



USAID
FROM THE AMERICAN PEOPLE

ANNUAL REPORT

OCTOBER 1, 2012 - SEPTEMBER 30, 2013

PRODUCED BY:

USAID POWER DISTRIBUTION PROGRAM

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OCTOBER 1, 2012 – SEPTEMBER 30, 2013

IRG, USAID contractor for the Power Distribution Program

House 23, Street 19, F-6/2

Islamabad, Pakistan

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ACRONYMS

AEAI	Advanced Engineering Associates International
AM	Accounting Manual
AMR	Automatic Meter Reading
AT&C	Aggregate Technical and Commercial
BDO	BDO Ebrahim and Company, an international audit and accounting firm
BOD	Board of Directors
CCN	Cooperating Country National
CEO	Chief Executive Officer
CIS	Customer Information System
CM	Change Management
COP	Chief of Party
COR	Contracting Officer's Representative
CoS	Cost of Service
CoSS	Cost of Service Study
CPOP	Commercial Process Optimization Project
CPPA	Central Power Purchasing Agency
CSC	Customer Service Center
CSP	Completely Self-Protected
CTC	Circle Training Center
DCOP	Deputy Chief of Party
DISCO	Government-Owned Power Distribution Company
DSM	Demand Side Management

EAD	Economic Affairs Division
EMG	Energy Markets Group
ENERCON	National Energy Conservation Centre
EOI	Expression of Interest
ERP	Enterprise Resource Planning
ESCO	Energy Service Company
FAT	Factory Acceptance Testing
FD	Finance Director
FESCO	Faisalabad Electric Supply Company
GENCO	Generation Company
GEPCO	Gujranwala Electric Power Company
GET	Gender Equity Training
GIS	Geographic Information System
GOP	Government of Pakistan
GPRS	General Packet Radio Service
GSM	Global System for Mobile Communications
HESCO	Hyderabad Electric Supply Company
HHU	Handheld Unit
HR	Human Resource
HRIS	Human Resources Information System
HT	High Tension
IA Manual	Internal Audit Manual
ICO	Integrated Commercial Office
IESCO	Islamabad Electric Supply Company

IMR	Improved Meter Reading
IRG	International Resources Group
IT	Information Technology
KP	Khyber Pakhtunkhwa Province
KPA	Key Performance Area
KPI	Key Performance Indicator
KPMG	KPMG, Taseer Hadi & Company an international audit and accounting firm
KVA	Kilo Volt Ampere
kW	Kilowatt
kWh	Kilowatt-hour
LDI	Load Data Improvement
LESCO	Lahore Electric Supply Company
LOP	Life of Project
LT	Low Tension
M&S	Monitoring and Surveillance
MCO	Meter Change Order
MD	Managing Director
MIS	Management Information System
MEPCO	Multan Electric Power Company
NPCC	National Power Control Center
MVA	Mega Volt Ampere
MVAR	Mega Volt Ampere Reactive
MW	Megawatt
MWP	Ministry of Water and Power

NAB	National Accountability Bureau
NEPRA	National Electric Power Regulatory Authority
NRECA	National Rural Electric Cooperative Association
NTDC	National Transmission and Dispatch Company
O&M	Operations and Maintenance
OJT	On-the-Job Training
ORD	Outage Reduction Device
P&E	Planning & Engineering
PCB	Punjab Cooperative Bank
PDC	Power Distribution Control Center
PDP	USAID Power Distribution Program
PEPCO	Pakistan Electric Power Company
PESCO	Peshawar Electric Supply Company
PICG	Pakistan Institute of Corporate Governance
PITCO	Pakistan Industrial Trading Company (Pvt.) Limited
PITC	Power Information Technology Company
PO	Purchase Order
QESCO	Quetta Electric Supply Company
RF	Radio Frequency
RFP	Request for Proposals
RFQ	Request for Quotations
RO	Revenue Office / Officer
RTC	Regional Training Center
SECP	Securities and Exchange Commission of Pakistan

SEPCO	Sukkur Electric Power Company
TA	Technical Assistance
TCN	Third Country National
TELCONET	TelcoNet Services (Pvt.) Limited
TORs	Terms of Reference
TOT	Training of Trainers
URD	User Requirements Document
US	United States
USAID	United States Agency for International Development
USN	United States National
VPN	Virtual Private Network
VSD	Variable Speed Drive
WAPDA	Water and Power Development Authority

SECTION 1: PROGRAM OVERVIEW

This Annual Report of the USAID Power Distribution Program (PDP) covers continuing efforts of USAID and International Resources Group (IRG) to bring about improvements affecting the overall commercial performance of participating government-owned power distribution companies (DISCOs), the Ministry of Water and Power (MWP), and the National Electric Power Regulatory Authority (NEPRA). Under Component 1, PDP conducted operational audits of MWP, all nine DISCOs and NEPRA, and developed Action Plans for future interventions and demonstration projects. Components 2 and 3 are focused on the execution of jointly-selected interventions identified in Action Plans with the goal of improving sustainability in the power sector.

This year saw the peaceful transition in Pakistan's ruling government as the PML-N Party won federal elections. More reform-minded than their predecessors (the PPP), the new PML-N Party was elected on a pro-reform agenda. Since taking over in mid-2013, the PML-N has begun rolling out the reforms in the energy sector, largely following plans as recommended by PDP. Program policy advisors working with the MWP have played a key role in executing the government's new energy plan and are advocating for strong action in the coming fiscal year.

PDP has had many successes in FY 2012-13. The Load Data Improvement (LDI) project, a country-wide system of monitoring power flows to the distribution companies and to the individual distribution feeders through smart meters, went from concept to design to delivery in just under eight months, almost completely eradicating unplanned load shedding in the process. LDI has been recognized by the Prime Minister as well as Secretary of State Kerry as a major contributor towards improved power sector performance. Using data generated by the LDI system, PDP is helping DISCOs, for the first time, more heavily load shed feeders with poor revenue collections and provide relief to the feeders with higher revenue collections. Supporting theft-reduction cells then enter target areas, removing illegal hooks and prosecuting consumers stealing power.

The combination of improved data and field work is resulting in significant improvement in the system, especially at the Peshawar Electric Supply Company (PESCO), PDP's Turnaround DISCO partner. Starting in October of 2012, PDP began working with PESCO senior management to improve overall performance of the DISCO. Shadow managers have been placed to support PESCO senior management and interventions have been designed and initiated that include revenue optimization/reconciliation, commercial governance, engineering interventions, Human Resource optimization, communication/outreach, and improved system maintenance. This fiscal year PDP has:

- Successfully completed the Load Data Improvement project including installation of 1,000 smart meters and establishment of a Power Distribution Control Center. As a result,

PESCO has reduced unscheduled load shedding to near zero and is now more effectively using planned load shedding to target customers with poor payment records

- Established a state-of-art Planning and Engineering center, allowing PESCO to design more cost-effective system improvements
- Established an anti-theft unit which, working with the local police, are addressing consumer theft through 1) removal of illegal hooks, and 2) prosecution of those stealing power
- Procured and have started to install anti-theft cable in several subdivisions effectively reducing theft.
- Working on conversion of one complete bare conductor feeder to insulated conductor to get rid of theft and illegal hooks. This will be followed by more such feeders.
- Installed 11,000 meters at the consumer level, resulting in reduced demand and increased revenue, improved customer services and significantly reduced consumer complaints
- Trained PESCO linemen and procured specialized vehicles and equipment so as to allow PESCO a direct role in installation of consumer meters, and aerial bundled cable (ABC) cable
- Procuring an ERP with principle components including Finance, Commercial and Human Resource being provided
- Established a robust communication and outreach strategy.

As a result of PESCO's collaboration with PDP, the DISCO's financial performance improved by \$ 95 million since partnering with PDP, which is attributed to the following:

- Reduce technical and non-technical losses from 36.2% to 34.1%
- Increase recovery by 2.1%
- Decrease AT&C losses by 2.8%.

Goals for the coming year include an additional 3% reduction in technical and non-technical losses (from 34% to 31%) and a further increase in collections by 5%.

In addition, PDP has seen significant impact at the policy level. Program advisors working at MWP and NEPRA have developed and implemented a new cost of service mechanism for use when developing tariff petitions; identified and helped correct DISCOs' non-compliance with NEPRA customer billing processes costing the country \$15 million annually in uncollected revenue. Most importantly, PDP (in unison with other USAID contractors) produced the Circular Debt Report; a comprehensive document that the first time codifies and quantifies the sources and volumes of circular debt being generated in the power sector. PDP continues to provide support to NEPRA through reports, whitepapers and by providing services of advisors on a regular basis.

In the coming year we at PDP look forward to continuing many ongoing interventions such as the LDI project, the PESCO Turnaround work, and our policy advisory work. In addition, PDP will be expanding activities to include a second Turnaround DISCO as well as assisting the GOP in privatizing several of the better performing DISCOs.

