submitted an initial report.

## OTHER PROJECTS

### Transmission

In FY2015, EPP completed Step-II due diligence and REA for USAID on the following three projects:

- Dispersal of power from wind power plants at Jhampir 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 2: Due Diligence – Transmission Projects

Due Diligence Project	Total Project Cost (US\$)	MW Potential	Timeline
Sind Wind Projects	43 million	680 MW	4 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.

**Environmental Mitigation and Monitoring Plan.** The Environmental Documentation Form (EDF) and Environmental Mitigation and Monitoring Plan (EMMP) was developed and approved 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

# COMPONENT IV: NEW ACTIVITIES

## PESHAWAR ELECTRIC SUPPLY COMPANY (PESCO)

During the reporting period FY 2015, thus far, 1,075.2 MW of transmission throughput capacity have been added to the PESCO and NTDC network as a result of USAID/EPP's technical and financial assistance.

**Crane-Mounted Trucks.** PESCO requested EPP to provide them with transmission line and grid station equipments along with crane-mounted trucks. EPP processed the procurement of the requested crane-mounted trucks for PESCO. The requested vehicles are a form of self-loading trucks. Currently, when grid station equipment needs to be replaced it has to be done by the grid station technician manually with ropes, pulleys and slings. The work method was inefficient and causing high risk of damage to the sensitive equipment installed in grid station. Truck with lift boom would be able to remove the faulty equipment and place new one on the foundation. These trucks will also allow PESCO to transport the tools and equipment EPP is providing to and from the work location.

These trucks arrived at Port of Karachi in the FY2015. The exemption for the cranes were obtained and these were delivered to PESCO. Appropriate trainings in this regard were also conducted..

**Power Transformer Program.** During the FY2015 period, two 40 MVA power transformers were installed and commissioned at the 132 kV Chakdara and Peshawar Industrial Grid Stations adding 28 MVA of throughput capacity to the PESCO network. All punch list items pertaining to 40 MVA power transformers were attended and cleared by the vendor.

**Circuit Breakers:** Thirteen 132kV circuit breakers were installed in the PESCO network, thereby completing all 20. Seventeen of the 20 installed are in service while the remaining three will be commissioned once PESCO resolves the wiring issues at the respective sites. The project is expected to end mid-January 2016.

**Bucket Trucks.** PESCO requested USAID Energy Policy Program (EPP) to acquire tools and equipment for the Transmission Lines and Grid Departments. Among the required tools and equipment needed are bucket trucks with lift booms to be used for performing maintenance in the grid stations. Grid stations are designed with lattice steel structures upon which equipment, such as switches, lightning arrestors, and wire and solid metal buss is attached. All of this equipment is attached to the lattice steel structures at 5 to 10 meters off the ground.

The registration process is underway for the four telescopic bucket trucks delivered to PESCO warehouse on April 28, 2015. This will help PESCO in effective and efficient maintenance of their facilities. Registration of the bucket trucks has been completed. The trucks will help PESCO in effective and efficient maintenance of their facilities.

**Transmission and Grid Equipment.** EPP awarded the purchase order to M/s. Ikram Corporation for supply of transmission grid equipment. Some of the tools (17/37) were delivered by the contractor and remaining equipment was scheduled to be delivered by mid-July 2015. The remaining equipments and items need customs clearance for delivery by the vendor.

**Oil Purification Plants.** EPP initiated the procurement of power transformer oil purification plants at the request of PESCO. Two hundred-thirteen samples of transformer oil were tested with the results showing potential transformer damage, which increases the likelihood of an outage that can cause loss of customer loads. Many of PESCO's transformers require oil purification, and EPP processed of procuring two oil filtration plants for PESCO's operations and maintenance staff. EPP asked PESCO to implement policy changes that will allow joint use of the plants between PESCO's Grid Systems Operation and Grid Systems Construction organizations. Oil purification plants were

delivered to PESCO in November 2015. The demonstration on operation and maintenance of these plants was given to the PESCO staff in the first week of December 2015.

**Capacitor Bank Rehabilitation.** EPP completed the installation and final testing of the capacitor bank and circuit breaker at 132 kV Tall Grid Station during February and was commissioned in April, 2015. This rehabilitation resulted in 20.1 MW throughput capacity made available to meet power sector demand and reduced losses by 2 MW. EPP also rehabilitated 36 MVAR capacitor bank at 132kV Jehangira and 48 MVAR capacitor bank at Bannu 132kV grid station. The capacitor bank at Jehangira resulted in adding 12 MW of throughput capacity and reduced losses by 2 MW, while the Bannu capacitor bank rehabilitation resulted in adding 18 MW of throughput capacity and reduced losses by 2.1 MW.

**Protection and Instrumentation Equipment and Vans.** Fully equipped testing vans for PESCO's P&I department were handed over to PESCO in a ceremony held on November 13, 2014. The provision of these vehicles will allow PESCO to conduct testing of the installed protection systems to improve reliability and perform timely maintenance where necessary.

**Technical Audit of Grid Station PESCO.** EPP completed all 82 audit reports for PESCO sub-stations, and also finalized a comprehensive report highlighting shortcomings, bottlenecks, recommendations, and preventative corrective measures to improve PESCO's capabilities. The final summary report was submitted to PESCO's CEO on June 26, 2015.

**Cooling Fans.** Cooling fans increase the capacity of power transformer by adding additional cooling of transformer oil. This is important in the peak loading summer months. PESCO has requested USAID EPP to provide them with replacement of cooling fans and fan motor circuit breakers. EPP completed the second phase of the installation of all 129 cooling fans for PESCO. Due to the second phase 68.43 MW of throughput capacity has been added. This is in addition to the first phase with 348 cooling fans, which added 192.1 MW throughput capacity.

**Tower Repair.** PESCO requested EPP to assist them with the replacement/rehabilitation of damaged/hazardous towers in PESCO's grid system. Damaged towers causes outages and blackouts and this effects financially and lead to customer dissatisfaction. A detailed survey has been carried out by EPP engineers in SS&TL Divisions Mardan, Abbottabad and Peshawar. EPP completed all 15 priority tower repairs for PESCO in the reporting period. EPP engineers worked with its contractor and finalized minor issues during April. The rehabilitated and repaired damaged towers will enable PESCO to have a stable, safe and more reliable power supply in the network.

## TECHNICAL SUPPORT TO NTDC

**G2G Projects:** Activity Agreement of Power Transmission System for Wind Power Projects in Sindh Wind Corridor for \$43 million was signed by USAID and NTDC. The agreement now needs the approval of Economic Affairs Division (EAD). Draft on the cost reasonableness analysis and project implementation letter for this project is under review.

Revised Rapid Environment Assessment (REA) report of transmission line for evacuation of power from Patrind Hydropower Plant was reviewed by EPP and USAID and the comments forwarded to the consultant for further revisions.

**Renewables Integration Study.** In the reporting period, EPP awarded the subcontract to prepare a study on the integration of intermittent renewable resources into the national grid. The study was completed after gathering the pending data and the study information was shared with NTDC.

**Real Time Power System Simulator.** Based on a request from NTDC, EPP procured Real Time Power System Simulator (RTPSS) for the NTDC. The RTPSS is a power system-modeling simulator and design tool used to design and test planning models in near instant simulated time. The purchase order was awarded to M/s. OPAL-RT in April; Factory Acceptance Tests were successfully conducted in May, and the RTPSS equipment was delivered in September, 2015.

