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ENERGY POLICY PROJECT - II MONTHLY PROGRESS REPORT

APRIL 2012



April 2012

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USAID/PAKISTAN: ENERGY POLICY PROJECT (EPP)

Monthly Report: April 2012

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ACRONYMS

ADB	Asian Development Bank
AEAI	Advanced Engineering Associates International
AEDB	Alternate Energy Development Board
BOD	Board of Directors
CASA 1000	Central Asia to South Asia 1,000-MW Power Import Project
CCGT	Combined Cycle Gas Turbine
CDM	Clean Development Mechanism
CPGCL	Central Power Generation Company, Ltd
CPPA	Central Power Purchasing Agency
DISCO	Distribution Company
ECC	Economic Coordination Committee
EPP	Energy Policy Project
FARA	Fixed Amount Reimbursable Agreement
FESCO	Faisalabad Electric Supply Company
FODP	Friends of Democratic Pakistan
GE	General Electric
GENCO	Generation Company
GOP	Government of Pakistan
GTPS	Guddu Thermal Power Station
GZDP	Gomal Zam Dam Project
HESCO	Hyderabad Electricity Supply Company
HVAC	High Voltage Alternating Current transmission lines and substations
IESCO	Islamabad Electricity Supply Company
IPP	Independent Power Producer
JTPS	Jamshoro Thermal Power Station
KESC	Karachi Electricity Supply Company
LESCO	Lahore Electricity Supply Company
LNG	Liquefied Natural
MOF	Ministry of Finance
MPNR	Ministry of Petroleum and Natural Resources
MTPS	Muzaffargarh Thermal Power Station
MWP	Ministry of Water and Power
MW	Megawatt, unit of electrical power, 1 million watts, 1 thousand kilowatts
NEPRA	National Electric Power Regulatory Authority
NPCC	National Power Control Center
NTDC	National Transmission and Despatch Company
OGDCL	Oil and Gas Development Company, Ltd
PC	Planning Commission
PDIP	Power Distribution and Improvement Program
PEPCO	Pakistan Electric Power Company
PPIB	Private Power and Infrastructure Board
PSO	Pakistan State Oil Company
PSRP	Power Sector Reform Program
PSS/E	Power System Simulation for Engineers
SOP	Standard Operating Procedure
T&D	Transmission and Distribution
TUTAP	Turkmenistan, Uzbekistan, Tajikistan, Afghanistan, Pakistan Power Import Project
USAID	United States Agency for International Development
WAPDA	Water and Power Development Authority

PROGRAM OVERVIEW

USAID’s Energy Policy Project (EPP) supports the jointly agreed upon interests of USAID and the GOP in power generation, transmission, and related policy reform activities. Current key activities include providing monitoring and implementation support to the following six signature energy projects, announced by the Secretary of State, Hillary Clinton:

- Four repair and maintenance projects (3 GENCOs and Tarbela. Total Funding \$68 million)
- Two multipurpose dam completion projects (Gomal Zam and Satpara, Total funding \$66 million)

These projects, when completed, will add more than 863 MW to Pakistan’s generation capacity. As of April 2012, a total of 429 MW have been added to Pakistan’s grid.

Project	Planned MW Gains per FARA	Expected Gains	MW added (as of 30 April 2012)
Muzaffargarh	165	475	280
Jamshoro	95	150	25
Guddu	55	75	-
Tarbela	80	128	118
Gomal Zam	17.4	17.4	-
Satpara	17.66	17.66	6
Total	430.06	863.06	429

EPP is providing technical support to the Ministry of Water and Power (MWP) for identifying and selecting new generation and transmission projects. Examples include import of electricity from Central Asian Republics to Pakistan through Afghanistan, providing analytical support for projects such as Step I Due Diligence for Diامر Basha, Kurram Tangi, Warsak and Mangla Dam Projects and issues related to these candidate projects.

EPP is also supporting generation & transmission related studies and the policy reform activities assigned by USAID, development of GENCO and NTDC business plans, and developing policies/procedures for the National Power Control Center and advisory services at MWP and the Planning Commission (Energy Wing), Ministry of Finance, etc.

Staffing: Contractor’s level of effort is comprised of 85% Pakistani and 15% international staff.

Location: All Provinces and Federally Administered Tribal Areas

Total USAID Funding: \$ 134.121 million - FARAS
\$ 14.893 million - EPP Phase II



PROJECT ACTIVITIES



COMPONENT I: PROJECT MONITORING & IMPLEMENTATION

EPP is monitoring the implementation of six Fixed Amount Reimbursable Agreement (FARA) projects; three existing thermal GENCO power plants (Muzaffargarh, Guddu and Jamshoro), one existing hydropower (Tarbela) and two new multipurpose dams (Gomal Zam and Satpara). EPP is also coordinating with the implementing partners to achieve timely progress and the processing of invoices for reimbursement to the GOP from USAID.

HYDROPOWER PLANTS

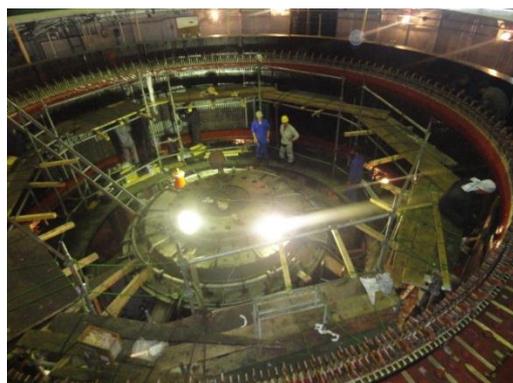
With a total funding of \$82.5 million a total of up to 163MW are estimated to be added through the rehabilitation of Tarbela hydropower plant and completion of two multipurpose dams, Satpara and Gomal Zam.

For Tarbela the baseline condition at the time of signing of FARA was 80MW; however due to further deration in plants operational capacity the estimated gains have increased to 128MW. For Satpara and Gomal Zam the baseline at the time of signing of agreement was zero.