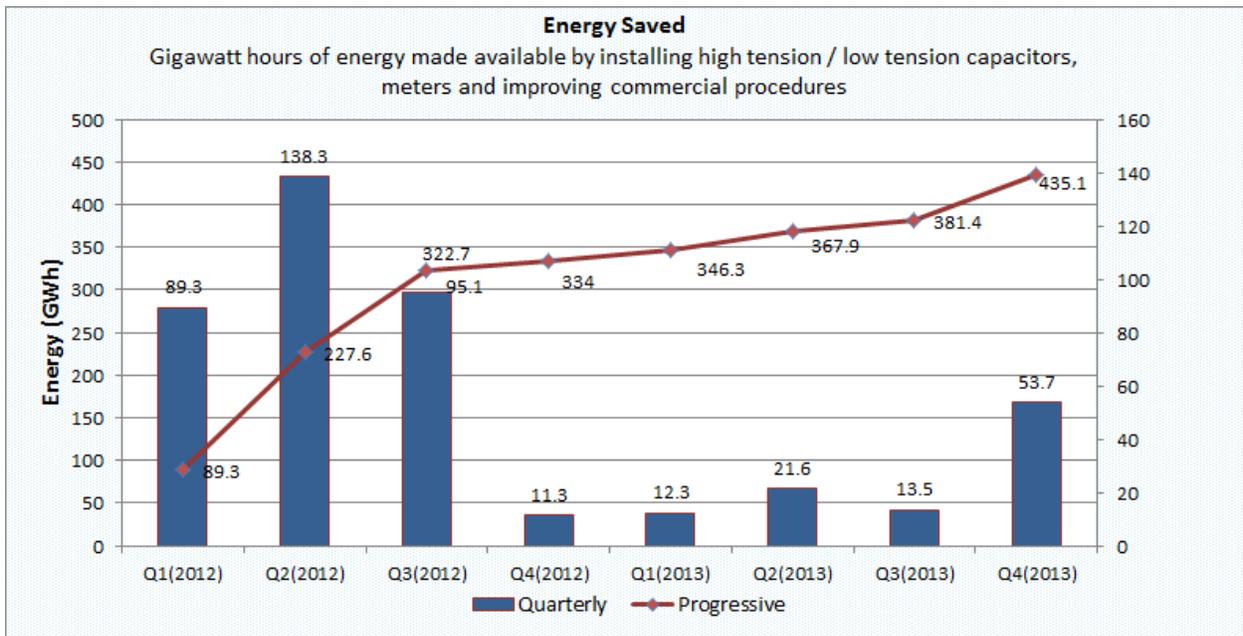
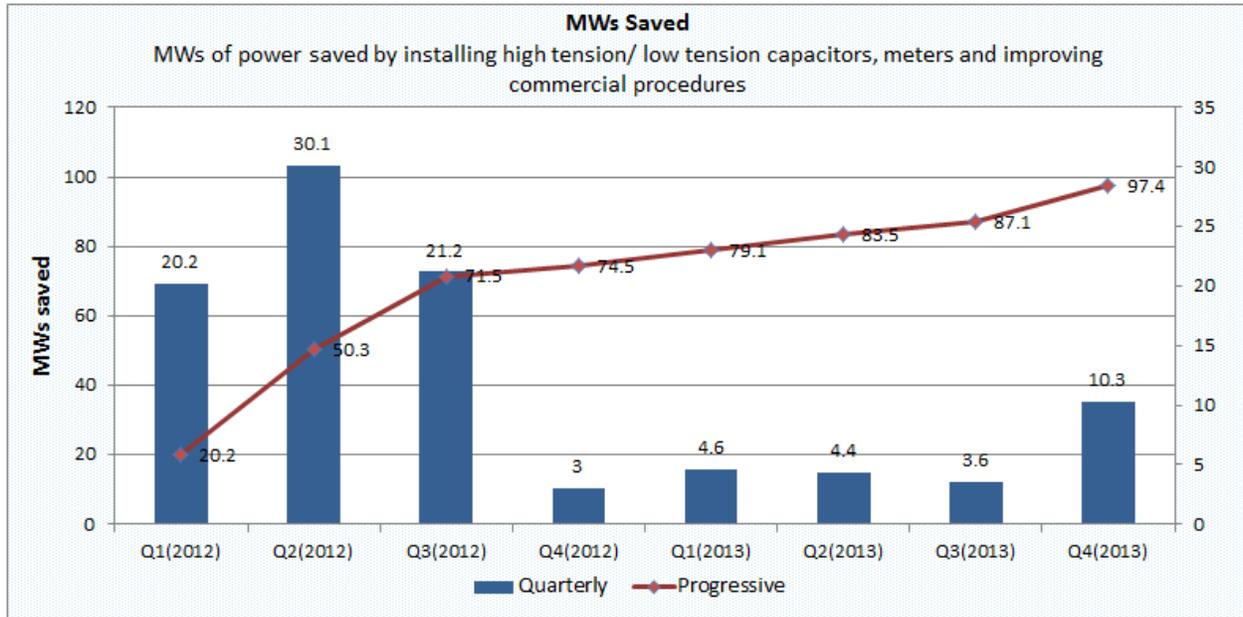
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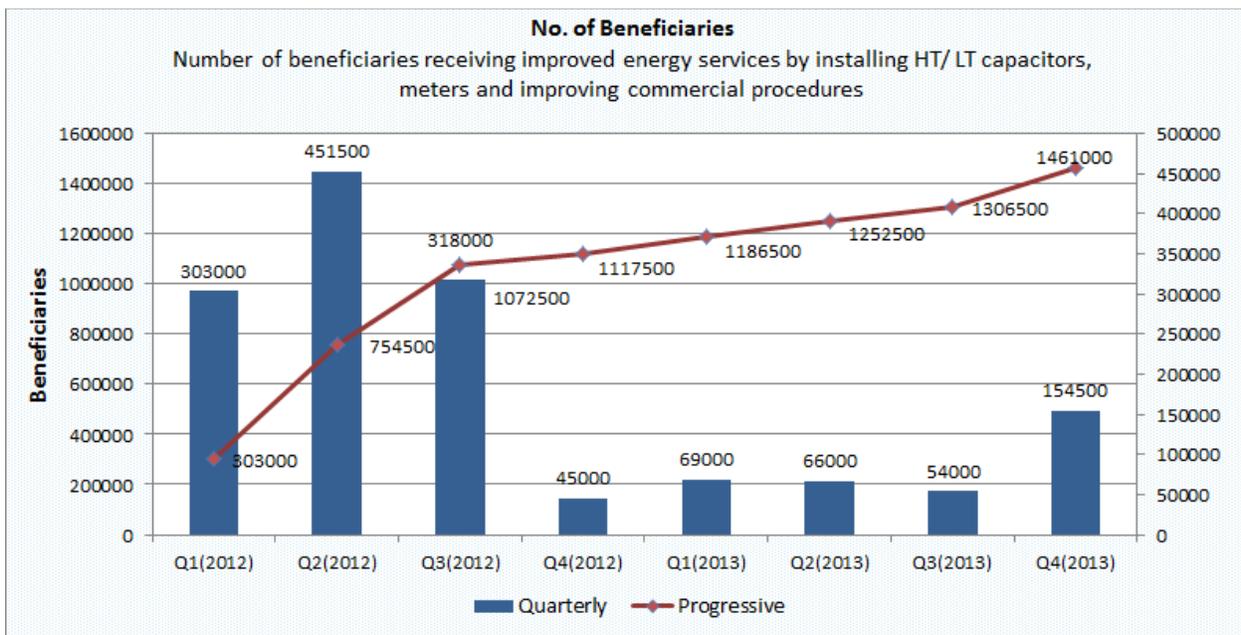
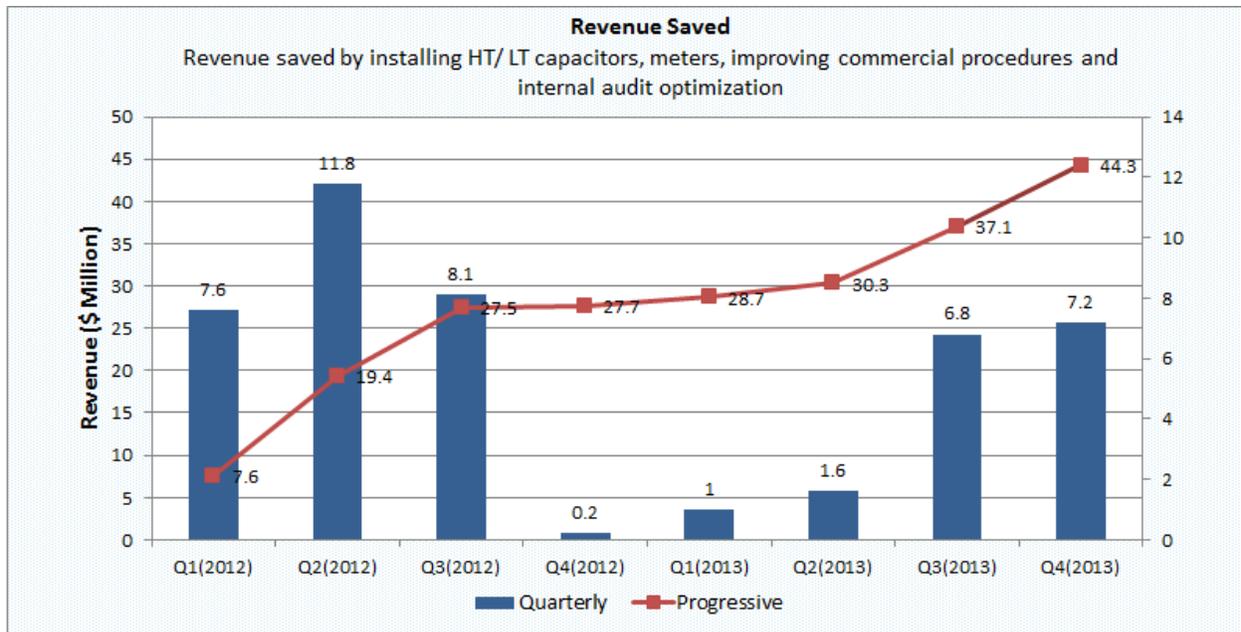
Craig R. VanDevelde
Chief of Party