NTDC has completed all requirements in their scope of work for the establishment of RTPSS training facility; air conditioners, furniture and IT equipment was delivered in October 2015.

**Testing Equipment for Grid System Operations:** All nine shipments delivered to NTDC and demonstration of testing equipment given to its staff.

**Auto-Transformer Program.** NTDC requested assistance from USAID for the purchase of two new 250 MVA transformers, and purchase of peripheral equipments. EPP awarded the contract for delivery of the two autotransformers. Factory Acceptance Test of two JHSP 250MVA, 220/132kV autotransformers was successfully carried out during May, and these were shipped during June and arrived at the Karachi Port. In August, the transformers were delivered on site. The Fire Protection System was shipped by M/s. Xuming and delivered in July 2015. Circuit breakers, conductors, connectors, and other ancillaries were also delivered in July 2015. The cumulative effect of purchasing two new 250MVA transformers has added 180 MVA throughput capacity to the NTDC network.

- Repair work on 150 MVA and 160 MVA transformers have been completed. FAT of both transformers successfully conducted and subsequently delivered at respective sites.
- The second transformer, removed from Mardan 220 kV GS after augmentation with new 250MVA transformer, has been installed and energized at Shahi Bagh 220kV GS. Commissioning of this transformer helped add 160 MVA throughput capacity to the NTDC network.
- FAT of repaired 220/132 kV 160MVA transformer at HEC was once again unsuccessful and unlikely to be completed by EPP program conclusion.
- FAT of the repaired 500/220kV 150MVA transformer was successfully completed. The transformer is now at Sheikh Muhammadi 500kV grid station where it will act as a spare.
- All punch list items pertaining to 250 MVA transformers were attended and cleared by the vendor.

**NTDC Design Center Rehabilitation.** EPP received all hardware upgrade items for the NTDC Design Center; the installation was completed during the reporting period. The training for Design Center was also completed on June 19 at the NTDC, Lahore spread over 11 different courses, i.e., AutoCAD, PLS – Power, PLS- Tower, PLS – Pole, SAPS, SAGSEC, CAISON, ARCGIS, Bentley STAAD-PRO, Bentley Sub-Station, and MS Project. NTDC procured additional furniture and office space for the design center rehabilitation. The hardware installation took place as scheduled prior training.

**IT Hardware.** EPP awarded a vendor for the IT upgrades at NTDC in March. The delivery of the hardware was in April, NTDC installed the items themselves with EPP monitoring.

**Advisory Services to NPCC.** In response to near countrywide blackouts in December and January, the NTDC Board of Directors asked EPP to review system operations at NPCC. EPP started working at NPCC in January advising the General Manager on operations, compliance, and enforcement of the Grid Code and by providing research and consultation services to the NPCC dispatchers and managers. As a result, loadshed schedules were changed to lessen their impact on the system frequency variations, and an Automatic Generation Control program was activated to help maintain system frequency at 50 Hz. These are significant changes to past grid operational practices. In addition, EPP is working with NPCC to integrating generating plant data into their new SCADA system.

**Secured Metering System and Storage Area Network.** After installation, EPP monitored use of the Storage Area Network (SAN) and Secured Metering System across all DISCOs for full implementation. Post-training reviews of the SAN participants monitoring indicated that the head of the IT department and designated staff are committed to keep the installations sustainable.

## LIVE LINE MAINTENANCE

**Hot Tools.** EPP received the new “hot” tools for live-line maintenance in July 2014 and began distributing the equipment to two DISCOs (IESCO and PESCO) in the first quarter of FY2015. To support equipment delivery, EPP conducted a four-week refresher course as participants had not worked with live lines in more than 10 months.

**Live Line:** The missing live line tools have been distributed among all nine DISCOs.

**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 Electric Supply Company (HESCO), Islamabad Electric Supply Company (IESCO), Gujranwala Electric Power Company (GEPCO), Multan Electric Power Company (MEPCO), Sukkur Electric Power Company (SEPCO), Quetta Electric Supply Company (QESCO), and Lahore Electric Supply company (LESCO) in two phases. The LLM program was 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 was completed by first quarter of FY2015. EPP then implemented the recommendations of the consultant to enhance the capabilities of NTDC and start the Phase II training of Live-Line.

**Hot-Stick Refurbishment.** The live-line team refurbished hot-sticks for three live line crews; one at NTDC Islamabad University 220kV GS, the second at Tarbela Training Center and the third for Lahore Electric Supply Company (LESCO). A demo session was held in this quarter. NTDC’s and LESCO’s live-line staff were taught how to perform this task. At the end of the session a hot-stick refurbishment and cleaning kit was handed over to NTDC and LESCO along with instructional videos. EPP live-line experts also hosted hot stick refurbishment classes at 500 kV Jamshoro Grid Station and 500 kV Multan Grid Station during the reporting period. The refurbishment classes taught live-line staff how to perform this task along with providing a cleaning kit and instructional video. EPP provided refurbishment demonstrations as a part of live-line training.

**Refresher Course.** IESCO completed the majority of the live line maintenance refresher course in April. PESCO, GEPCO, HESCO, and FESCO completed their refresher courses during May, June and July. The tools and trucks required for ongoing live-line work procured by EPP were handed over to each DISCO after completion of their trainings.

**NTDC Tarbela Center.** EPP re-started the 16-week Live-Line Training course at NTDC Tarbela Center in February for MEPCO and SEPCO. The 20 linemen successfully completed their training in May 2015. USAID-EPP provided live-line tools and trucks were handed over to the crews upon successful completion of training. The live-line training for twenty linemen from LESCO and QESCO started in May and was completed in October 02, 2015. All live-line tools have been handed over and their material receiving report signed.

# OVERALL PROGRAM SUPPORT

## INCREASED PUBLIC AWARENESS ON ENERGY SECTOR REFORM

During FY2015, the communications team organized and facilitated the following activities:

- Organized the live-line handover ceremony wherein Gregory Gottlieb, Mission Director USAID handedover the tools and equipment to PESCO and IESCO. The event was covered both by print and electronic media.
- Organized the 250 MVA Transformers at NTDC Mardan Grid Station. The event was hosted at the Rawat 500 kV Grid Station where, John Groarke Mission Director USAID inaugurated the autotransformers. The event was covered both by print and electronic media.
- Communications & Outreach team organized and managed the NTDC Lahore Design Center and RTPSS certificate distribution ceremony at WAPDA House Lahore. Zachary Harkenrider Consul General Lahore was the chief guest on the occasion. The event was covered both by print and electronic media.
- Communications & Outreach team hosted another milestone achievement ceremony at Muzaffargarh Thermal Power Station, Muzaffargarh. John Groarke Mission Director USAID, Zachary Harkenrider Consul General Lahore, and Chief Minister Punjab, Mian Muhammad Shahbaz Sharif were among the key guests on behalf of the USG and the GOP respectively. The event was covered both by print and electronic media.
- Quality Control/ Quality Assurance of reports including appropriate Branding & Marking per USAID protocols laid down in the Graphics Standard Manual, and the ADS 320 was ensured prior to sharing with USAID.
- Success stories and one-pagers were prepared as per landmark achievements of different componenets.
- Fact Sheets of all componenets and other significant areas of the program were regularly updated and shared with USAID.