Tarbela Units under Rehabilitation	Baseline at the time of FARA signing		Baseline at shut down for replacement	
	Capacity (MW)	MW gains	Capacity (MW)	MW gains
Unit 1	185	10	185	10
Unit 3	185	10	185	10
Unit 4	135	60	87	108
	505	80	457	128

Rehabilitation of Tarbela Hydropower Plant under FARA:

A field visit was conducted by EPP expert on April 5, 2012 to monitor the progress on unit # 3 winding and installation of new seals for relief and bypass valves. The replacement of winding is expected to complete in May 2012, which will add another 10 MW capacity gain. A total of 118MW have already been achieved with installation of new modernized winding at Unit 1 & 4. Spare Seals & Guides for Relief and Bypass Valves on Turbine Side at Units 1-10 installed during the reporting month. Procurement of remaining equipment pumps, digital governors and SCADA system is under process.



Ongoing Work at Unit 3

EPP verified WAPDA claims of \$ 50,000 for installation of Spare Seals & Guides for Relief and Bypass Valves on Turbine Side at Units 1-10 and \$ 250,000 for the completion of Training and forwarded the claims to USAID Energy Office for approval and further processing.

To ensure environmental compliance and implementation of EMMP, EPP contracted an engineering firm which carried out a site visit on April 5, 2012. During the audit observations were made and issues were shared with the

plant management to take necessary corrective actions. A follow up visit is scheduled for next month. An environmental audit report has been submitted to the USAID/ENR.

Amendment-I of the Tarbela FARA, revised the completion date to December 31, 2012. Out of the \$16.5 million assistance amount committed for Tarbela, total disbursement as of April 2012 is \$10,579,917.

The schedule of status for the Tarbela FARA is tabulated below:

LINE ITEM #	UNIT #	WORK ITEM DESCRIPTION	AMOUNT (USD million)	PRESENT STATUS
1	4	Replacement of Damaged Generator Stator Windings with Class F Insulation Windings, Unit#4	3.7	Work completed and 100% amount reimbursed
2	3	Replacement of Damaged Generator Stator Windings with Class F Insulation Windings, Unit#3	3.7	Installation of winding is in process and expected to complete in May 2012. 90% amount has been reimbursed
3	1	Replacement of Damaged Generator Stator Windings with Class F Insulation Windings, Unit#1	3.7	Work completed and 100% amount reimbursed
4	1-14	Upgrading of the SCADA System, Units 1-14	1.0	New SCADA system is under manufacturing with ABB and shipment is expected in October
5	1-10	Spare Seals & Guides for Relief and Bypass Valves on Turbine Side, Units 1-10	0.5	Installation completed on all units. 90% amount reimbursed and 10% claim is in process with USAID
6	1-10	Replacement of Electromechanical Governors by Digital Ones, Unit 1-10	3.0	Governors are scheduled to be shipped from GE USA in May 2012
7	1-10	Replacement of Worn out Station Drainage and Dewatering Pumps, Units 1-10	0.4	New Station Drainage Pumps received at Tarbela and replacements of old pumps have been started Unwatering pumps are scheduled for shipment in May 2012.
8		Training	0.5	20 WAPDA engineers from Tarbela power station have completed training on hydropower maintenance and operations in Switzerland. 50% Amount reimbursed and remaining 50% Claim is in process with USAID
Total Allocated Amount			16.5	

Gomal Zam Multipurpose Dam under Activity Agreement:

The installation of transmission line towers is in progress; towers have been installed over a distance of 54 km (95 % completion achieved) starting from the Tank Grid station to the powerhouse. Main Dam and Spillway concrete and related works along with mechanical testing of dam fixtures are 100 % complete. Hydropower and Switchyard component is 98 % complete.

The reservoir filling started with the closure of the diversion tunnel, and the water level has gone up to 90 meters in the reservoir. The final testing and commissioning is dependent on reservoir filling up to normal operating level of 743 meters which is expected in Aug-Sep 2012.

Amendment No. 1 to the Activity Agreement, revised the completion date to September 30, 2012. From the \$40 million assistance amount committed for Gomal Zam, the total disbursement as of April 2012 is \$36,589,000.

The schedule of status for the Gomal Zam Activity Agreement is tabulated below:

LINE ITEM NO.	WORK ITEM DESCRIPTION	% COMPLETION & DATES AS PER AGREEMENT	AMOUNT (USD- Million)	PRESENT STATUS
1.	Main Dam and Spillways Concrete and Related Works	88%	19.171	Paid
2.	Hydropower & Switchgear Component	90%	0.757	Paid
3	Main Dam and Spillways Concrete and Related Works	91%	5.125	Paid
4.	Main Dam and Spillways Concrete and Related Works	100%	5.125	Paid
5.	Hydropower & Switchgear Component	50% of remaining 10% works by December 09, 2011	0.920	Paid
5a.	Hydropower & Switchgear Component	100% by June 30, 2012	0.920	98% completed
6.	132kV Transmission Line and related works	50%	1.0	Paid
7.	132kV Transmission Line and related works	50% of remaining 10% works by December 09, 2011	0.5	Paid
7a.	132kV Transmission Line and related works	100% by April 30, 2012	0.5	95% Completed. Expected to get completed in June 2012
8a.	Completion of Mechanical testing of Dam fixture	100%	2.0	Paid
8b.	Completion of Project - Filling of Reservoir, Testing, & Placement in Commercial Operation	50% by December 09, 2011	1.991	Paid
8c.	Completion of Project - Filling of Reservoir, Testing, & Placement in Commercial Operation	100% by August 30, 2012	1.991	On schedule and depending upon water availability
Total Allocated Amount			40	

Satpara Multipurpose Dam under Activity Agreement:

The dam and power house 1 & 2 are 100 % complete and irrigation system is 99% complete. The construction activities were suspended at site due to law and order situation in Skardu, and also due to shortage of cement and other construction material due to closure of Karakoram Highway. WAPDA has requested an extension for completion of irrigation system from April 30, 2012 to June 30, 2012, which is under review.

The overall progress of civil works at power house 3 & 4 is 60 % and Electro-Mechanical works is 59 %. The expected completion date of Unit 3 & 4 is April 30, 2013 as per the Agreement completion

date. From the \$ 26 million assistance amount committed for Satpara, the total disbursement as of April 2012 is \$21,485,700.