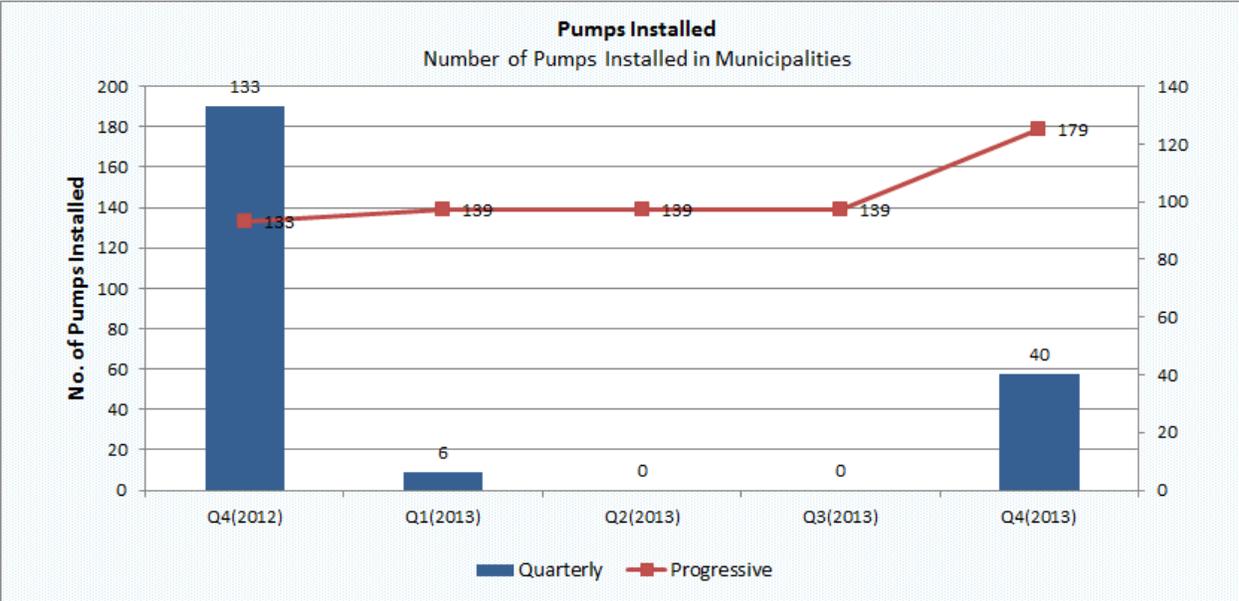
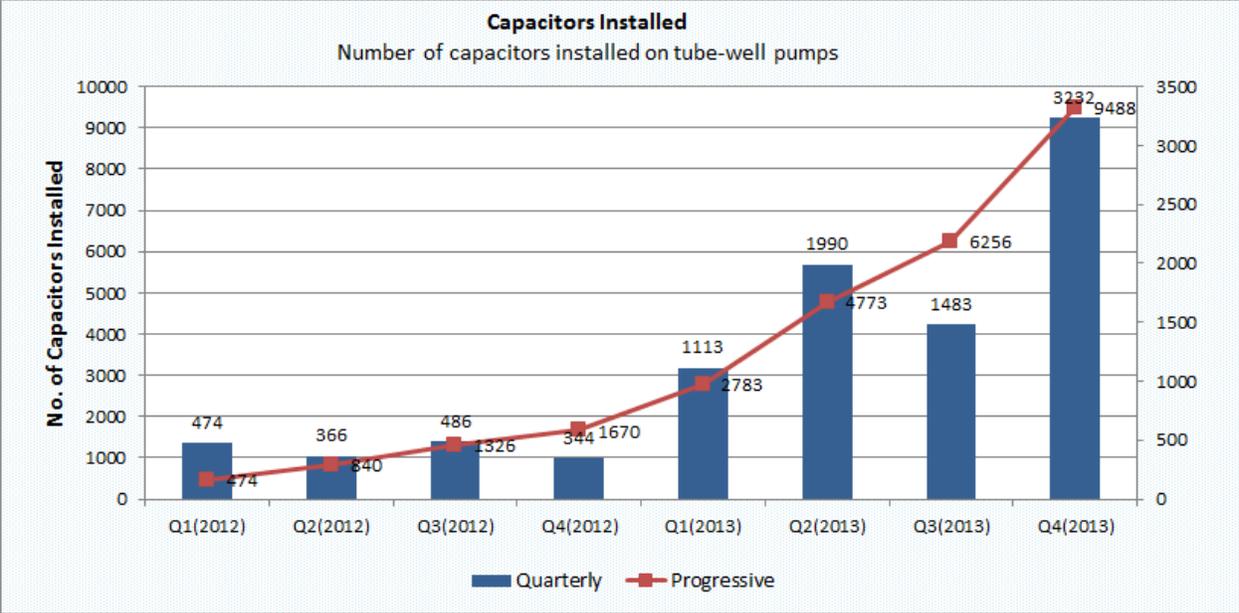
FINANCIAL SUMMARY

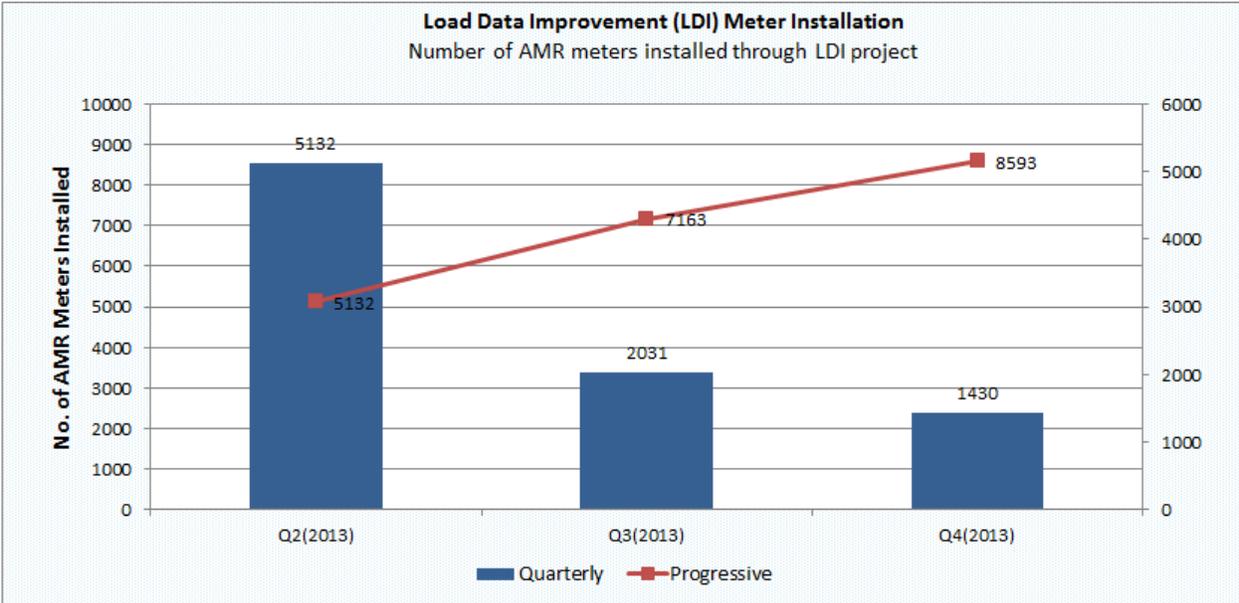
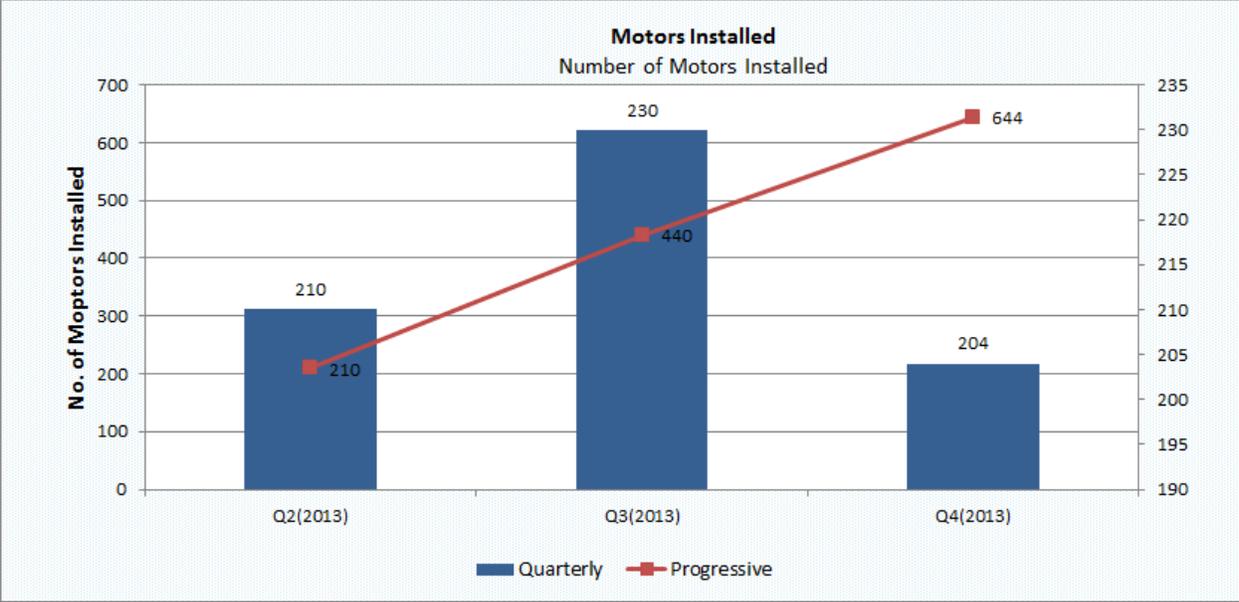
Contract No:	EPP-1-00-03-00006-00, Task Order 13
Date of Issuance of Task Order:	September 17, 2010
Amount Obligated Under Task Order:	US \$98,199,409
Total Project Funds Expended to Date:	US \$76,767,133
Project Funds Expended During the Quarter:	US \$11,419,632
Project Funds Expended During the Fiscal Year:	US \$47,611,592