## ENERGY SECTOR CAPACITY BUILDING

**NTDC Exchange.** EPP conducted a debriefing session for operation exchange visits with Lahore participants in March. Participants formally shared their experience with the EPP, NTDC, and USAID regarding visits, action plan developments, and future plans. The final of the three exchange visits, Commercial Operation Exchange, started on March 22 and completed in April. Through these exchanges, EPP aims to improve transmission capacities in Pakistan's power sector while establishing professional relationships to draw upon after the conclusion of the program.

**Live-Line Maintenance.** EPP's Live-Line Maintenance Batch II training for MEPCO and SEPCO was completed in May, while the first of five refresher courses at IESCO in April. The second of the five refresher courses at PESCO started in April. EPP met with the live-line maintenance crew to conduct a monitoring and evaluation session with the participants from Faisalabad Electric Supply Company (FESCO) on June 19 and compiled a report based on the feedback given by the engineers and linemen. A break was observed for Ramadan for Quetta Electricity Supply Company (QESCO) and Lahore Electricity Supply Company (LESCO). After the Ramadan break QESCO and LESCO trainees resumed their training and completed the Live-Line training on September 18, 2015. GEPCO completed their refresher course at GEPCO on September 4, 2015. To date EPP has completed four of the five refresher courses at IESCO, PESCO, FESCO, and GEPCO, along with 14 weeks of live-line maintenance training for MEPCO, SEPCO, QESCO, and LESCO.

**SAN Training.** The second round of a focus group was conducted in March at EPP's Lahore office to monitor the progress made on the challenges highlighted by SAN training participants during its deployment at CPPA. Participants highlighted the improvements made after the successful

deployment and future goals. The discussion session was followed by a meeting with the Director General for Information Technology for his feedback on the post-training outcomes and suggestions for further improvements.

**HYDRO Operations and Maintenance Training.** A Focus Group Discussion was conducted in June at the Ghazi Barotha Power Station to monitor the progress made on the techniques learned and challenges highlighted during the post-training interviews. Participants highlighted the improvements made in the optimal operations of the plant where the training was based on different departmental criteria. The discussion session included the participants, senior engineers, and shift engineers.

**NTDC Design Center.** The Design Center training was completed in June at NTDC, Lahore spread over 11 different courses, i.e., AutoCAD, PLS – Power, PLS- Tower, PLS – Pole, SAPS, SAGSEC, CAISON, ARCGIS, Bentley STAAD-PRO, Bentley Sub-Station, and MS Project. EPP conducted a monitoring and evaluation session on June 16-17 with the participants to ensure sustainability of the Design Center rehabilitation program.

**LNG Business Management Certificate.** EPP arranged visas, travel, and final schedules for the LNG business management certificate training on June 12 2015 in which EPP hosted 14 participants. The training focused on improving SSGCL, PQA, and OGRA's commercial capacity and port operations standards. EPP hosted a debriefing and monitoring evaluation session with all the participants in August 2015.

**Thermal Operations and Maintenance.** The focus group discussion report on thermal operations and maintenance was shared with USAID in February. EPP met with the CEO Jamshoro Thermal Power Plant to discuss on-site training opportunities and visits to IPPs. EPP advertised for a vendor to provide on-site training and anticipates award in the coming quarter. Second round of focus group discussions was conducted on April 22 at Jamshoro Power Generation Company Ltd. to monitor the progress made on the assignments and challenges. Participants highlighted the improvements made in the heat-rate testing with respect to shift improvements and timely generation of trouble reports, cooling tower efficiency, and efficient procedures.

**Real Time Digital Simulator (RTDS) Training.** EPP finalized selection of 24 participants for RTDS training from NTDC's system protection, design, and planning departments. The visa process for the trainers was finalized. Training and RTDS installation are scheduled for September 28 through October 25, 2015. The state-of-the-art Real Time Power System Simulator (RTPSS) will enhance NTDC's capacity in the crucial areas of electricity transmission system planning, design, operation, dispatching, and protection to enhance network efficiency and availability. The RTPSS will conduct testing of physical devices, such as protection equipment and control equipment, to perform analytical system studies, and to educate operators and engineers.

**Best Practices in Grid/Market/Commercial Operations Executive Exchange.** EPP hosted three executive exchanges on best practices in United States from October 2014 to April 2015 for 26 participants from NTDC. The best practices training in grid operations, market functions, and commercial processes, through focused exchange visits, enabled NTDC planning, design, finance, market operations, and grid operations managers to identify modern solutions to current transmission system challenges in Pakistan. EPP conducted follow-up sessions to monitor the progress made on the highlighted challenges and recommended solutions by participants at National Power Control Center (NPCC), WAPDA Power Privatization Organization (WPPO), and Central Power Purchasing Authority (CPPA). EPP conducted the Grid/Market/Commercial session September 1-3, 2015 at EPP's Lahore Office. A similar session was conducted in Islamabad on September 21, 2015 with NPCC participants. EPP drafted individual reports as well as a comprehensive reports based on the highlighted challenges and potential solutions to be reviewed by EPP's Transmission Department, NTDC, WPPO, CPPA, and NPCC.

**Training for Pakistan.** EPP shared all the requested reference documents and held knowledge exchange meetings regarding the upcoming nationwide energy internship program. EPP continues to

support the efforts of USAID-funded program *Training for Pakistan* and provides guidance related to the sector.

## GENDER ACTIVITIES

**Assessment and Strategy.** EPP submitted the final Gender Assessment and Strategy report to USAID for review and discussion, and coordinated with USAID/Pakistan's gender specialist and the Energy Office's Assistant Contract Officer's Representative regarding the Gender Strategy and Assessment. Comments received from USAID and a team from EPP cross cutting met in-person during April for next steps prior to the planned public forum. A discussion program on gender issues in Pakistan's energy sector was broadcast on FM 101 on March 19 with representatives from NTDC Planning Department, Air University, NTDC Hyderabad, and Ghazi Barotha Power Station participating in the discussion regarding interventions being undertaken by the USAID/EPP across all four provinces aimed at reforming the power sector.

Energy Policy Program (EPP) identified opportunities for staff training in the long- and short-term programs (especially for women and youth) in order to ensure their engagement in the energy sector. EPP collected data from stakeholder organizations related to employee statistics, hiring practices, and gender specific policies. The data provides a baseline of female participation in the energy sector and proposes steps to increase their participation. The baseline comprised interviews, surveys, and site visits of and from Pakistan's transmission, hydro and thermal generation, alternative energy, and the oil and gas authorities.

In various capacity building trainings conducted for key stakeholders in GOP organizations, the female participation rate in trainings increased by 8% compare to the previous year, which is to say that from 17% in FY2014 to 25% in FY 2015. Similarly, in FY2015, 27% (7 of 26 participants) females from National Transmission & Despatch Company (NTDC) participated in the U.S. Exchange Visit Program to learn about grid, market, and commercial operations related to the grid station.

**Increased Female Participation.** Twenty-seven percent of trainees at the NTDC exchange visits were female. Between April and June 2015, during the Design Center Training Course at NTDC, the following percentage of trainees were female: 36% in AUTOCAD, 21% in PLS-CADD, 23% in PLS-Tower, 20% in PLS-Pole, 20% in SAPS, 37% in SAGSEC, 25% in CAISON, 36% in ARCGIS, 33% in MS Project, and 27% in Bentley Substation. EPP currently has an 18% female participation rate across all training up from 4% in January 2014.