The schedule of status for the Satpara Activity Agreement is tabulated below:

LINE ITEM NO.	WORK ITEM DESCRIPTION	% COMPLETION & DATES AS PER AGREEMENT	AMOUNT (USD - Million)	PRESENT STATUS
1.	Civil Works for Dam and Power House 1 & 2	94%	4.500	Paid
2.	Civil Works for Dam and Power House 1 & 2	100%	1.877	Paid
3.	Civil, Electrical and Mechanical Work for Power Houses 3 & 4	50%	5.846	Paid
4.	Civil, Electrical and Mechanical Work for Power Houses 3 & 4	100% by April 30, 2013	3.681	60% works completed and is on schedule
5.	Irrigation System	78 %	2.530	Paid
6.	Irrigation System	89 %	2.282	Paid
7.	Irrigation System	90 % by December 09, 2011	2.0538	Paid
7a.	Irrigation System	100% by Apr 30, 2012	0.2282	99% work completed and expected to get completed in June 2012. Delayed due to law and order situation.
8.	Consultancy Services for Satpara Dam	81%	0.0853	Paid
9.	Consultancy Services for Satpara Dam	90%	0.400	Paid
10.	Consultancy Services for Satpara Dam	100% by April 30, 2013	0.390	Ongoing till end of project
11.	Completion of Project, with Testing & Placement in Commercial Operation (less PH 3 & 4)	90% by December 09, 2011	1.9116	Paid
11a.	Completion of Project, with Testing & Placement in Commercial Operation (less PH 3 & 4)	100% by Apr 30, 2012	0.2124	Expected completed in June 2012. Delayed due to law and order situation.
Total Allocated Amount			26.00	

THERMAL POWER PLANTS

With a total funding of \$54.312 million (revised from \$52 million per Activity Agreement), a total of up to 700MW are estimated to be restored through the rehabilitation of three thermal power plants. The baseline condition at the time of signing of FARA was 315 MW; however due to further deration in plants operational capacity the estimated gains have increased to 700 MW.

Thermal Plants under Rehabilitation	Baseline at the time of FARA signing		Present Operational Baseline	
	Capacity (MW)	MW gains	Capacity (MW)	MW gains
Muzaffargarh TPS	835	165	690	475
Jamshoro TPS	560	95	500	150
Guddu TPS	225	55	200	75
	1620	315	1390	700

Rehabilitation of Muzaffargarh TPS under Activity Agreement:

280MW capacity has been restored with the rehabilitation/replacement works out of the total estimated gains of 475 MW. After rehabilitation of boiler super heater tubes at Unit 1, 2 & 3, 230MW capacity has been restored and with replacement of air pre-heater elements (Intermediate and cold end) at Unit 4 another 50MW were added.

For the remaining equipment delays were anticipated in the procurement process due to the GENCO weak financial standing to pay on time through a letter of credit. Therefore, EPP experts worked with USAID in redefining the reimbursement process and revising the FARA to facilitate the GENCO in making timely payments. A new Activity Agreement and implementation letter was signed in April allowing GENCO to have necessary funding available for making timely payments to the vendors. The completion date per the revised activity agreement is June 30, 2013.

During the reporting month, the EPP team visited the plant to monitor progress and to expedite the procurement cases.

To ensure environmental compliance and implementation of EMMP, EPP contracted an engineering firm which carried out a site visit by mid-April. During the audit observations were made and issues were shared with the plant management to take necessary corrective actions. A follow up visit is scheduled for next month. An environmental audit report has been submitted to the USAID/ENR.

From \$15,778,195 assistance amount committed for Muzaffargarh, the total disbursement as of April, 2012, is \$4,872,500.

The schedule of status for the MTPS Activity Agreement is tabulated below:

LINE ITEM NO.	UNIT NO.	WORK ITEM DESCRIPTION	AMOUNT	PRESENT STATUS
1	1,2&3	Rehabilitation of Boiler super heater tubes to overcome failure of tubes	\$4,080,000	Material received and installed at site. 100% Claim reimbursed from USAID
2	1 - 4	Special Cooling Water Treatment.	\$187,440	Re-Tendered second time and opened in March 2012. Bid Evaluation is in process
3	1 - 6	Use of Fuel Oil Additive as done on Unit-4 (450 Tons).	\$921,225	Re-Tendered and opened in March 2012. Bid Evaluation is in process
4	1,2&3	Replacement of Cold layer element for RAH (2 sets)	\$170,000	Material received and installed at site. 100% Claim reimbursed from USAID
5	1,2&3	Modification of Excitation system (3 set)	\$191,700	Tender opened and Bid Evaluation is in process
6	1,2&3	Electric motors for C.T. Fan (02 No) and for GRC fan. (01 No).	\$184,245	PO has been issued on 23.09. 2011 for electric motors while LC opened on 02.02 2012 for GRC fan. Material is expected to reach at site in August 2012.
7	3	D.C. Storage batteries (01 Set).	\$60,000	Material received and installed at site. 100% Claim reimbursed from USAID
8	1,2&3	220Kv circuit breaker SF6 type (06 No).	\$337,605	PO issued and LC is in process
9	4	Re-blading of LP. Rotor (LP Turbine Rotor blades of row (6&7), pins & locking device).	\$787,035	PO issued and LC opened on 02.02.2012
10	4	Air Pre-Heater Elements (Intermediate and Cold) 02 sets	\$255,000	Material received and installed at site.
11	4	Up-gradation of AVR System (01 set).	\$249,210	Tender opened and Bid evaluation is on going
12	4	Changing of UPS 1&2. (01 set).	\$62,835	Tender opened and Bid Evaluation is ongoing
13	4	DEH (01 set).	\$319,500	Tender opened in March 2012
14	4	Up-gradation of FSSS System (01 set).	\$138,450	Tender opened and bid submission is in process
15	4	Up-gradation of TSI system BNC 3300 or equivalent (Turbine Supervisory Instrument) (01 set).	\$266,250	Tender opened in March 2012 and bid submission is in process
16	1-6	Training and software/hardware cost for CMMS and off-line efficiency monitoring system. All Units	\$1,000,000	Technical offer opened in Feb 2012 and is under technical evaluation
17	5&6	I.D. Fan Rotor/Impeller along with Housing and Dampers (04 Set).	\$625,000	Consignment received on 26.02.2011 and installed partially at unit 5. 90% claim reimbursed by USAID
18	5&6	Air Pre heater Elements Hot end, intermediate & cold end layers along with seals for both units (04 Set).	\$639,000	Tender opened and Bid Evaluation is on going
19	5&6	Procurement of G.R.C. Fan Impeller/Rotor (01 Set).	\$33,548	Po issued and LC opened on 27.01.2012