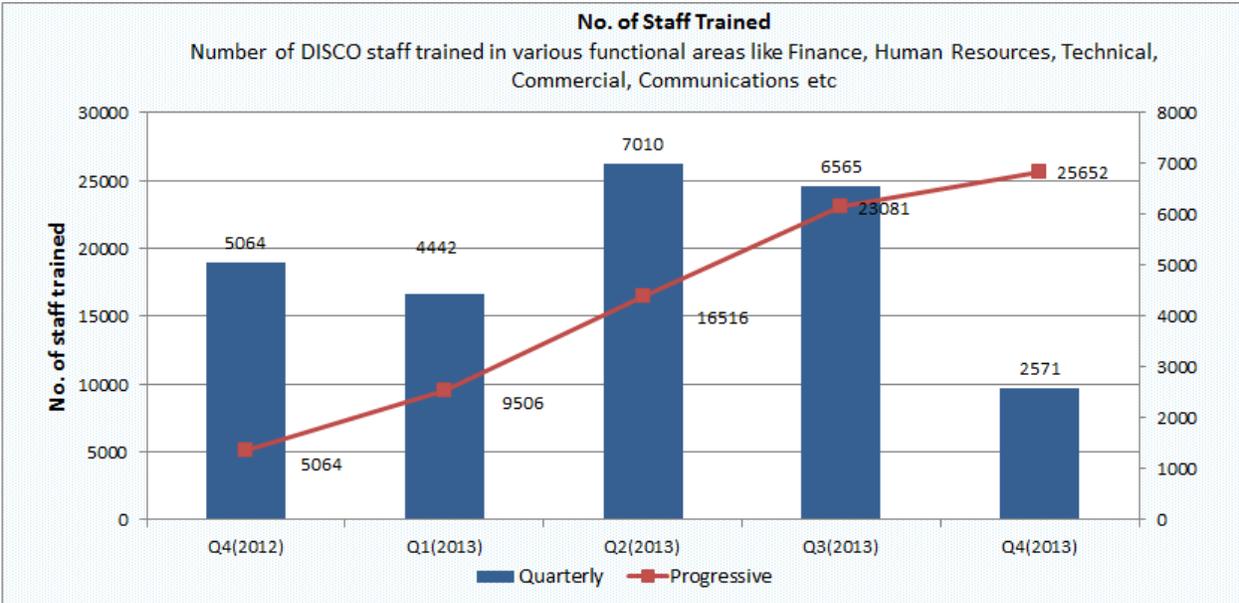
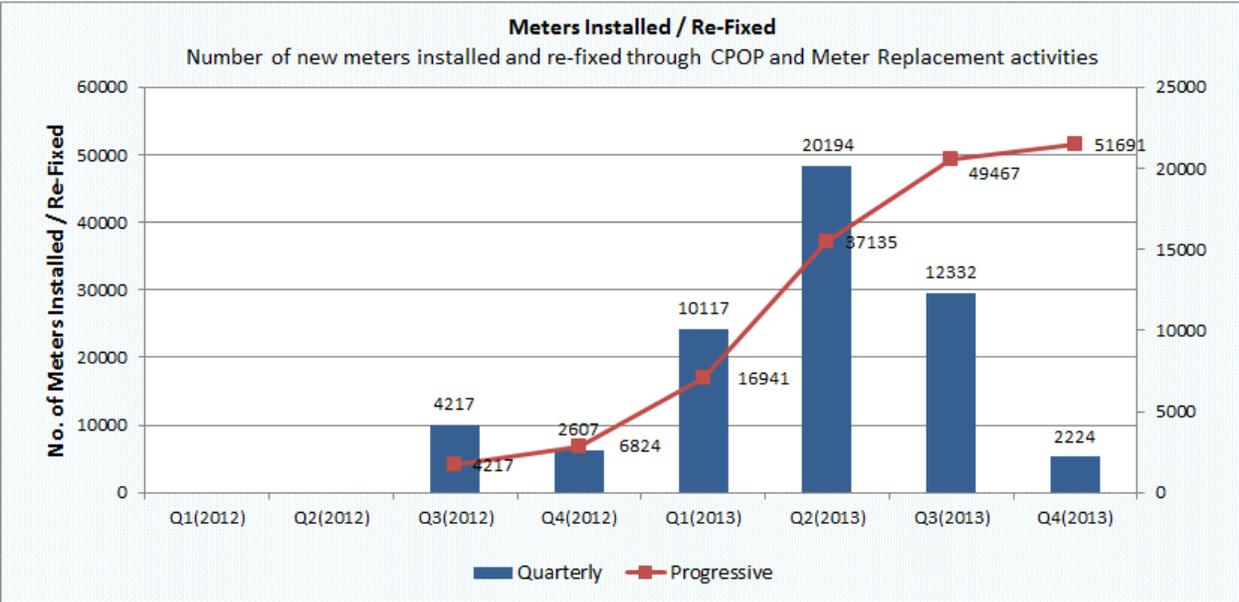
SECTION 2: PERFORMANCE













- 1,306,500 beneficiaries received improved energy services
- \$53.5 million in savings and revenue generated by the Power Distribution Program's interventions
- 97.4 megawatts (MW) saved through installation of capacitors, pumps, motors and electronic meters

SECTION 3: COMPONENT 2 TASKS

TASK 1: TRAIN AND MENTOR DISCO BOARDS OF DIRECTORS AND SENIOR MANAGEMENT

The MWP dissolved the Board of Directors (BOD) of all nine government-owned power DISCOs in November 2010 and announced new boards in early February 2011. The decision to name new directors was undertaken to reduce the influence of both the national and local governments in DISCO governance and to ensure greater participation of local stakeholders in DISCO decision-making. In response to this important change, PDP began a series of training activities.

HIGHLIGHTS

- **MWP Dissolved BODs of DISCOs** – PDP-developed corporate governance policies were approved by MWP for adoption at DISCOs. These policies were adopted by most DISCO boards while the remaining BODs are also in the process of adopting them. PDP also assisted the Securities and Exchange Commission of Pakistan (SECP) in making modifications to the draft Public Sector Companies (Corporate Governance) Rules 2013 to improve corporate governance of public sector companies.

TASK 2: DEVELOP DISCO BOARD POLICIES & PROCEDURES MANUAL

Since previous DISCO BODs were composed primarily of MWP, Pakistan Electric Power Company (PEPCO) and Water and Power Development Authority (WAPDA) representatives, the DISCOs did not have policies and procedures for board activities that are oriented toward operating as independent, autonomous bodies focused on supporting long-term profitability and sustainability. In FY 2012-13, PDP first drafted a 'policies and procedures manual' to suit all DISCOs, and later customized this manual to address the specific needs of each DISCO.

TASK 3: EVALUATE CHANGES IN DISCO ORGANIZATIONAL STRUCTURE

To foster a corporate culture that embraces change, all employees must feel like valued corporate assets in whom investment (such as training) will be made and whose welfare is considered vital. Leading utilities around the world empower their employees to identify problems, help devise solutions and receive recognition and rewards for doing so. Empowering DISCO

employees to participate meaningfully in the fundamental changes that lie ahead requires continuous improvement of work practices and the understanding that no problem is too small to receive attention.

DISCO service areas are established on a political and geographical basis that encourages political interference and creates inherent conflicts between Engineering, Operations and Commercial Management Departments. Given the challenges in Commercial Management to act independently and responsibly for all activities related to consumer billings and collections, changes are required in the organizational structure of DISCOs.