In FY2015, 21% females (15 of 71 participants) from NTDC were trained in 'Best Practices in Hydro Operations and Maintenance' training program; 14% females (1 of 7 participants) were trained in 'Storage Area Network' training program; 25% females (6 of 24 participants) were trained in 'Real Time Power System Simulator' training program at NTDC in Lahore, and 26% females (12 of 47 participants) were trained in 'Design Center'.

## MONITORING & EVALUATION

**Work Plan.** USAID approved the EPP revised work plan for FY2015 in April.

**NTDC Exchange.** EPP conducted a debriefing session on May 12 with participants of the NTDC Commercial Operations exchange and a focus group discussion session with Grid Operations participants on May 13. General findings were that the exchanges were very successful and lead to many on-site improvements.

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



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

**NTDC Design Center:** The EPP started Design Center training on April 20 at NTDC, Lahore in five different courses: 45 participants were enrolled in Microsoft Project Management, 29 in Bentley, 14 in ARC GIS, 39 in Power Line Module, and 25 participants in AutoCAD. EPP monitored all participants and trainings to ensure sustainability of the Design Center rehabilitation.

**LNG Business Management Certificate.** EPP arranged visas, travel, and final schedules for the LNG business management certificate training, which hosted 14 participants from OGRA, SSGCL, and PQA in Kuala Lumpur in June 1 2015. The program focused on improving SSGCL, PQA, and OGRA's commercial capacity and port operations standards.

**Post-Training Evaluations:** EPP conducted a post-training evaluation session with the Live-Line Maintenance crew from GEPCO on September 4, 2015 and with LESCO and QESCO's crews at Tarbela Training Center on September 18, 2015.

**White Paper Follow-Up Sessions:** EPP hosted a white paper follow-up sessions on September 1-3, 2015 in Lahore and on September 21, 2015 in Islamabad with participants from Executive Exchange participants from Grid/Market/Commercial Operations.

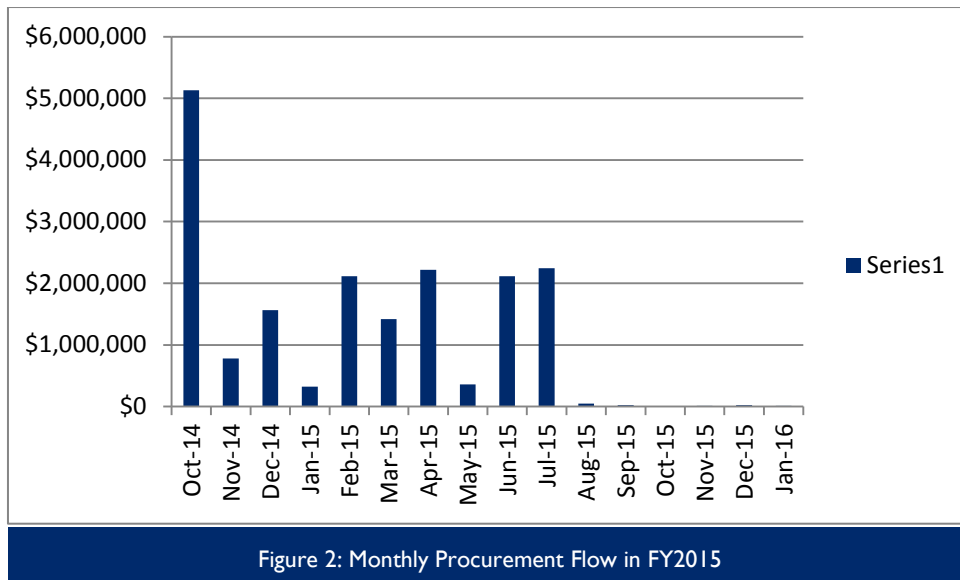
**PakInfo:** EPP is in the process of drafting PakInfo's close-out report. To date, EPP's accomplishments have been updated in the document with January 2016 data entries to follow. Once completed, the report will be shared with USAID for Q2 FY2016 PakInfo reporting.

**Public Forum:** As part of the targets set by Mission Strategic Framework's (MSF), EPP conducted a public forum on '*Clean Energy Potential & Utilization*' at the COMSATS Institute of Information & Technology Islamabad on December 28, 2015. To date, eleven out of the target of twelve public forums have been accomplished.

**Acknowledgement Letters:** As of December 2015, EPP has obtained acknowledgement letters from the following organizations and stakeholders for its accomplished activities:

- Central Power Generation Company, Ltd. (CPGCL)
- Northern Power Generation Company, Ltd. (NPGCL)
- Jamshoro Power Company Limited (JPGCL)
- Gomal Zam Multipurpose Dam Project
- Satpara Multipurpose Dam Project
- Tarbela Hydropower Plant Rehabilitation Project
- Planning Commission of Pakistan (PCP)
- Ministry of Finance
- Interstate Gas System (ISGS)
- Port Qasim Authority (PQA)
- Peshawar Electric Supply Company (PESCO)
- National Transmission and Despatch Company (NTDC)
- Faisalabad Electric Supply Company (FESCO)
- Islamabad Electric Supply Company (IESCO)
- Gujranwala Electric Power Company (GEPCO)
- Multan Electric Power Company (MEPCO)





## LEVEL OF EFFORT

EPP reduced the staff from 102 to 48. In FY2014 staff was hired to fulfill the targets, but as the program end date (November 2015) approached, a large number of staff was reduced in view of closeout of the program in a systematic and timely manner. The chart below shows the reduction of EPP staff in FY2015. For a full list of staff changes and additions, see **Annex II: FY2014 EPP Staff**.

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 FY2015, EPP hired a significant number of Pakistani staff to fulfill this target.

# ANNEXES

# ANNEX I: PERFORMANCE MONITORING INDICATOR TRACKER SHEET

Indicator	Unit	LOP Target	Achieved						Total Achieved as of Q1 FY2016	LOP % Achieved as of Q1 FY2016
			FY2011	FY2012	FY2013	FY2014	FY2015	Q1 FY2016		
I.a: GWh of energy sold	GWh	7880	1,909	405	3,229	2,681.64	1,153.5	3,798.34	13,176.5	167%
I.1.a: Number of beneficiaries with improved energy services due to United States Government assistance	Individuals	13,624,226	3,362,106	703,912	5,439,624	4,594,107	2,106,551	6,936,516	23,142,816	170%
I.1.b: GWh of energy availability	GWh	7880	1,909	405	3,229	2,681.64	1,153.5	3,798.34	13,176.5	167%
I.1.c: MW available to meet power sector demand as a result of USG assistance	MW	1,303	363	76	556	386.6	164.6	542	2,088.2	160%
I.1.1.a: MW of electrical power added or saved as a result of USG improvements	MW	875	363	76	480	100	8.2	0	1,027.2	117%
I.1.1.b: Efficiency of thermal power plant tests completed	No.	3	0	0	1	1	1	0	3	100%
I.1.1.c: Number of USG supported installations and operations and maintenance improvements	No.	181	0	0	11	95	63	9	178	98%
I.1.1.d: Number of transmission bottlenecks resolved	No.	121	0	0	4	80	43	8	135	112%
I.1.4.a: Public and private funds leveraged by the USG for energy infrastructure projects	U.S. \$	193.5 million	0	0	33.5 million	5 million	140 million	0	178.5 million	92%
I.2.1.a: Number of key policies and regulations in various stages	No.	12	0	2	5	4	35	5	51	425%