LINE ITEM NO.	UNIT NO.	WORK ITEM DESCRIPTION	AMOUNT	PRESENT STATUS
20	5&6	Procurement of Cooling Tower Fan Gear Box & its parts. (06 No. gear box).	\$236,963	PO issued and LC opened on 27.01.2012
21	5&6	Economizer Tubes for both Units (02 Sets)	\$2,130,000	Po issued and LC opened on 05.04.2012
22	5&6	IP Turbine Rotor (01 No).	\$641,130	Tenders opened and bids evaluation is in process
23	5&6	Replacement of Damaged Exhaust flue gas ducts of material Russian Grade Steel sheets (50 M.T), Plate Type Heat Exchanger for Inner Water Cooling System of Generator and Motor for Starting Oil Pump (Vertical) Units 5-6	\$287,550	Tender opened and is under evaluation
24	5&6	Conversion of Boiler Ignition System from Natural Gas to HSD/Furnace Oil	\$277,965	Tenders opened and evaluation is in process
25	5&6	Repair of winding and stator of Generators and testing	\$319,500	Tender will open in June 2012
26	5&6	Hydraulic coupling of Boiler Feed Water Pumps (01 No).	\$63,900	Tender opened and file sent for re- evaluation on 1.2.2012
27	5&6	Modification of Excitation System	\$166,140	Tender opened and is under evaluation
28	5&6	Procurement of 0.4KV Motors for Cooling Towers Fan and APH 02	\$10,650	PO issued and LC opened in April 2012
29	5&6	Procurement of 6.6KV Motor for C.W. Pumps, CP, ID Fan, FD Fan & BF Pumps (05 No).	\$162,945	Po issued and LC opened in April 2012
30	5&6	Procurement of 6.6/0.4KV Breaker (5 No. 6KV breaker, 18Nos. 0.4Kv Breakers).	\$295,005	PO issued and request to establish LC has been made.
31	5&6	Protection Relay for Generators.	\$29,820	Tenders opened and LOI issued on 24.02.2012
32	5&6	MK Breakers, Seal Oil Coolers, PMG	\$169,335	Consignment received at site.
33	5&6	Supply, Installation, Commissioning & Testing of complete distributed control system (DCS) including field equipment like sensors, transmitter & actuators etc. for turbine governing system DEH-III and Boiler Turbine Auto regulation system YEWPACK-II	\$213,000	Retendered and bid evaluation is in process
34	5&6	Rehabilitation of Furnace safety Supervisory System (FSSS) including Furnace camera, flame monitoring & ignition system	\$266,250	Demand sent to GM Thermal for administration approval of MD.
Total Allocated Amount (Under PIL)			\$15,778,195	

Rehabilitation of Jamshoro TPS under Activity Agreement:

Two FARA items (Air Pre-heater elements and seals at Unit-I and Autoburner Control System) have been replaced which added a total of 25 MW.

For the remaining equipment delays were anticipated in the procurement process due to the GENCO weak financial standing to pay on time through a letter of credit. Therefore, EPP experts worked with USAID in redefining the reimbursement process and revising the FARA to facilitate the GENCO in making timely payments. A new Activity Agreement and implementation letter was signed in April allowing GENCOs to have necessary funding available for making timely payments to the vendors. The completion date per the revised activity agreement is June 30, 2013.

During the reporting month, the EPP conducted a due diligence visit the plant to monitor progress, verify the received equipment and to expedite the procurement cases.

To ensure environmental compliance and implementation of EMMP, EPP contracted an engineering firm which carried out a site visit by mid-April. During the audit observations were made and issues were shared with the plant management to take necessary corrective actions. A follow up visit is scheduled for next month. An environmental audit report has been submitted to the USAID/ENR. From the \$19,329,150 assistance amount committed for Jamshoro, the total disbursement as of April, 2012, is \$2,545,000.

The schedule of status for the JTPS Activity Agreement is tabulated below:

LINE ITEM NO.	UNIT NO.	WORK ITEM DESCRIPTION	AMOUNT	PRESENT STATUS
1	I	Rehabilitation of Air Pre-heater Side A&B Rotor.	\$1,672,050	Tender was opened on 29.02.2012. Three companies have participated. Their bids are under evaluation process.
2	I	Replacement of Final Super Heater Coils.	\$958,500	Tenders opened and performance bond is awaited
3	I	Complete replacement of Flue Gas Duct & Air Pre-heater Bottom hoppers and F.D Fan duct up to steam coil Air Heater.	\$720,000	The consignment received at JPCL on 16.01.2012. 90% Claim reimbursed. Installation is in process.
4	I	Complete Rehabilitation of Cooling Towers.	\$500,000	Material received at Jamshoro and 90% claim reimbursed. Installation is completed. 10% Claim will be lodged shortly.
5	I	Up gradation / replacement of Auto Burner control system and Data Acquisition System.	\$300,000	Material received and installed at site. 100% Claim reimbursed by USAID.
6	I	Hiring of services for major overhauling.	\$810,000	The tender opened on 20.02.2012. Only one firm M/s IED Ukraine through their local agent M/s Istil Karachi has participated in the tender, their offer is under evaluation.
7	I	Soot Blower Spare Parts.	\$117,150	L/C opened on 28.12.2011. Material received at site but specifications mentioned in PO are different from PIL specifications. Claim for 100% Payment is under consideration.
8	I	Tube Bundles of Steam Converter, unit#1	\$250,000	Material received at site on 21.11.2011 & installed. 90% claim reimbursed while 10% claim is in process with USAID.
9	I	Spares for Oil & HSD Burners & Igniters.	\$213,000	L/C Established on 28.12.2011 & material received at site but specifications mentioned in PO are different from PIL