HIGHLIGHTS

- **Organizational Assessment & Restructuring at MEPCO** – This year PDP supported the Multan Electric Power Company's (MEPCO) in assessing their organizational structure and developed recommendations for their restructuring. All deliverable reports were provided to MEPCO including reports on "Performance Evaluation System", "Organization Structure," "Grade Structure & Career Path Planning," "Manpower Planning," "Recruitment & Selection," "Delegation of Powers & Authorities," "Employee Relations," "Training & Development," "Job Profiles," "Compensation & Benefits Structure," "HRIS – RFP, Software & Hardware," and "Employee Handbook". All contractor deliverables were reviewed by PDP and MEPCO's Change Management Steering Committee. By the end of the fiscal year, five of the proposals have been immediately accepted and approved by MEPCO's BOD for implementation. The five proposals include "Performance Evaluation System", "Job Profiles", "Recruitment and Selection", "Manpower Planning", and "Training and Development". Implementation of these five proposals began in the last three months and PDP is providing limited technical assistance to the MEPCO Human Resources (HR) Department. A close-out report on the project was prepared and submitted.
- **Internal Audit Process Optimization at Power Distribution Companies** – As part of the Power Distribution Program's (PDP) Internal Audit Process Optimization (IAPO) project, a new internal audit manual and framework was introduced and being implemented at DISCOs, emphasizing a risk-based approach which considers the entire business process rather than individual transactions. This includes training programs for internal audit staff, DISCO senior management and BOD Audit Committees (Committee). The results have been significant and revenue improvements at all DISCOs are estimated to exceed \$9 million per year. The revenue improvement amounts are based on audit results, primarily, from the revenue and receivables audit areas which were performed at DISCO revenue offices. The IAPO project is designed to improve the transparency of financial transactions and operational efficiencies of DISCOs while introducing better controls in the organizations. The new framework will involve the DISCOs Committees which will oversee the internal audit function and report results directly to the Board of Directors, instead of centralizing accountability into the hands of the

CEO. This will improve the level of financial transparency and financial accountability. PDP is providing on the job training as well as a “training the trainer” programs. The DISCO will be provided with an internal audit training calendar and recommendations to achieve a sustainable internal audit capacity at each DISCO. The new internal audit manual was delivered by PDP to DISCO Boards of Directors.

TASK 4: PERFORM FULLY ALLOCATED COST OF SERVICE STUDY

DISCOs continue to operate with tariff structures that have been designed to cross-subsidize electric service from industrial and commercial consumers to domestic and agricultural consumers, as well as from larger domestic to smaller domestic consumers. Tariffs do not reflect full cost of service to DISCOs as a whole, or customer categories. PDP has completed one comprehensive Cost of Service Study (CoSS) for Islamabad Electric Supply Company (IESCO) and has embarked on performing similar studies in the remaining eight DISCOs. PDP is demonstrating true cost of service and charting a course to tariff reform that can lead to the elimination of all but social safety net subsidies.

HIGHLIGHTS

- **Streamlining IESCO’s Tariff Petitions & Cost of Service Studies** – IESCO’s initial Cost of Service Model was updated using current data and used to justify IESCO’s tariff petition. The COS model and IESCO’s tariff petition were submitted to NEPRA and PDP was requested to provide a detailed presentation to NEPRA during the tariff determination process. NEPRA greatly appreciated the usefulness of the CoSS and the organization is currently directing other DISCOs to include the CoSS with their future tariff petitions.

TASK 5: ERP DOCUMENTATION MANUAL AND TECHNICAL ASSISTANCE PROJECT

Enterprise Resources Planning (ERP) systems are standard management tools for well-managed, modern electric distribution utilities. The project produced an ERP documentation manual as a resource for DISCOs and a blueprint for ERP implementation. The ERP focused on financial, materials, and project management and payroll applications and can be used for other platform applications as well. The documentation manual focused on documenting business processes at Faisalabad Electric Supply Company (FESCO) and validated at IESCO. Technical assistance was provided upon request to all DISCOs. Other objectives of this project included reviewing, validating and documenting existing and future processes, practices and procedures by mapping current and future processes.

HIGHLIGHTS

- **Enterprise Resource Planning at IESCO** – PDP successfully concluded this project by handing the ERP documentation manual to IESCO for further action. A close-out report was completed and sent to USAID for archiving. PDP helped IESCO prepare an RFP for ERP implementation in IESCO.

TASK 6: IMPLEMENT ANTI-THEFT, SUBDIVISION DISTRIBUTION SYSTEM OPTIMIZATION, AUTOMATIC METER READING

PDP is conducting a number of improvement initiatives focused on theft reduction and feeder optimization. Also included in this initiative are power factor improvements for tubewells. An Automatic Meter Reading (AMR) initiative is aimed at reducing theft and improving revenue at select locations. These projects have several implementation elements in common, including use of Geographical Information System (GIS) to map distribution systems, and engineering software to model losses, segregating technical losses and identify loss reduction targets. Projects will provide an introduction of AMR metering technology on selected feeders, on selected distribution transformers for energy accounting, multiplex secondary circuits to reduce vulnerability to theft, and for reducing Low Tension (LT) losses, smaller and more efficient distribution transformers, and improved service drop design with secured revenue meters.

HIGHLIGHTS

- **Defective Meter Replacement** – PDP completed the replacement of electromechanical meters with electrostatic meters in Lahore Electric Supply Company (LESCO), Peshawar Electric Supply Company (PESCO) and FESCO. A total of approximately 9,000 meters were replaced in PESCO's Kohat Road subdivision and approximately 8,000 in FESCO's Garden Colony subdivision. Additionally, 20,000 electronic meters were replaced and/or re-fixed with new service drops and proper fixing brackets in LESCO's Niaz Baig subdivision, thus eliminating opportunities for theft of electricity and enhancing safety. The initial results received from these three replacement programs have been positive with an overall reduction in the Aggregate Technical and Commercial (AT&C) losses, leading to an increase in revenue for each DISCO. The meter replacement program aims to improve the commercial



Meter Replacement Work at PESCO

viability of DISCOs by reducing theft, improving the accuracy of billing to consumers and improving revenues. It also eliminates the possibility of meter tampering which is rampant in electromechanical meters, and considered a major factor in the commercial losses of DISCOs. Completion of all the three projects have resulted in drastic reduction in consumer complaints leading to improved customer services and satisfaction in these areas.

- **Automatic Meter Reading Program** – Work continued on PDP’s AMR program which is installing about 24,000 AMR meters in five DISCOs: LESCO, MEPCO, IESCO, PESCO and Hyderabad Electric Supply Company (HESCO). These include meter installations for general customers, on transformers for energy accounting and cost of service, and on high-end consumers. Radio Frequency (RF) enabled meters are being installed at LESCO and AMR meters on tubewells at MEPCO. To insure sustainability of this intervention, 80 AMR meters with cell phone SIMS were installed for communication reliability testing before field installations. Additionally, PDP mobilized its central data center service provider and GSM/GPRS communications service provider, and work began on establishing connectivity with all five DISCOs. HESCO will install 14,000 AMR meters in its Qasimabad subdivision and has initiated the tender process for this installation.

- **Anti-Theft Campaigns for Peshawar Electric Supply Company** – PDP launched an anti-theft campaign for PESCO in Ramadan this year.

Due to the severe prevalence of power theft in the Khyber Pakhtunkhwa (KP) province, PESCO faces approximately Rs3 billion in monthly losses. As part of its multipronged anti-theft campaign in PESCO that includes KP-wide media campaigns, e.g. radio shows with public service announcements, billboards, and 24/7 commercials on cable television, PDP established an Anti-Electricity Theft Cell at PESCO headquarters. PDP installed a toll-free number at the cell for logging theft cases 24/7 as reported by consumers observing theft in their areas. The campaign received wide coverage in both local and international media such as the BBC, The Hindu, AFPAK blog, Business Recorder and other newspapers and agencies.

“Special police stations will be established to stop pilferage and power theft. Banners and posters with different messages have been prominently displayed at different places in Peshawar.”

– Director General PR, PESCO
Shoukat Afzal

TASK 7: CONCENTRATION ON HUMAN RESOURCE MANAGEMENT INITIATIVES

One of the most significant deficiencies at all DISCOs assessed during the operational audits was the poor quality of HR management systems. Realizing that HR is key to sustained improvements, PDP is concentrating on improving DISCOs HR management capabilities in all areas, including addressing HR factors impacting all action plans and project improvement activities.

HIGHLIGHTS

- **Modern HR Concepts and Practices** – PDP concluded its Utility Exchange Program (UEP) with the last two programs held in the US: One program for “Distribution Utility Regulation” was held at Massachusetts and Connecticut while the other “Distribution Utility Regulation” was held at Ohio and Kentucky. Eleven delegates from DISCOs and NEPRA visited utilities in each program. These UEPs taught Pakistani energy professionals best practices on regulatory structures, consumer affairs, policymaking, rate-setting mechanisms, and the power market. All 13 exchange programs have been completed with a total of 148 delegates participating in eight



Charging Station

countries, and a close-out report is being prepared to detail all activities. Additionally, PDP supervised “Customer Excellence” trainings conducted by DISCO trainers previously trained by PDP, and who are now fully capable of conducting these trainings independently.

- **Training of Trainers Programs Continue** – PDP continued Training of Trainer (TOT) programs: orientation training to PDP’s new accounting manual, internal audit TOT and performance management. The five-day orientation session for finance personnel at all nine DISCOs was conducted with a TOT approach allowing two participants from each DISCO who will subsequently deliver orientation sessions on the new accounting manual to other staff of their respective DISCOs. MEPCO’s internal audit staff was trained in order to provide training to other staff as determined by PDP’s co-sourcing partner BDO Ebrahim and Company (BDO), where participation mandated trainers have significant auditing experience and knowledge. However, because it was noted that very few of the trainers possessed this knowledge, PDP will conduct follow-up trainings incorporating adult learning concepts as a means for improving the effectiveness of the programs these trainers will be delivering in the future. PDP also conducted a four-day performance management TOT in Multan for 12 MEPCO officers as a capacity building measure to ensure the sustainability of the program.
- **Improving Working Conditions of Professional Women** – Recently PDP successfully renovated and handed two Customer Service Centers (CSCs) to LESCO and HESCO, bringing the total to seven sites that have been renovated. These centers with upgrades that include separate washrooms for women, will result in improved efficiency, motivation and performance of female employees working at these centers. In a related event, PDP also handed over an improved and renovated data center at FESCO’s Management Information

System (MIS) Department which will not only assist in providing a stable and comfortable environment for the 22 female staff positioned at the center, but will also increase efficiency.