Indicator	Unit	LOP Target	Achieved						Total Achieved as of Q1 FY2016	LOP % Achieved as of Q1 FY2016
			FY2011	FY2012	FY2013	FY2014	FY2015	Q1 FY2016		
I.2.2.a: Number of policies following international best practices	No.	6	0	0	0	2	2	1	5	83%
I.2.2.b: Number of board recommendations following international best practices	No.	4	0	0	0	0	3	0	3	75%
I.2.3.a: Number of best practice-driven systems created, improved, and implemented	No.	10	0	0	4	1	4	1	10	100%
I.2.4.b: Number of public forums resulting from USG assistance in which government officials and citizens interact	No.	12	0	0	5	0	4	2	11	92%

## ANNEX II: FY2015 EPP STAFF

Sr. No.	Name of Employee	Title/Justification	Status	Staff	Location	EPP Department
1	Redacted	Sr. Manager Admin & Finance	Part Time	CCN	Islamabad	Finance & Administration
2		Sr. IT Specialist	Full Time	CCN	Islamabad	Finance & Administration
3		Sr. Operation Specialist	Full Time	CCN	Islamabad	Finance & Administration
4		Sr. Projects Monitoring and Implementation Engineer	Full Time	CCN	Islamabad	Generation
5		Policy Specialist	Full Time	CCN	Islamabad	Policy
6		Senior Advisor Transmission	Full Time	CCN	Islamabad	Transmission
7		Senior Energy Expert	Full Time	CCN	Islamabad	Generation
8		Senior Energy Expert	Full Time	CCN	Islamabad	Policy
9		Senior Advisor Hydro	Full Time	CCN	Islamabad	Due Diligence
10		Deputy Chief of Party/Director Administration and Finance	Part Time	CCN	Islamabad	Management
11		Director Policy Reform	Part Time	CCN	Islamabad	Policy
12		Chief of Party/Director Project Implementations supports	Full Time	CCN	Islamabad	Management
13		Senior Software Engineer	Full Time	CCN	Islamabad	Generation
14		Associate Engineer Mechanical	Full Time	CCN	Islamabad	Generation
15		Project Development Advisor	Full Time	CCN	Islamabad	Policy
16		Director Audit & Budget	Full Time	CCN	Islamabad	Finance & Administration
17		Communications Associate	Full Time	CCN	Islamabad	Communications
18		Communications Manager	Full Time	CCN	Islamabad	Communications
19		Assistant Communications Specialist	Full Time	CCN	Islamabad	Communications
20		Admin Assistant	Full Time	CCN	Islamabad	Finance & Administration
21		Finance and HR (A)	Full Time	CCN	Islamabad	Finance & Administration
22		Project Technical Assistant	Full Time	CCN	Islamabad	Transmission
23		Project Technical Assistant	Full Time	CCN	Islamabad	Transmission
24		Senior Procurement Specialist	Full Time	CCN	Islamabad	Procurement

Sr. No.	Name of Employee	Title/Justification	Status	Staff	Location	EPP Department
25	Redacted	Procurement & Inventory Officer	Full Time	CCN	Islamabad	Procurement
26		Administrative Assistant	Full Time	CCN	Islamabad	Finance & Administration
27		Associate Manager- Cross Cutting Activities	Full Time	CCN	Islamabad	Crosscutting
28		Junior Engineer	Full Time	CCN	Islamabad	Transmission
29		Assistant IT Specialist	Full Time	CCN	Islamabad	Finance & Administration
30		Snr. Driver	Full Time	CCN	Islamabad	Finance & Administration
31		Driver	Full Time	CCN	Islamabad	Finance & Administration
32		Gardner	Full Time	CCN	Islamabad	Finance & Administration
33		Senior Cook	Full Time	CCN	Islamabad	Finance & Administration
34		Cook	Full Time	CCN	Islamabad	Finance & Administration
35		Senior janitor	Full Time	CCN	Islamabad	Finance & Administration
36		Janitor	Full Time	CCN	Islamabad	Finance & Administration
37		Office Assistant	Full Time	CCN	Islamabad	Finance & Administration
38		Office Assistant	Full Time	CCN	Islamabad	Finance & Administration
39		Senior Energy Expert	Part Time	CCN	Islamabad	Generation
40		Oil and Gas Specialist	Part Time	CCN	Islamabad	Policy
41		Legal Specialist	Part Time	CCN	Islamabad	Policy
42		Project Manager	Full Time	CCN	Peshawar	Transmission
43		Protection Engineer	Full Time	CCN	Peshawar	Transmission
44		Relay Protection & Instrumentation (P&I) Engineer	Full Time	CCN	Peshawar	Transmission
45		Assistant Electrical Engineer	Full Time	CCN	Peshawar	Transmission
46		Driver	Full Time	CCN	Peshawar	Finance & Administration
47		ERP Lead Advisor	Full Time	CCN	Lahore	Transmission





## ANNEX IV: PROCUREMENT DETAILS

S.No.	Component	Purchase Order #/Subcontract	PO Approval/ Start Date	Delivery Date/End Date	Description of Goods/Services	Supplier / Vendor Name	Purchase order Value (USD)	Payments Made
1	Admin	EPP-Admin-PO-066	2-Oct-14	6-Oct-14	Lenovo Laptops	Electroline	\$11,584	100%
2	C4	EPP-C4-PO-067	14-Oct-14	14-Nov-14	Supply of Power Transformer Oil	Orient Oils (Pvt) Ltd.	\$6,655	100%
3	C4	EPP-C4-PO-068	15-Oct-14	28-Feb-15	Repair of Damaged Towers	Construction and Project Management Services	\$306,500	100%
4	C4	EPP-C4-PO-063	15-Oct-14	31-May-15	Supply, Delivery of Tools & Equipment for PESCO T&G Depart.	Ikram Corporation	\$761,472	100%
5	C2	EPP-C1-SC-010	15-Oct-14	15-Nov-15	Consultancy & Construction Supervision Services for PQA for LNG Terminal	ECIL-GRANADA	\$1,500,000	100%
6	C4	EPP-C4-PO-062	18-Oct-14	30-Nov-15	250MVA autotransformer	JSHP	\$2,517,500	100%
7	C4	EPP-C4-PO-069	24-Oct-14	8-Nov-14	Modification of 3 Testng P&I Vans for PESCO	K Enterprises	\$10,474	100%
8	C4	EPP-C4-PO-070	27-Oct-14	28-Feb-15	Replacement, Commissioning and Installation of 31.5/40MVA, 132/66kV Elta repaired PTF at Chakdara GS with Dismantling and placement of existing PTF at PESCO	Shine Power Technologies	\$18,853	100%
9	C4	EPP-C4-PO-072	6-Nov-14	6-Nov-15	Insurance of 42 Live Linemen	Jubilee General Insurance Co. Ltd.	\$2,004	100%
10	C4	EPP-C4-PO-074	6-Nov-14	16-Jan-15	Dismantling, Transportation and Pre-repair joint Inspection of two (02) Damaged Autotransformers	Heavy Electrical Complex	\$100,305	100%