				specifications. Claim for 100% Payment is under consideration.
10	1	Air Pre-heater Elements & Seal,	\$670,000	Material Installed at site amount reimbursed. 100% Claim reimbursed by USAID.
11	1-4	Use of fuel oil additives to prevent slag formation and cooling water treatment chemicals to prevent scale buildup.	\$958,500	Tender opened on 17.02.2012. Four companies has participated. Their bids are under evaluation process.
12	2-4	Replacement of H.P Heaters along with the valve and controllers including Rehabilitation of Instrument Control & Protection System.	\$3,306,825	L/C Established on 30.09.2011. The material is expected to reach TPS up to July 2012. Claim for 100% Payment submitted and in process with USAID.
13	2-4	Complete Rehabilitation of Cooling Towers.	\$718,875	P.O No. ICB-21/11/JFOB-25/1432-35 placed on 01.02.2012 but L/C is awaited.
14	2-4	Complete Rehabilitation of drain valves.	\$351,450	L.C Established on 28.12.2011. The material is expected to reach TPS up to 30.05.2012. Claim for 100% Payment is under consideration.
15	2-4	Rehabilitation of soot blowing system.	\$702,900	LOI issued and P.O will be issued after receipt of Performance Bond from the bidder with the approval of MD (PEPCO)
16	2-4	Supply, installation and commissioning of complete economizers of three units	\$3,195,000	Tenders have been opened and the case is under evaluation process. Allocation of Foreign exchange is awaited. Claim for 100% Payment is under consideration.
17	2	<p>a. Modification / Rehabilitation of Electro Hydraulic and Mechanical Hydraulic Governing system.</p> <p>b. Replacement of Data Acquisition System (DAS-100), Auto Regulation System (MZ-III) and Temperature Scanners for Generator Winding Temperature, Super Heater/Re- Heater Temperature, Boiler Drum Metal Temperature, F.D, I.D Fan motor Temperature, Boiler Feed Pump Temperatures with latest Distributed Control System (DCS)</p> <p>c. Replacement of existing FSSS along with Furnace Flame Monitoring on one unit. Replacement of Data Acquisition System (DAS-100), Auto Regulation System (MZ-III) and Temperature Scanners for Generator Winding Temperature, Super Heater/Re- Heater Temperature, Boiler Drum Metal Temperature, F.D, I.D Fan motor Temperature, Boiler Feed Pump Temperatures with latest Distributed Control System (DCS)</p> <p>d. Replacement of Turbine Vibration system with Vibro-Control-4000 Schenk or equivalent</p>	\$1,171,500	A combined tender for three units was opened on and PO will now be placed for one unit. LOI will be issued to the successful bidder.
18	2	Procurement of Boiler Feed Pump Motor Complete.	\$117,150	L/C was opened on 28.12.2011 and the equipment is expected to reach TPS up to 30.05.2012. Claim for 100% Payment is under consideration.
19	3	Replacement of Final Super Heater Coils.	\$958,500	Commercial Offer was opened on 16.12.2011. Performance bond is awaited

20	3	Three-Way valve of Oil burner.	\$200,000	Material received at JPCL on 23.11.2011. 90% claim reimbursed and 10% claim is in process with USAID.
21	3	Spares for Overhauling of Turbine.	\$532,500	Consignment reached at Jamshoro but specifications mentioned in PO are different from PIL specifications. Claim for 100% Payment is under consideration.
22	4	I.D Fan Impellers.	\$479,250	Purchase Order issued on 16.03.2012. Establishment of LC is awaited
23	1-4	Off-line Efficiency Monitoring system and training.	\$426,000	Tender re called due to not offering of required software. It will open in May 2012.
Total Allocated Amount (Under PIL)			\$19,329,150	

Rehabilitation of Guddu TPS under Activity Agreement:

After a series of negotiations between GE and Guddu management regarding the upgrade/uprate of Block-I, one of the two General Electric Combined Cycle Plants (CCP), the parties are expected to reach an agreement. GE provided revised performance bank guarantee based on which the Guddu Management issued the Purchase and Service Orders. The final negotiations pertaining to the terms and conditions in the orders are underway. The uprate, upgrade and overhaul will increase the capacity of the plant by about 75 MW (higher than the earlier expected increase of 55 MW), improve its efficiency by about 3.4%, and improve the reliability of the system by upgrading the obsolete gas turbine and steam turbine control systems.

A new Activity Agreement and implementation letter was signed in April allowing GENCO to have necessary funding available for making timely payments to the vendors. The completion date per the revised activity agreement is June 30, 2013 with a total funding of USD 19,242,420.

Exploring Opportunities for MWs Restorations at the GENCOs

During April, EPP visited Muzaffargarh, Jamshoro and Guddu Thermal Power Stations to review and analyze a proposal put forward by the Chief Executive Officer, Genco Holding Company Limited for funding of quick-implementation activities for restoring some of the lost capacity at the GENCOs. The proposal highlighted rehabilitation work at the three GENCO core power plants with an estimated gain of 380 MW at a cost of \$21.4 million with additional benefits like increased reliability, increased efficiency, and reduced cash losses.

EPP evaluated the proposals with for each GENCO and held meetings with the stations managers, discussing the expected gains and equipment required in detail. In coordination with the GENCO station managers. EPP reviewed the estimated costs, schedules, and capacity gains and pointed out some overlaps with the already under implementation Activity Agreements. However, the judgment of the GENCOs proposal is based on good engineering practice and the prudent needs of the plant to prevent future deterioration as much as possible, and this should be a primary consideration in approving the funding.

If approved, the proposed rehabilitation work will require a time frame of 70 – 360 days to be implemented, yielding much needed capacity to alleviate the energy crisis in the country.

COMPONENT 2: POLICY AND REFORM

SUPPORT TO GOVERNANCE AND REFORM TEAM (GRT), MWP

EPP is supporting the Ministry of Water and Power to implement the GOP's Power Sector Reform Program (PSRP) in generation, transmission, fuels, policy and finance. GRT support is jointly performed with the USAID funded Power Distribution Improvement Program (PDIP).