- **Delivery of Effective Meter Reading Program Continues at all Power Distribution Companies**

– As part of PDP’s ongoing effort to improve the quality of meter reading in DISCOs, PDP delivered this program at MEPCO. The program focused on the duties and responsibilities of meter readers and the

“This course was an excellent experience, and should be made mandatory for all meter reading professionals, especially those new to the job who too often don’t have the necessary skills to work in the field.”

– Meter Reading Supervisor, PESCO

techniques for reading electromechanical and various types of electronic meters. The program also covered information and tactics on improving interaction with customers while in the field. At the program’s conclusion, the 33 participants—including Manager Commercial, Deputy Manager Commercial, Meter Reading Supervisors etc.—provided positive feedback along with expressing the desire to attend further Effective Meter Reading training programs in the future. PDP also conducted a related program for PESCO as a Quick Impact Meter Reading training program focusing solely on meter reading, where participants were equally enthusiastic about the training.

- **Enhancing the Professional Workforce at Power Distribution Companies**

– PDP is positioning interns in the Finance Department, Planning and Engineering (P&E), HR and Project Management Unit Departments, as part of its Management Training Program which aims to place qualified young professionals at key positions within DISCOs. Recently PDP set up a Computer Training Lab at PESCO to deliver trainings that will help improve the computer knowledge of PESCO employees, under the guidance of two qualified instructors. Additionally, the five engineering interns inducted have been providing commendable support to both PESCO and PDP’s interventions at the DISCO and were provided On the Job Training (OJT) on Geographic Information System (GIS) field surveys and mapping, and the SynerGEE analysis tool software which will play an instrumental role in optimizing PESCO’s distribution network.

- **Capacity Building Continues for all Power Distribution Companies**

– PDP organized a two-day workshop on “Developing Proposals for the Outage Reduction Devices (ORD) Program” for the planning engineers of seven DISCOs. The focus of the workshop was on the different aspects of developing proposals for the proper utilization of the ORDs i.e. switches, fuses, fault indicators and low voltage protection switches for installation on 11 kilovolt (kV) distribution feeders, through the application of planning tools PDP previously provided to the power utilities.

- **Adult Learning Training of Trainers** – Recently 13 trainers from seven DISCOs went through the Adult Learning Training of Trainers course, enabling them to further carry out the course at their DISCOs. The Adult Learning TOT brings global best practices and modern training methods to DISCO training staff. These training methods result in a higher level of knowledge and skills retention thereby increasing the skills and knowledge of those they train.

“This course provided key staff with leadership skills and provided our business with the capability to better train our staff. This empowerment will result in increased productivity and job satisfaction, as we work in a rejuvenated work environment.”

– Line Superintendent, PESCO

Syed Shafiq Aziz

TASK 8: IMPROVE COMMERCIAL MANAGEMENT PRACTICES

Currently, most DISCOs employ manual, paper-driven commercial management practices such as handwritten logs of customer information and electricity consumption. However, DISCOs have matured to the point where these legacy systems and practices are no longer feasible to manage customer information, meter readings, billing and revenue collection efficiently. Automating these procedures is now a requirement for a modern utility which will improve revenue collection and transaction transparency.

HIGHLIGHTS

- **Deploying Customer Information System at MEPCO** – PDP completed the Customer Information System (CIS) demonstration at MEPCO’s Bosan Road subdivision. Pleased with the results, MEPCO senior management requested that the implementation be scaled up to include all of Multan Circle and accepted all costs associated with the increased scope. As part of this activity, the CIS development team has moved from MEPCO headquarters to Lahore in order to work under the supervision of Power Information Technology Company (PITC) and the CIS software development for circle scalability is now in progress. Most recently, three new procedures developed for the CIS (“new accounts process”, “technical complaints” and “minimum charge complaints”) were implemented at the Bosan Road subdivision and handed over to MEPCO’s MIS Department for further development under the supervision of PITC.
- **Commercial Procedure Optimization Project** – PDP concluded its Commercial Procedure Optimization Project (CPOP) in LESCO, FESCO, PESCO and HESCO. PDP completed its Improved Meter Reading (IMR) program at LESCO’s Johar Town subdivision, FESCO’s Garden Colony and People’s Colony subdivisions, PESCO’s Sikandarpura subdivision, and HESCO’s Saddar subdivision. The IMR system is a low-cost, quick and efficient system for the meter reading function to improve the performance of read meters and increase the accuracy of consumer bills. The system is designed as a low-cost way for DISCOs to improve their meter reading practices, increasing billing accuracy and reduce consumer complaints.

- **Radio Frequency Handheld Units Pilot Project at LESCO** – As part of its RF meter pilot project, PDP awarded the meter installation contract for the 6,800 RF-enabled meters on two feeders of LESCO's Niaz Baig subdivision. Additionally, PDP began developing the meter reading and back office software tailoring it to LESCO's specifications and requirements, and prepared a detailed User Requirements Document. This software application will automate the commercial procedures currently practiced at the subdivision's revenue office and computer center. RF-enabled meters allow meter readers to read meters in a radius of 30 meters, thus saving time and increasing accuracy as meters are read along the route. Once the meters are read, this information is sent automatically for consumer energy billing.



A Meter Reader Using HHU Devices for Reading Meters

- **Handheld Units Project at IESCO & MEPCO** – PDP has also successfully implemented meter reading using Handheld Units (HHUs) at IESCO's Kamalabad subdivision resulting in a substantial reduction in consumer complaints. Additionally, in MEPCO after the successful implementation of HHUs in Gulgasht subdivision, PDP on request of the MEPCO BOD extended its implementation to the Bosan Road subdivision. As a measure of project sustainability, MEPCO initiated procurement of 130 units to scale up HHU implementation to other divisions and circles and expressed the desire to have the Musa Pak division serve as a model division by switching entirely to the electronic meter reading system, eliminating the current paper-based model resulting in faulty and corruptible readings. As a result of this initiative, meters now can be read and billed efficiently thus reducing the time from meter reading to billing.

TASK 9: IMPROVE CUSTOMER RELATIONS THROUGH COMMUNICATIONS & OUTREACH

PDP in partnership with DISCOs is developing a general communications management program to address general DISCO communications needs, and to implement specific demonstration interventions to illustrate how to develop and communicate messages from DISCO management to customers. This will include trainings and technical assistance to



Live Talk Show 'Behtri Ka Safar' from FM 101 Station, Peshawar

commercial staff that have direct contact with customers, seeking to sensitize staff to the need for projecting a more positive image of DISCOs.

HIGHLIGHTS

- **Radio Programs for Two Power Distribution Companies** – After the successful completion of 39 radio talk shows as part of its “Behtri Ka Safir” (Journey to Betterment), PDP this year launched radio talks for MEPCO and PESCO on their request for their regional FM channels. Both shows were designed to clarify the role of their respective DISCOs in the current power crisis with particular focus on the distribution of electricity. Both MEPCO and PESCO are facing high losses due to electricity theft in rural areas. Consequently, both shows centered on the causes of load shedding while also discussing the importance of theft reduction and informing the combined listenership of approximately nine million about energy conservation methods. Senior management from both DISCOs attended to promote their DISCOs’ image and inform the public about energy conservation habits.

- **Consumer Outreach Material for Power Distribution Companies** – This year PDP, in close collaboration with DISCOs, developed consumer outreach material with information on new connection procedures, contact numbers for complaints, human safety, the consumer’s role in discouraging theft and useful tips on energy conservation for circulation as fliers, banners, posters and standees. PDP completed the distribution of material to eight DISCOs including LESCO, FESCO, HESCO, MEPCO, Gujranwala Electric Power Company (GEPCO), Sukkur Electric Power Company (SEPCO), and Quetta Electric Supply Company (QESCO). In addition to this printed material, PDP also produced documentaries for PESCO, MEPCO, GEPCO, FESCO, and LESCO.

“On behalf of FESCO, I would like to thank the USAID Power Distribution Program for providing awareness material to FESCO. This material helps FESCO to better inform its customers on energy conservation, safety and energy efficiency.”

– CEO, FESCO

Dr. Rana Abdul Jabbar Khan

- **Energy Conservation Awareness** – PDP organized energy conservation walks in Multan and Faisalabad in celebration of International Earth Day. Large number of students from various educational institutions participated. 3,500 male and female students participated in both walks jointly organized by PDP, FESCO and MEPCO. Students carried placards, banners and posters reinforcing energy conservation messages, and were joined by MEPCO, FESCO and PDP staff in both events extensively covered by both print and electronic media.
- **Intranet Web Portal for PESCO.** PDP launched development of an intranet portal which is a very collaborative exercise and a number of workshops and meetings have been held with all the stakeholders. With the launch of web portal in 2014, PESCO employees will access to all

the official public documents on their desktops. The BOD, and the Management will have the extra facility available for communicating essential information across PESCO. All the departments of PESCO will have their own dedicated space available on the portal to upload any information for dissemination.

TASK 10: SUPPORT TO NATIONAL ELECTRIC POWER REGULATORY AUTHORITY

PDP is supporting NEPRA in improving its regulatory capacity in line with international best practices by employing regulatory, legal, and economic advisors. These advisors are international regulatory experts and will visit Pakistan on an as-required basis. Advisory services are being provided through regular interaction with NEPRA Authority, its key professionals and holding of workshops/seminars is done on a regular basis to support NEPRA. In addition, significant organizational and resource improvement work is also being carried out.