S.No.	Component	Purchase Order #/Subcontract	PO Approval/ Start Date	Delivery Date/End Date	Description of Goods/Services	Supplier / Vendor Name	Purchase order Value (USD)	Payments Made
11	Admin	EPP-Admin-PO-075	17-Nov-14	17-Nov-14	Live Line Event Management	RAMADA	\$2,412	100%
12	Admin	EPP-Admin-PO-081	17-Nov-14	17-Nov-14	Multifunction Printer	Electroline	\$2,552	100%
13	Admin	EPP-Admin-PO-083	17-Nov-14	17-Nov-15	Internet connection for Lahore Office	Multinet	\$13,000	100%
14	C4	EPP-C4-PO-079	17-Nov-14	16-Dec-15	Comprehensive Insurance 09 Toyota Vigos	East West Insurance Company Pvt. Ltd.	\$6,801	100%
15	C4	EPP-C4-PO-077	17-Nov-14	17-Aug-15	Warehouse - Rental Space for Live Line Vehicles	Security Packers	\$8,700	100%
16	C4	EPP-C4-PO-076	18-Nov-14	18-Feb-15	Supply & Installation of Cooling Fans	Shine Power Technologies	\$71,666	100%
17	C4	EPP-C4-PO-078	18-Nov-14	28-Feb-15	Rehabilitation of Capacitor Banks at Grid Station Tall, Banu & Jahangira	Shine Power Technologies	\$29,149	100%
18	C4	EPP-C4-PO-080	18-Nov-14	30-Apr-15	Supply & Delivery of Personal Protective Equipment (PPE)	Ikram Corporation	\$50,650	100%
19	C4	EPP-C4-PO-082	19-Nov-14	31-Dec-15	Study to Determine the Limit of Integrating Intermittent Renewable Resources	Intel-Gopa Germany	\$369,917	100%
20	C4	EPP-C4-PO-071	20-Nov-14	30-Apr-15	Supply, Delivery, Installation and Training of Hardware Equipment for NTDC Design Department	EGS Private Limited	\$109,411	100%
21	Admin	EPP-Admin-PO-086	24-Nov-14	8-Dec-14	Dell Rack Mounted Server with Accessories and Software's	Kokusai Computers	\$7,252	100%
22	Admin	EPP-Admin-PO-088	25-Nov-14	15-Oct-15	Up gradation of internet for House # 17, F-7/2, Islamabad	Naya Tel	\$5,390	100%
23	Admin	EPP-Admin-PO-089	25-Nov-14	25-Dec-14	Supply and Delivery of Workstations & Chairs	Furnishing Pavilion	\$1,300	100%

S.No.	Component	Purchase Order #/Subcontract	PO Approval/ Start Date	Delivery Date/End Date	Description of Goods/Services	Supplier / Vendor Name	Purchase order Value (USD)	Payments Made
24	C3	EPP-C3-PO-090	1-Dec-14	25-Dec-14	Preparation of Side Agreement to remove CPPA functions from the WAPDA/NTDC Power Purchase Agreements	Jaffar Sibtain & Associates	\$3,000	100%
25	C4	EPP-C4-PO-085	1-Dec-14	31-Dec-15	Rapid Environmental Assessment	Halcrow Pakistan	\$55,080	100%
26	C4	EPP-C4-PO-091	9-Dec-14	9-Feb-15	Translation of Live Line Training Manuals	Nazar Hassan Kazmi	\$2,911	100%
27	C4	EPP-C4-PO-092	12-Dec-14	12-Feb-15	Supply and Delivery of Live Line Additional Tools	MISTA NA LLC	\$85,787	100%
28	C4	EPP-C4-PO-094	16-Dec-14	8-May-15	Supply & Delivery of Hardware Conductors and Connectors for 250MVA autotransformers	Power Trading Company	\$549,674	100%
29	C4	EPP-C4-PO-087	17-Dec-14	15-Jun-15	Bus Disconnecter for 250MVA autotransformer	Sieyuan Electric Company	\$322,200	100%
30	C4	EPP-C4-PO-093	22-Dec-14	24-Mar-15	Fire Protection System	Xuming Fire-Fighting Equipment	\$206,000	100%
31	C2	EPP-C2-SC-011 (EPP-C2-DO-001)	30-Dec-14	31-Aug-15	LNG Business Management Internsive Training Program	IHRDC	\$338,029	100%
32	C4	EPP-C4-PO-096	9-Jan-15	9-Aug-15	Duty Free Custom Clearance and Transportation of Tools & Equipment for T&G, PPE and Live Line Tools & Equipment.	United Professional Movers	\$5,495	100%
33	C4	EPP-C4-PO-098	12-Jan-15	27-Jan-15	Power Transformer Oil	Vega Lubrications (Pvt) Ltd.	\$9,301	100%
34	C4	EPP-C4-PO-095	12-Jan-15	5-Dec-15	Oil Purification Plant	Transworld Associations	\$292,845	100%
35	Admin	EPP-Admin-PO-097	22-Jan-15	1-Mar-15	Supply and delivery of Stationery for AEAI Office	Minhar Stationary Centre	\$5,515	100%

S.No.	Component	Purchase Order #/Subcontract	PO Approval/ Start Date	Delivery Date/End Date	Description of Goods/Services	Supplier / Vendor Name	Purchase order Value (USD)	Payments Made
36	C1	EPP-C1-PO-099	22-Jan-15	2-Feb-15	Short term Legal Services for Power Sector	Jaffar Sibtain & Associates	\$3,500	100%
37	Admin	EPP-Admin-PO-101	28-Jan-15	5-Feb-15	Supply and delivery of Stationery for AEAI Office	Minhas Stationery Centre	\$5,515	100%
38	Admin	EPP-Admin-PO-100	3-Feb-15	17-Feb-15	Supply & Delivery of Toners for Office	Powertech Solutions Company	\$19,662	100%
39	C4	EPP-C4-PO-103	3-Feb-15	18-May-15	Live Line Training for MEPCO & SEPCO	TSG - NTDC	\$42,636	100%
40	C2	EPP-C2-PO-104	4-Feb-15	4-Mar-15	Full Mission Bridge Simulation Study	Siport XXI	\$102,699	100%
41	C4	EPP-C4-PO-105	9-Feb-15	9-Apr-15	Supply and Delivery of Hardware for NTDC IT Department	EGS Private Limited	\$119,095	100%
42	C4	EPP-C4-PO-106	10-Feb-15	24-Jun-15	Supply, Delivery and Training of Software for NTDC Design Department	Engineering Systems	\$447,077	100%
43	C4	EPP-C4-PO-102	11-Feb-15	31-Aug-15	Supply, delivery, installation and commissioning of 2 nos. 31.5/40MVA Power Transformers and Allied Equipment on Turnkey basis.	Pak Elektron Limited	\$1,351,460	100%
44	Admin	EPP-Admin-PO-107	25-Feb-15	15-Oct-15	Long Term Hotel Accommodations at Lahore	Imperial Hotel Management Services (Pvt.) Ltd.	\$29,334	100%
45	C4	EPP-C4-PO-084	5-Mar-15	5-Jul-15	Supply of 4 Sets of 220kV& 27 Sets of 132 kV Circuit Breakers	ALSTOM	\$686,100	100%