Policy:

Electricity Act of 1910 (Policy Advice):

- **Background:** The law governing Pakistan's electricity sector was last updated in 1910. Major developments and changes in the industry and technology, as well as the constitutional framework on electricity, require for this Act be revised.
- **Challenge:** There are several challenges to crafting a well thought out Act and in passing it. First, the 18th Amendment has changed the ground level realities for electricity in ways that many people do not yet fully comprehend. The division of federal versus provincial powers has still not been clearly demarcated in a manner that most stakeholders can easily understand. This confuses the process. Second, the political landscape has normally defeated previous attempts to revise the Act or even to consider revising it. This is a highly charged issue. Third, the tendency in Pakistan to focus on the short run will have its impact on the direction and our energies need to be spent helping them shape the Act with a vision on where the sector will be in the long run.
- **Product:** EPP is providing advisory services in stakeholder meetings to address relevant issues and provide understanding on how India did it and how other countries have handled these issues.
- **Result:** EPP advice is helping to create an understanding among stakeholder to the long run sector picture, to help ameliorate provincial tensions (our advice is not couched in terms of one Province versus another), to help understand how the role of Federal and Provincial are handled by other countries and how this will be in part also dictated by the structure of the Industry – both as it evolves and as they are shaping it with the Act.

PERIC

- **Background:** The Energy Wing of the Planning Commission has proposed setting up of an Energy Research Institution (PERIC). This institution will cover policy/advisory services to the energy sector, maintain a dataset of the industry and conduct specialized studies.
- **Challenge:** The major challenge would be the setting up of such an organization, especially since no such think-tank exists at the moment. Getting all stakeholder views and incorporating those in the business model would also be a challenge. Finally, the funding for such an organization will also need to be discussed.
- **Product:** EPP met with the Energy Wing of the Planning Commission for a preliminary discussion on how to proceed with PERIC. The discussion involved questions pertaining to financing, and involvement of stakeholders. To guide the stakeholders in the initial development of a business model EPP prepared case studies documenting experiences of similar organization throughout the world.
- **Result:** A concept paper has been sent to the Planning Commission for review and comments. Once this is completed, the paper will be circulated among potential stakeholders and then a

stakeholder meeting will be held in Islamabad to garner support and direction for PERIC. The Planning Commission is also looking for USAID assistance in terms of expertise to help with the initial development of the idea. The Planning Commission will move forward to finalize the concept note preparation and development of a business plan to be sent out to stakeholders. Once completed, the concept paper will be sent to EPP for reviews and comments. The Planning Commission is also looking for USAID assistance in terms of expertise to help with the initial development of the idea.

Energy Efficiency (18th Amendment):

- **Background:** As a result of the 18th Amendment Electricity is now a concurrent subject and Energy Efficiency (EE) is regarded as a matter for the Council of Common Interests (CCI). EE has long been neglected by the GOP and all analyses and reports have recommended that EE can only be effective if based on an Act of Parliament. After a very long time in the making, a draft bill was presented to Parliament and then moved to the Council of Common Interests.
- **Challenge:** While some aspects of EE will fall under the CCI, not all do and the GOP needs to move now on energy efficiency given the state of the economy and the current energy deficit; waiting for the CCI decision would be costly.
- **Product:** EPP was tasked with providing the MWP policy advice on areas where the Federal Government could legitimately move forward in EE, building a base for the passage of the Draft Bill. EPP developed a list of options that will help to set the GOP on a course for EE. After receiving feedback from the provinces, the proposed changes were incorporated and a final draft bill prepared in consultation with MWP.
- **Result:** A final stakeholder meeting was held on April 13th in which the Draft Bill was finalized. There was general agreement among all stakeholders. The Draft Act now goes to Cabinet Division and Law Division before returning to the CCI for formal approval. Once this is done the Act will then be sent to Parliament.

Energy Efficiency (Institutional Strengthening/Capacity Building):

- **Background:** Energy Efficiency (EE) has long been neglected by the GOP. A draft bill has been moved to the Council of Common Interests and the GOP is moving to make ENERCON the foundation of the APEX EE body.
- **Challenge:** ENERCON has lacked significant government support and remained mostly a project driven entity. The ENERCON management has been unsuccessful in staffing the sanctioned positions. Of the eight sanctioned technical positions, only one of them is filled and that even on deputation. The condition and, therefore the challenges, are best summarized by a recent report: *“ENERCON had essentially become a project implementation agency with only skeletal resources dependent almost entirely on donor funded initiatives such as, those described below for its financial needs and technical activities. This situation persists largely unchanged to the present day. A lack of sustained political support has therefore led to a situation in Pakistan where almost all EE&EC relevant materials prepared and institutional capacity developed during the initial period of activity in the '80s has lost its validity due to lack of maintenance and periodic updating. Moreover, valuable skills, experience and lessons learned have been allowed to dissipate to a large extent and will now need to be reconstructed.”*¹

¹ Gap Analysis on Energy Efficiency Institutional Arrangements in Pakistan, UNESCAP, 2010.

The challenge is to begin staffing ENERCON and moving beyond a purely project driven organization while at the same time developing an organizational blue print for the new APEX EE body and an organizational transformation plan.

- **Product:** EPP has provided a series of first steps to rebuild ENERCON.
- **Result:** MWP has agreed to recruit internally for ENERCON as MWP/WAPDA/PEPCO/DISCO employees can be transferred without any higher approvals. The Secretary has approved the deputation of staff ENERCON and the search is underway. Additionally a file has been moved to transfer the Additional Secretary Water and Power to Managing Director Enercon. Surveys have been sent to donors about ENERCON and employee surveys are being tabulated.