HIGHLIGHTS

- **Guiding NEPRA on Regulatory Environment** – Task reported in –Section 3: Component 3 Tasks” under –Task 3: Cost Reflective Tariff and NEPRA Reform.”

TASK 11: TRAIN MWP, DISCO & OTHER GOVERNMENT OFFICIALS ON UTILITY REFORM OPTIONS

PDP is engaging with MWP, DISCO BODs and senior management, and other Government of Pakistan officials in a series of workshops on utility reform options including management contracts and other privatization options.

HIGHLIGHTS

- **Engaging With DISCOs and NTDC for Performance Contracts** – Last quarter, PDP advisors were engaged by the interim Minister of Water and Power to draft performance contracts for DISCOs and National Transmission and Dispatch Company (NTDC), to be signed by the CEOs and Chairman BOD under the supervision of Secretary MWP. PDP advisors created Key Performance Indicators (KPIs) and monitoring mechanisms to ensure that performances at these public sector companies were streamlined especially with regards to operational and financial improvements. This quarter, the draft contracts were approved by MWP and distributed among all concerned stakeholders – thus far, only FESCO and GEPCO have signed these contracts though remaining DISCOs are expected to follow shortly. Furthermore, in order to support monitoring of the performance contract, PDP assisted the

MWP in developing the dashboard for remotely gathering all relevant information against each KPI of the performance contract, to maintain a centralized KPI database.

TASK 12: SUPPORT ENERGY EFFICIENCY & DEMAND SIDE MANAGEMENT IMPLEMENTATION

PDP is engaging with MWP and DISCOs on opportunities to improve energy efficiency, including appliance efficiency, and support for the design and implementation of Demand Side Management (DSM) programs. In particular, PDP will assist two DISCOs with large industrial loads in designing and implementing load management programs and two DISCOs with large urban loads in developing their capacity to conduct energy audits for residential, commercial, and industrial customers.



Newly Installed Motor at Diamond Fabrics Near Faisalabad

HIGHLIGHTS

- **Support Energy Efficiency and Demand Side Management** – Task reported in –Section 3: Component 3 Tasks” under –Task 2: Energy Conservation and Demand Side Management.”

TASK 13: IMPLEMENT PERFORMANCE IMPROVEMENT INTERVENTIONS & PROJECTS

PDP is performing a combination of general and specific performance improvement interventions that ensure sufficient performance improvement projects are implemented across all DISCOs. These include theft reduction through feeder optimization, revenue management through prepaid metering and anti-theft intervention.

HIGHLIGHTS

- **Planning & Engineering Centers in DISCOs –**

PDP has successfully established P&E centers in all nine DISCOs, with state-of-the-art equipment to modernize planning procedures. These centers are equipped with GIS and SynerGEE network power flow analysis software, which will help modernize and strengthen the P&E Departments to reduce energy losses, increase revenue, and increase the amount of reliable power for consumers. For the first time, this new USAID-provided equipment will allow DISCO planning engineers to produce accurate GIS maps of existing feeders and transformer locations, and conduct engineering analysis to reduce losses and optimize new projects and investment plans.



**The SynerGEE Planning Software
in Use by P&E Staff**

Recently, as part of capacity building at DISCOs, PDP conducted intensive classroom trainings for GIS mapping and power flow analysis software at PESCO. The hands-on training conducted by PDP experts focused on the three core models used in the SynerGEE planning software. This training followed by consistent technical support will ensure a permanent change and increase its sustainability upon PDP's withdrawal.

- **10 Year Financial Forecast Model (Model)** - PDP delivered a tool to improve a DISCO's business planning processes. The Model was developed and delivered to all DISCOs to function as a business planning tool for annual budgeting, tariff petitions, revenue requirements, funding requirements and strategic business planning. It also allows for inputs from other DISCO long-range construction work plans and power requirement studies models. During the year, PDP was informed by certain DISCOs were populating and utilizing the Model's capabilities. A close-out report was completed and sent to USAID for archiving.

- **Accounting Manual (AM) Update** - The AM was an initiative under PDP's Accounting Process Optimization project. The AM identifies and documents all aspects of the organization's accounting business processes and controls and compliant with an enterprise resource planning environment. The manual updates the DISCO's legacy manual, last revised in the 1980's, and provides DISCOs with a manual consistent with that of a best practices modern electric utility. It will act as a comprehensive finance and accounting resource which is fully compliant with all governmental, regulatory and International Accounting Standards as applicable in Pakistan. Job descriptions, supported by documented detail, are included and will serve as a tool for training, performance review and evaluations and promotions. The AM was delivered by PDP to DISCO Boards of Directors.

- **GIS Data Collection and Database Development in Power Distribution Companies –**
Work continued for assisting DISCOs in the development of GIS databases for their power

distribution facilities – this data is collected by individual feeders and processed into a GIS database suitable for map preparation as well as engineering program analysis. DISCOs are being encouraged to use their own personnel to conduct the GIS work and six DISCOs have already informed PDP that all GIS functions are being carried out by their own personnel, with PDP providing on-the-job support only. PDP's sessions focus on facilitating staff in processing spatial data captured through field surveys and subsequent processing to be used in SynerGEE, the power flow analysis tool. Recently, PDP assisted in completing GIS mapping of High Tension (HT) and all other feeders in PESCO's Peshawar circle. PDP has trained the P&E Departments of PESCO and other DISCOs to use GIS maps for network optimization and in calculating HT and transformation losses, using SynerGEE. A milestone was achieved recently when PESCO initiated GIS mapping of all LT feeders in five subdivisions of its Peshawar Circle. By the end of this year, PDP surveyed, mapped and modeled 399 feeders for technical analysis.



“The fully-upgraded Power Distribution Control Center (PDC) will allow operators to, for the first time, monitor actual load in real-time and ensure it doesn’t go over the limits set by National Power Control Centre (NPCC), crucial in reducing load shedding,” said Dick Dumford, Technical Team Lead, PDP.

(Pictured Above) Minimizing Unscheduled Load Shedding at MEPCO: Through the LDI project, PDP launched the newly upgraded PDC. With live monitoring screens presenting continuous actual load data from MEPCO’s 116 grid substations and 1,239 feeders, it allows MEPCO’s operators to, for the first time, monitor its planned load shedding to ensure it stays within the allocation quota set by the NPCC and avoid the need for unplanned load shedding.

SECTION 4: COMPONENT 3 TASKS

TASK 1: COMMERCIALIZATION OF DISCOS

Task 1 provides a two-pronged approach to commercializing DISCOs by focusing on improving performance of the Model (Task-1a) and Turnaround (Task-1b) DISCOs. As Task-1a has yet to begin, this report focuses only on Task-1b. Task-1b focuses on improving Turnaround DISCO PESCO with initiatives resulting in significant loss reduction and performance improvement to demonstrate how low-performing DISCOs can be improved.

HIGHLIGHTS

- **New Engineering Projects in PESCO** – The selection of PESCO as PDP’s turnaround DISCO was followed by detailed planning of engineering projects focused on improving the DISCO’s performance in terms of losses and theft. For this purpose, the Peshawar Circle was selected with 500,000 customers divided into 29 subdivisions. In 18 of these subdivisions, losses exceeded 15 million Kilowatt-hour (kWh) annually and PDP is focusing on improving the performance of these subdivisions. PDP’s project to upgrade congested areas using inter-set transformers and insulated LT conductors will help reduce losses and improve revenues in these areas. For engineering design and installation, PDP provided 30 Complete Self-Protected (CSP) 45 Kilo Volt Amperes (KVA) transformers and insulated secondary conductors for the Peshawar Circle. Site selections using the GIS mapping database led to the identification of locations most suitable for the installation of these transformers. The locations targeted were sites where the installation of the 45 KVA transformers would reduce the extra load resulting from overloaded distribution transformers in congested areas and lengthy LT lines, thus resulting in significant decreases in power losses and voltage drops, and improving revenue and customer satisfaction.



Reducing Unscheduled Load Shedding in Collaboration with DISCOs and NPCC UEP Delegates Being Briefed about the Electric Vehicle

- Modern HR Concepts and Practices at PESCO –** Recently PDP conducted a one-day training workshop on Customer Care for HR Staff” for PESCO staff handling HR-related work in various offices i.e. at the headquarters, circle and division levels. Significant positive feedback was received from the participants which included the five PDP interns positioned at PESCO, with the desire that this program be delivered to other employees.