S.No.	Component	Purchase Order #/Subcontract	PO Approval/ Start Date	Delivery Date/End Date	Description of Goods/Services	Supplier / Vendor Name	Purchase order Value (USD)	Payments Made
46	C4	EPP-Admin-PO-109	11-Mar-15	15-Oct-15	Duty Free Custom Clearance and Transportation of 31 Nos. Circuit Breakers and 02 Nos. Nitrogen Injection Explosion Prevention and Fire Protection System from Karachi Seaport to NTDC warehouse Gatti and PESCO Warehouse	Security Packers	\$10,710	100%
47	Admin	EPP-Admin-PO-108	11-Mar-15	15-Nov-15	Long Term Hotel Accommodations at Karachi	Karachi Marriott Hotel	\$78,326	100%
48	C4	EPP-C4-PO-111	16-Mar-15	16-Apr-15	Short term Insurance for 40 Live Linemen	Pak Qatar Family Takaful Limited	\$344	100%
49	C4	EPP-C4-PO-110	16-Mar-15	31-Dec-15	Repair of Damaged Auto-Transformers	Heavy Electrical Complex (HEC) Pvt. Ltd.	\$534,548	100%
50	C4	EPP-Admin-PO-112	20-Mar-15	31-Aug-15	Long Term Hotel Accommodations at Karachi	Karachi Marriott Hotel	\$12,524	100%
51	C4	EPP-C4-PO-113	26-Mar-15	31-Oct-15	Inland Transit Insurance of 02 PTFs, 31 CBs and 2 Fire Protection System	IGI Insurance	\$5,968	100%
52	Admin	EPP-Admin-PO-115	26-Mar-15	30-Oct-15	Services of Internet Bandwidth 4 Mbps and 2 Mbps CIR Wireless Connection for Peshawar Office and PESCO Control Room.	COMSATS Internet Services	\$7,053	100%
53	Admin	EPP-Admin-PO-114	26-Mar-15	30-Nov-15	Supply of Internet Bandwidth Connect 1000-12MB and 600-6MB for AEAI Islamabad office, two Guest Houses and Energy Wing Islamabad	NAYATEL (Pvt.) Ltd.	\$17,877	100%
54	C2	EPP-C2-SC-012	30-Mar-15	31-Aug-15	Legal Services for Electricity Sector	Saima Akbar Khattak	\$63,360	100%

S.No.	Component	Purchase Order #/Subcontract	PO Approval/ Start Date	Delivery Date/End Date	Description of Goods/Services	Supplier / Vendor Name	Purchase order Value (USD)	Payments Made
55	Admin	EPP-Admin-PO-116	8-Apr-15	15-Apr-15	3 HP Envy Laptop	SAFA	4185	100%
56	Admin	EPP-Admin-PO-117	8-Apr-15	15-Apr-15	HP Envy Q006TX Laptop for Amir Hadi	Kokusai Computers	\$1,721	100%
57	C4	EPP-C4-PO-073	22-Apr-15	15-Nov-15	Supply, Delivery, Installation and Training of turnkey solution for a Real Time Digital Simulator for NTDC Planning Department.	OPAL-RT Technologies	\$1,708,200	100%
58	C4	EPP-C4-PO-118	28-Apr-15	13-Jun-15	Supply & delivery of Grounding Sets & PPEs	Trading 360	\$64,996	100%
59	C4	EPP-C4-PO-119	28-Apr-15	15-Jan-15	Supply & Delivery of 04 Nos. Crane Mounted Trucks	Meraj Limited	\$438,820	100%
60	Admin	EPP-Admin-PO-120	1-May-15	30-Nov-15	Group Health Insurance for EPP Staff along with their dependents for the period of May 01, 2015 to October 15, 2015	Jubilee General Insurance,	\$73,494	100%
61	C4	EPP-C4-PO-122	12-May-15	31-Aug-15	Duty Free Custom Clearance and Inland Transportation of 2NOS. 250MVA Autotransformers	Security Packers	\$82,970	100%
62	C4	EPP-C4-PO-123	13-May-15	31-Dec-15	Installation of twenty (20) Circuit Breakers at PESCO designated Grid Stations.	Shine Power Technologies	\$88,000	100%
63	C2	EPP-C1-SC-013	15-May-15	15-Oct-15	Legal Expert for Power Sector	Cornelius, Lane & Mofti	\$66,344	100%
64	Admin	EPP-Admin-PO-124	15-May-15	30-Nov-15	Internet Connectivity for Video Conferencing at Islamabad, Lahore & Peshawar	M/s CommTel	\$8,500	100%
65	C4	EPP-C4-PO-121	18-May-15	2-Oct-15	Live Line Training for QESCO and LESCO	Technical Services Group (TSG) - NTDC	\$41,930	100%

S.No.	Component	Purchase Order #/Subcontract	PO Approval/ Start Date	Delivery Date/End Date	Description of Goods/Services	Supplier / Vendor Name	Purchase order Value (USD)	Payments Made
66	C4	Work Order	19-May-15	15-Jun-15	Travel Insurance for 14 Live Line Men	East West Insurance.	\$432	100%
67	C4	EPP-C4-PO-125	1-Jun-15	30-Nov-15	Duty Free Custom Clearance and Inland Transportation with Loading & Unloading of two (02) Oil Purification Plants, Hardware Disconnectors, and Conductors, Current Transformer and Surge Arrestors with complete spare parts and accessories from Karachi to Islamabad.	Ocean Air International	\$52,680	100%
68	C4	EPP-C4-PO-126	2-Jun-15	15-Aug-15	Inland Transit Insurance for Current transformers, Bus Disconnectors , surge Arrestors, with accessories , hardware 220Kv connectors , 132kV connectors, switch yard and Two nos Oil Purification Plant	IGI Insurance Limited	\$1,603	100%
69	C4	EPP-C4-PO-127	18-Jun-15	31-Oct-15	Supply and Delivery of Testing Equipment to NTDC for Maintenance of Grid Stations	Ayk (Pvt) Ltd.	\$2,059,074	100%
70	C4	EPP-C4-PO-128	2-Jul-15	17-Sep-15	Supply & Delivery of Additional Live Line Tools for DISCO's	KOBBECO USA LLC	\$38,928	100%
71	C4	EPP-C4-PO-129	10-Jul-15	10-Aug-15	Custom Clearance of 04 Nos. Hydraulic Cranes	United Professional Movers International	\$19,580	100%
72	C4	EPP-C4-PO-130	14-Jul-15	15-Sep-15	Custom Clearance & transportation of RTDS	United Professional Movers International	\$18,072	100%
73	C3	EPP-C4-PO-131	22-Jul-15	31-Dec-15	Due Diligence of K.E & G.E	Ernst & Ford Rhodes	\$35,000	100%