Improving Energy Supply:

- **Background:** Economic dispatch is an important tool for Pakistan and a requirement of the Power Purchase Agreements. It has not been instituted very often for a variety of reasons. Even a limited form of Economic Dispatch can improve the situation and reduce cost.
- **Challenge:** Fuel supply curtailment, lack of maintenance and lack of proper planning tools and skilled staff at NPCC to implement an economic dispatch program.
- **Product:** EPP is undertaking an analysis of the NPCC procedures, developing a gap analysis of what is required for economic dispatch and developing standard operating procedures. Based on NPCC's existing Dispatch pattern and the hydroelectricity generation of certain volume of GWH as required under the existing model of Economic Dispatch and analysis was prepared and shared with MWP. However the analysis was not an exact and true depiction of the situation as it was only based on a single day's data. Efforts are underway to obtain additional data. The monthly figures of hydropower energy for February and March are being analyzed.
- **Result:** MWP has approved the work, given it priority and data has been requested from the NPCC. Meeting were held with MWP for obtaining the data and reminder requests have been sent to NPCC and it is expected that the data will be shared with EPP shortly. In the end of April a meeting was held with Joint Sect.

Upon JICA's invitation, EPP participated in a familiarization visit of Energy Sector Donors to one of JICA's on-going projects with NTDC "Load Dispatch System Upgrade Project" at National Power Control Center (NPCC) on **April 26, 2012**. The visit provided an opportunity for EPP to study the new system particularly, with reference to the System operation and Economic Dispatch.

SUPPORT TO MINISTRY OF FINANCE

Finance:

LNG Policy

- **Background:** MOF together with MNPR is involved in the evaluation of cost and environmental benefits to be gained from importing LNG. MOF being the primary exchequer is responsible for evaluation of proposals on this subject.
- **Challenge:** To meet its energy requirements Pakistan is considering LNG import as a positive option. The challenge is to bring all decision makers on board with the benefits of the import and how it will meet the energy deficit.
- **Product:** Upon MOF's request EPP analyzed various policy issues relating to LNG import.
- **Result:** MOF will be submitting its comments on the LNG import policy based on the evaluation of LNG landed costs and analysis of the LNG policy to the ECC for consideration and/or approval.

Tariff Differential Subsidy and Tariff Reform

- **Background:** GOP with MOF as the executing agency has been directed to reduce all subsidies in the energy sector as a part of fiscal discipline and rationalization. MOF is looking into ways to make the subsidy provisioning more targeted to the lower income households.
- **Challenge:** Tariff differential subsidies that are currently being provided to the distribution companies are amounting to unaffordable sums. This outlay has become increasingly burdensome for GOP to bear. The current tariff and subsidy mechanism is providing electricity at discounted rate to all users, which is resulting larger than needed outlays of funds and deepening of the circular debt crisis.
- **Product:** EPP held a meeting with Chief Engineer, Subsidy Cell, and collected data on tariff differential subsidy and tube well subsidy.
- **Result:** EPP shared the information with MoF.

Circular Debt

To resolve the looming Circular Debt problem, Deputy Chairman Planning Commission requested to conduct a comprehensive study on Circular Debt, emphasizing on the amount of subsidy paid, where it is adjusted and proposing recommendations. Acting on the request, EPP initiated work for preparation of a paper 'Power Sector Circular Debt- History and Current Situation' to find out the main causes of circular debt as well as financial impact w.e.f 2004-05 onward to pursue the matter further.

In this regard a kick-off meeting was held on April 16, 2012 between Power Distribution Program and EPP for initiation of collaboration on the paper. Subsequently, a brainstorming session was conducted among the two USAID funded programs for developing an outline for the power sector circular debt paper. During the session, potential sources of data pertaining to circular debt were identified, the data of DISCOs was analyzed and tasks assigned to team members, EPP has also solicited information from CPPA. EPP also held a meeting with Joint Secretary (Corporate Finance), MOF to seek the Ministry's assistance in collection of data required for preparation of the paper on circular debt.

SUPPORT TO PLANNING COMMISSION & MINISTRY OF PETROLEUM & NATURAL RESOURCES

LNG Imports:

EPP expert seconded at MNPR was fully dedicated to providing technical support to the LNG Import Program. The activities undertaken during the reporting period are as follows:

- a. Participated in a series of internal group meetings at MPNR and provided inputs for analysis of issues, follow-up and recommendations.
- b. Attended follow-up meetings with stakeholders with participation of Secretary Petroleum and other senior officials.
- c. Provided inputs on expected developments in LNG markets and pricing.
- d. Supported MPNR and DG Gas staff in developing revised documents/presentations for the ECC. Attended ECC meeting.

- e. Supported MPNR in assessing longer term needs for technical assistance for the implementation of a successful and cost effective LNG import program. Drafted correspondence by Secretary Petroleum to USAID requesting the services of an international LNG Consulting Company (including the TORs) to provide immediate technical support to MPNR
- f. Drafted and submitted two papers to USAID documenting MPNR's progress on LNG imports and highlighting the need for future technical assistance.

- **ECC Summary**

EPP provided support in the finalization of Brief, Working Paper and PC-I of Neelum Jhelum Hydroelectric Project for submission to Economic Coordination Committee (ECC) of Cabinet.

EPP drafted a summary on 'Delay In Payments By The Power Purchaser To IPPs Under Power Policy - 2002'.

- **National Energy Conference 2012**

EPP assisted in the organization of National Energy Conference 2012. Prior to the Energy Conference EPP experts were actively involved in consultations and meetings with the Planning Commission and Ministry of Finance. During these consultations, EPP recommended short and long term measures to mitigate the energy crisis through up gradation of the GENCOs and hydro project, energy sector policy reform and energy efficiency and conservation.

- **Shale Gas:**

During the reporting month LMKR submitted its technical and financial proposals for the resource assessment. EPP reviewed the proposals and brief summarizing the key developments, salient features of the proposal and options for future course of action was prepared and shared with Additional Secretary Petroleum.

- EPP participated in a meeting held at the US embassy to discuss potential USAID assistance to MPNR for LNG imports and Shale Gas. This meeting was attended by Mr. Bob Duetch from Washington DC, Deputy Mission Director USAID, Director Office of Energy USAID and other USAID and embassy staff. Various options for enhanced USAID assistance were explored and discussed upon.
- EPP initiated work on the conceptualization of a framework on downstream oil policy.

USAID role lauded at the National Energy Conference, 2012

The National Energy Conference was convened on 9 April, 2012 for discussing and recommending solutions for overcoming the severe energy crisis prevailing in the country. The conference was attended by all the main government counterparts, stakeholders and donors in the energy sector. It provided a platform where the participants highlighted the main problems for the energy crisis, suggested solutions for resolving the crisis and cited international best practices which could be adopted to generate additional power.

Addressing the media after the Conference, Minister for Water and Power, Naveed Qamar recognized and appreciated the efforts of USAID in supporting GOP in adding megawatts to the national grid through the restoration of 423 MWs of GENCO capacity.

SUPPORT TO NTDC/NPCC UNDER POWER SECTOR REFORM PROGRAM

Transmission:

- **Standard Operation Procedures for NPCC:**

First draft of the Standard Operating Procedures (SOP) for National Power Control Center (NPCC) is 97% complete. The internal review process of the drafted SOPs continued during the reporting month; the first 20 out of 25 SOPs are completed and NPCC/NTDC comments have been incorporated; review of the remaining SOPs is under process. The final draft is to be reviewed by NTDC.

- **Contingency Plan for NPCC:**

EPP is also developing a contingency plan for NPCC which will act as the backup procedures in the wake of an emergency. The Contingency Plan will serve as a guide line and encapsulate prior agreed actions to be taken and set procedures to be activated in response to the identified emergencies ranging from relatively mild that can be locally contained, to catastrophic requiring moving to a backup offsite facility to ensure safety of assets and employees; and continued availability of essential services.

The first draft has been completed. Internal review of the document is complete and is ready to be submitted to NPCC/ NTDC for their review and approval.

- **Induction Training Manual (Orientation & Operations) for NPCC:**

Induction Training Manual (Orientation & Operations) for NPCC's new recruits and the existing operators is being developed. The first draft is expected to be ready by May 2012.

Import of Power:

The TUTAP –CASA concept explores the possibility of combining CASA 1000 concept with emerging opportunities (TUTAP Concept) into a single project with much higher benefits, lower costs, and quicker implementation. Serving primarily thermal power, TUTAP-CASA would be able to deliver year-round. A request from the Secretary, MWP has been sent to USAID for further action on the TUTAP-CASA project.

During the reporting month a presentation was made to Director Energy Office, USAID highlighting the salient features of the TUTAP-CASA project.

NTDC BUSINESS PLAN

A collaborative approach was adopted in finalizing the Business Plan. NTDC senior managers (COO of CPPA, GM Planning, and others) provided detailed commentary and held a series of meetings with EPP to discuss the documents and incorporate NTDC's feedback and recommendations.

As a result of interaction with EPP, Planning Department of NTDC overhauled its technical assessment and its near-term capital program. Also in areas of HR, managing the 132 kV networks, and with regards to CPPA, many changes were recommended by NTDC. NTDC has recommended additional in-depth technical assistance in performance audits, benchmarking, and learning about best practices applicable to NTDC.

The draft NTDC Business Plan was shared with USAID and MWP for review. After incorporating the comments of USAID and MWP, the Business Plan was submitted to the NTDC senior management for review.

A copy of the draft Business Plan was submitted to Secretary Ministry of Water and Power on April 5, 2012 to take it up officially with the NTDC and DISCOS and facilitate to move into its implementation stage.

EPP held a meeting with Finance Director, NTDC and discussed the financial aspects of the plan. A follow-up meeting is planned in the coming month.

COMMUNICATIONS, COORDINATION AND GENERAL SUPPORT TO USAID

Upon USAID's request, EPP prepared a "Conference Attendance Data" on the prescribed USAID providing detailed information on conference-related expenditures, attendance, and planning for the past 3 years.

EPP coordinated with JICA Pakistan for a visit to NPCC. JICA organized a familiarization visit of Energy Sector Donors to one of its on-going projects with NTDC "**Load Dispatch System Upgrade Project**" at National Power Control Center (NPCC) on **April 26, 2012**.

EPP prepared a draft speech and presentation for the USAID Energy Office for the National Energy Conference held in Lahore, April 9, 2012.

COMPONENT 3: NEW PROJECTS, PLANNING & DEVELOPMENT

EPP continued its support to USAID Mission in their effort to determine funding levels and schedules for new projects.

EPP participated in a high level meeting at WAPDA House Lahore to determine the next steps with regard to Mangla based on the conclusion and recommendation of the Consultant's Report.. EPP facilitated the meeting participants in agreeing upon a line of action to be put to the Chairman for approval.

During the reporting, EPP assisted the Mission in responding to several detailed queries regarding the Kurram Tangi and Mangla for a Congressional Notification, namely:

- Cost-benefit and environmental analysis of the subject projects,
- Oversight measures sought by GOP/WAPDA for monitoring the rehabilitation and construction work,
- Resettlement alternatives planned by GOP for the local families
- Efforts made by Govt. of Pakistan to prevent deforestation and other man-made disruption of the ecosystem
- Sedimentation of the reservoirs
- Durability and Storage Capacity of the reservoirs
- Costs for maintaining designed levels of efficiency and power generation

ADMINISTRATION/MANAGEMENT: SUPPORT TO EPP

Administration is structured to support on-going and planned project activities while ensuring contractual compliance. Administration encompasses the following functions: Accounting/Finance, Human Resources, Procurement, Contracts, Logistics and IT. In implementing these functions, processes and policies are developed to ensure uniformity of efforts.

Accounting/Finance

Miscellaneous payments have been made to the vendors during this month. Payroll and financial reconciliations completed.

Procurement

Quotes were obtained, bids were evaluated and procurements placed for office equipment and supplies, security equipment, and related services to support on-going EPP operations.

Examples include: Nokia mobiles handsets have been procured for office staff. Servicing of the Split AC's has been carried out in the month of April. In line with the security protocols, fire extinguishers have been refilled in the current month. Update inventory list has been submitted to USAID. Construction of the driver room has been completed.

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Logistics

Provided logistical support for 10 trips made by project staff. Arranged international travel for expats. The visa process for the expats has been initiated. The bank accounts for office staff have been opened to facilitate salary payments.

IT

Trouble shooting IT equipment in office and for operations at ministries; all related matters have been solved during this month

Additional IT Activities

1. Relocated 1 CCTV camera
2. Completed hardware inventory
3. Set-up Group E-mailing account on *ep-ep.com.pk* domain