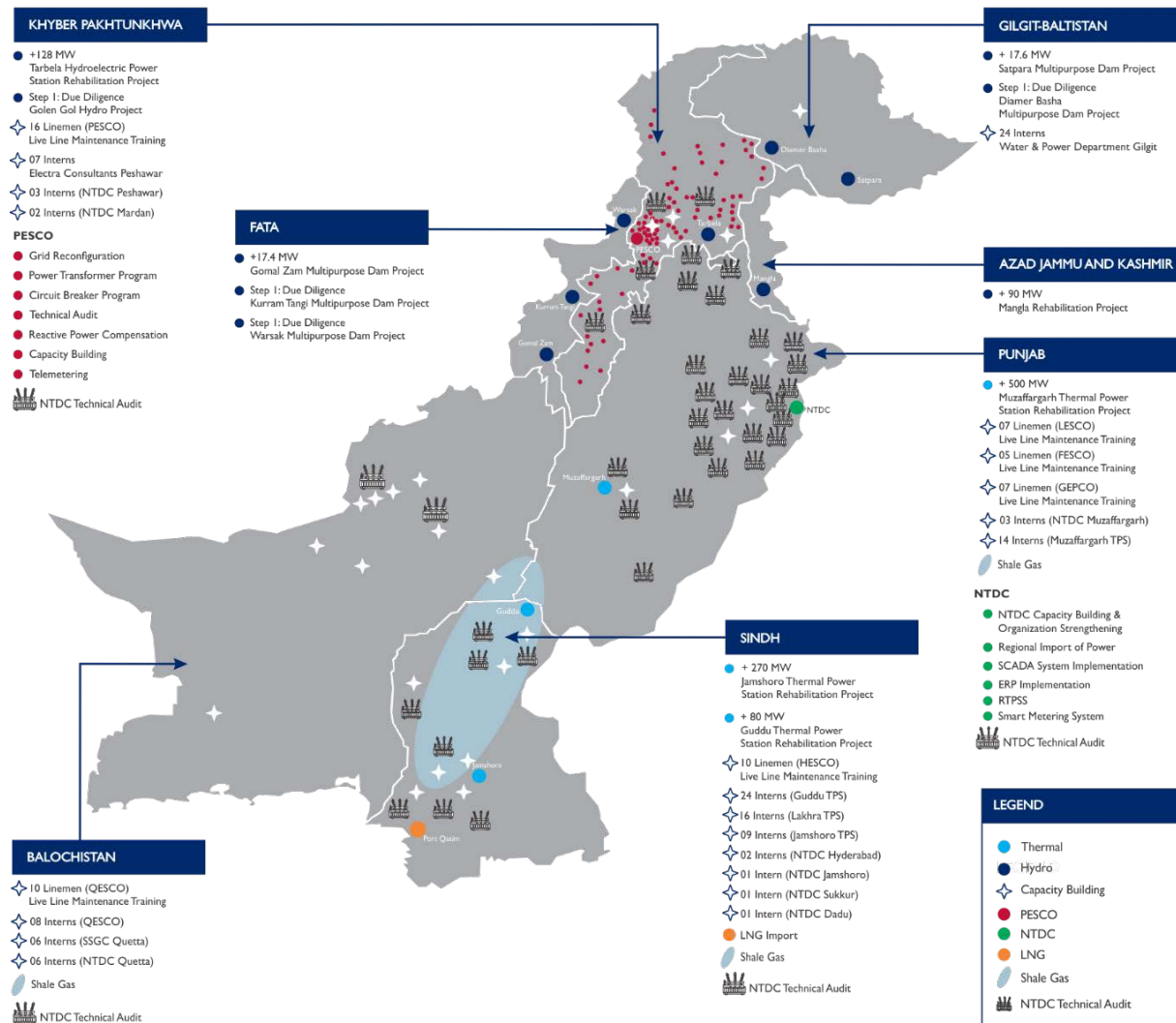


S.No.	Component	Purchase Order #/Subcontract	PO Approval/ Start Date	Delivery Date/End Date	Description of Goods/Services	Supplier / Vendor Name	Purchase order Value (USD)	Payments Made
74	C4	EPP-C4-PO-132	27-Jul-15	5-Oct-15	Supply Delievery & Comissioning of 3 Nos. PTF	Pak Elektron Limited	\$2,133,811	100%
75	C4	EPP-C4-PO-133	31-Jul-15	31-Jul-15	Supply & Delievery of 3 Nos. Current Transformers to PESCO	Pak Elektron Limited	\$1,000	100%
76	C4	EPP-C4-PO-134	4-Aug-15	31-Oct-15	Duty Free Custom Clearance, Transportation with loading /unloading and delivery of Eight (8) shipments	Security Packers	\$32,402	100%
77	C4	EPP-C4-PO-135	12-Aug-15	12-Sep-15	Delivery and Installation of Air Conditioners	Shaquri & Sons	\$4,200	100%
78	C4	EPP-C4-PO-137	19-Aug-15	31-Oct-15	Duty Free Customs Clearance of Trucks	Ocean Air International	\$950	100%
79	C4	EPP-C4-PO-136	19-Aug-15	31-Oct-15	Inland Transit Insurance of 08 By Air Shipments from Islamabad to Lahore.	EFU General Insurance	\$2,982	100%
80	C4	EPP-C4-PO-138	26-Aug-15	31-Oct-15	Supply and Delievery of Furniture	Workman Funiture	\$5,485	100%
81	Admin	EPP-Admin-PO-139	14-Sep-15	16-Sep-15	Catering Services for the Event	Khiva Resturant	\$1,978	100%
82	Admin	EPP-C4-PO-142	14-Sep-15	14-Nov-15	Repair of Mobile phones and laptops	PowerTech Solutions	\$1,450	100%
83	C4	EPP-C4-PO-140	17-Sep-15	2-Oct-15	Supply and Delivery of Hardware for NTDC Planning RTPSS	Powertech Solutions Company	\$16,688	100%
84	Admin	EPP-C4-PO-142	28-Oct-15	28-Nov-15	Photocopy and scanning	New Islamabad Photostate	\$6,790	100%
85	C4	EPP-C4-PO-146	10-Nov-15	25-Nov-15	Duty Free Customs clearance of conductors and live line tools	Security Packers	\$6,800	100%

S.No.	Component	Purchase Order #/Subcontract	PO Approval/ Start Date	Delivery Date/End Date	Description of Goods/Services	Supplier / Vendor Name	Purchase order Value (USD)	Payments Made
86	Admin	EPP-Admin-PO-147	10-Nov-15	25-Nov-15	Arrangements of Venue, Sitting arrangements and Lunch for Executive Event Management in Muzzaffargarh	Hanif Rajput Caterer, Multan Pakistan, Tel:+92-61-4577124-26	\$4,373	100%
87	Admin	EPP-Admin-PO-148	12-Nov-15	25-Nov-15	Arrangements for Executive Lunch for 100 People in Design Center and RTPSS WAPDA House-Lahore.	M/s Hanif Rajput Caterers, Lahore-Pakistan. Phone:+92-300-4991660	\$1,450	100%
88	Admin	EPP-Admin-PO-149	1-Dec-15	30-Jan-16	Armed Static Security Services Guards (2 Day shift & 2 Night Shift)	M/S Monarch Security Services (Pvt) Ltd.	\$1,311	100%
89	Admin	EPP-Admin-PO-150	1-Dec-15	30-Jan-16	Car Rental Services (For Out Station) including Driver and Close Protection Officer	M/S Capital Car Rental, Rehman Plaza, Abassi Market, F-8/4 Islamabad. Phone # 051-2856145	\$20,462	100%
90	C4	EPP-C4-PO-151	5-Jan-16	30-Jan-16	Door of Door by Sea Shipment of Office Files from AEAI Islamabad to AEAI Cambridge Office including transit Insurance	M/s Ocean Air International, Plot # 76, Street # 6, Sector-I-10/3, Industrial Area, Islamabad. Phone No: +92 51 4447551-4	\$7,715	100%
91	C4	EPP-C4-PO-152	13-Jan-16	30-Jan-16	Inland Transit Insurance of Nos. 4 Crane Mounted Trucks From Meraj Limited Karachi to PESCO Grid Station. Performance Period January 13,to January 22.2016	M/S IGI Insurance Limited	\$1,300	100%
							<b>\$18,382,845</b>	



# ANNEX V: WHERE WE WORK



## Gilgit-Baltistan

- 17.6 Satpara Multipurpose Dam Project
- Step I: Due Diligence for Diemer 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
- 07 Linemen (FESCO) Live-Line Maintenance Training
- 05 Linemen (GEPCO) Live-Line Maintenance Training
- 07 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 Power System Simulator (RTPSS)
  - 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 I: Due Diligence for Kurram Tangi Multipurpose Dam Project
- Step I: 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
- 80 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