One day training workshop on customer care

- Enterprise Resource Planning Rollout at PESCO –** As part of PDP’s ERP and CIS implementation, PDP’s ERP Project Management firm was deployed and work began. Senior management from PDP met with PESCO senior management to introduce their Project Management firm and present the ERP and CIS implementation plans, while orienting the firm to PESCO’s operations. The meeting was very well-received and significantly contributed in maintaining the positive momentum created from PDP’s earlier efforts toward a successful ERP and CIS implementation.
- IT Infrastructure Development at PESCO –** PDP is developing a ubiquitous Information Technology (IT) network which will allow users from any PESCO facility to be digitally connected at all times, facilitating intra-company communication. Additionally, PDP-developed ERP and CIS applications, will be available over the network for web-based teaching and learning, along with creating electronic newsgroups as an academic forum. During this year, PDP conducted an initial assessment of the offices and their locations, for the identification and sizing of the required servers and network backbone. The re-engineering of PESCO’s administrative processes and office procedures, digital signature recognition, secure transmission of integral documents, and the provision of integral documents and audit trails for data recovery are among the critical developments that will facilitate PESCO’s processes. After a detailed study and several meetings with PESCO authorities, the IT Infrastructure road map is ready. The PDP Infrastructure team is working on a comprehensive IT infrastructure development plan, which will be carried out in different phases, due to the fact that PESCO is a -green-field” and PDP has to start working from scratch. This infrastructure development is the key for successful implementation of ERP and CIS projects in PESCO.
- Customer Information System and Business Process Improvement at PESCO –** The CIS is a fully automated system that aims to increase the efficiency of the billing collections process including setting up new connections and managing existing connections. The computerized system will revolutionize the way DISCOs conduct their business by reducing operating costs, improving customer services and enhancing employee efficiency. It will also help minimize the

time it takes to translate customer energy consumption into billing statements and billing statements into revenue while dramatically reducing paperwork. This quarter, PDP developed a Terms of Reference document for CIS deployment at PESCO; the functional requirements of the CIS were discussed with PESCO's MIS and Commercial Departments, and tendering will begin in October. As part of Business Process Improvement, PDP continued mapping "as-is" commercial procedures and completed 53 processes including the "New Connections", "Disconnection", "Reconnection", "Complaints and Requests" and "Service Feedback" processes. These as-is procedures facilitate the foundation work for the CIS.

- **Commercial Activities Continue in PESCO** – During this year, PDP successfully completed the documentation and back-office work for meters replaced by PDP field staff at PESCO's Gulberg subdivision. The Meter Change Order (MCO) forms for these meters were prepared and sent to the Revenue Office for additional processing. Furthermore, approximately 25,000 under-billed units were discovered during the preparation of MCO forms and PDP followed up to ensure these units were charged to the correct consumers. PDP detected 85 illegal direct connections at the Kohat Road subdivision and reported these to PESCO – approximately 60,000 units were charged against 55 of the 85 illegal connections. Finally, 80,000 pending units were discovered during meter reading audits at the subdivision and subsequently charged to the respective consumers.

TASK 2: ENERGY CONSERVATION & DEMAND SIDE MANAGEMENT

Pakistan is currently facing the worst power crisis in its history. The country's current power supply falls significantly short of the estimated demand from consumers year-round. The capacity shortfall has resulted in 10-12 hours of load shedding in metropolitan cities such as Lahore, and as much as 16-20 hours of load shedding in rural areas. In the face of such challenges, energy efficiency and DSM can contribute significant benefits and in many cases in the shortest possible timeframe. DSM initiatives are considered to be the most cost-effective options for transforming peak demand growth to a longer time horizon and reducing wasted electricity consumption due to inefficiency.

HIGHLIGHTS

- **Demand Side Management of Industrial Motors** – The Industrial DSM Program focuses on the replacement of inefficient motors and VSDs. Industrial motors are estimated to contribute between 60-80% of industrial electricity consumption in most Pakistani industrial sectors. This year, PDP completed phase one installations for 644 large motor orders and 397 Variable Frequency Drives resulting in corresponding power demand reduction.

TASK 3: COST OF SERVICE & NEPRA REFORM

This task covers two activities: CoSS and Tariff Design for all DISCOs and NEPRA Reform. The Cost of Service Model is the tool with which the CoSS is performed, and includes a repository of financial, technical and billing information in a spreadsheet-based model. The model performs a functional classification of the total costs incurred by a utility and then allocates these costs to different customer categories. Once a customized model is developed, it becomes possible for utility staff to perform CoSS by simply updating the information repository.

HIGHLIGHTS

- **Cost of Service Study Begins for Four Power Distribution Companies –** After the successful completion of IESCO's CoSS, PDP assisted IESCO in incorporating the results of the CoSS for the tariff petition when it was filed with NEPRA. Additionally, presentations were made to NEPRA explaining the model in detail, and both the CoSS results and the model were appreciated by NEPRA. Simultaneously, data collection continued on the CoSS for FESCO, GEPCO, LESCO and MEPCO. Based on the data received so far, customizing the CoSS model has begun – upon completion, their results will be utilized in the preparation of tariff petitions.
- **Reevaluating Organizational Assessment and Restructuring at NEPRA –** Currently NEPRA's organizational structure is non-competitive and non-growth oriented, leading to low staff retention and resulting in limited skills and low morale of its professional staff. Through a series of meetings, PDP concluded that an absence of a mechanism for individual assessment and growth and a perpetually readjusting organizational chart has resulted in significant employee dissatisfaction, adversely affecting NEPRA's effectiveness. During this year, PDP initiated the process for organizational restructuring, and proposed a new organizational chart with all parameters defined e.g. work flows, job descriptions, KPIs, etc. In addition, work continued towards providing a modern information technology enabled environment. PDP has also carried out training of NEPRA senior managers in US under a Utility Exchange Program.
- **Continuing Reforms Agenda at NEPRA –** As part of continued interaction with NEPRA, PDP prepared a draft report on the electricity "market", focusing on NEPRA and DISCOs. This report will form the basis for subsequent development and recommendations on the market structure and reform process. Specific issues from this report will be converted into discussion papers and presented to NEPRA. Accordingly, during this period, six issues were identified and work began in collaboration with PDP advisors and consultants. A comprehensive workshop is planned in December this year for discussing and presenting key issues to market stakeholders. Also during the year, PDP conducted several workshops in collaboration with NEPRA, on power sector reforms and performance standards and one workshop on the request of NEPRA on improving the petition filing and submission processes. DISCOs were

trained on NEPRA's objectives for its data forms accompanying the tariff petitions, and the type of data used for these forms. This training will play a significant role in improving the tariff petition process for DISCOs.

- **IT Infrastructure at NEPRA:** The information technology infrastructure in place at NEPRA is not adequate and inhibits NEPRA's ability to respond to the Utilities and consumers needs on a timely basis. Based on the assessment of NEPRA's current IT infrastructure, it was concluded that although NEPRA has tried to incorporate some latest IT services, its IT infrastructure needs improvement, both at the functional and management levels. PDP will provide NEPRA with backbone servers and some related hardware and equipment.

TASK 4: CAPACITORS AT TUBEWELLS FOR POWER FACTOR IMPROVEMENT & LOSS REDUCTION

One of the largest loads on Pakistani DISCOs is that of tubewell pumps. Nationwide, electric consumption by tubewell pumps accounts for 12-15% of the total annual energy consumption, with significant variation from one DISCO to another. Tubewell pumps used in Pakistan have low-rated power factors, on the order of 80-85% even when new. Frequent rebuilding of pumps required due to poor power quality results in further reductions in power factor. Low power factor increases reactive power demand on transmission and distribution lines and transformers, and results in higher technical losses. The high number of inefficient tubewell pumps with low power factor has a significant effect on the system's technical loss, and creates unnecessary demand on the system.



Capacitors for Installation at PESCO

HIGHLIGHTS

- **Capacitor Installation at Peshawar Electric Supply Company** – The PESCO capacitor installation program for installing 9,000 capacitors is underway through a contractor. Stock projections are being explored to split stocks between QESCO and PESCO for subsequent backfill. Meanwhile the QESCO program which aims to install 16,000 capacitors is experiencing a slow rate of progress due to the sheer scale of operating in rugged difficult territory, with long distances between sites, the ongoing security constraints, and the cultural tensions between Pashtuns and Balochis divided north and south of the Quetta parallel which affects worker access. The capacitor installation program will result in substantial reduction in

demand and technical losses. Overall this year, about 7818 LT capacitors have been installed on tubewells.

TASK 5: FEEDER OPTIMIZATION FOR LOSS REDUCTION

DISCOs have not assessed current requirements for HT power factor correction. Feeder loads have changed with air conditioner motors and other appliances being added causing poor power factor on many feeders with lost revenue, low voltage and customer dissatisfaction.

PDP's P&E program will focus on the Model and Turnaround DISCOs to perform feeder power flow analysis using new software technology and to install 11 kV HT capacitors. This task will include installation of HT capacitors on feeders and in grid substations.

HIGHLIGHTS

- **Area Planning Using Geographical Information System (GIS) in PESCO:** The distribution network has undergone tremendous growth in the last few years. This growth was not governed by effective planning, resulting in a maze of feeders essentially serving the same area. GIS provides a vision of ground realities and conditions to planners, enabling them to properly manage the load of feeders and transformers. The SynerGEE software simulates the conditions and allows planners to test different network arrangements prior to field work.



Area Planning Using GIS and SynerGEE

TASK 6: EXPANSION OF HIGH IMPACT OPPORTUNITIES & IMPROVED GOVERNANCE

This task includes the following activities:

- Activity 1: Load Data Improvement Project
- Activity 2: Improved Meter Reading Project
- Activity 3: Line Staff Skill Development

- Activity 4: Governance
- Activity 5: Lineman Training for all DISCOs

HIGHLIGHTS

- **Load Data Improvement Project** – PDP is working on a fast track basis to provide DISCOs with the capability to reduce unscheduled load shedding through the installation of AMR meters at grid substations of all nine DISCOs. Over 9,000 AMR meters are expected to be installed in all DISCO grid substations in order to provide each DISCO PDC and the NPCC with near real-time data on current loads, which will help in anticipating and making quick adjustments to load management problems, avoiding many of the situations that lead to unscheduled load shedding. Through its Load Data Improvement (LDI) project, PDP successfully completed the installation of meters at all grid substations of seven DISCOs with work for the remaining two DISCOs nearing completion as well. Additionally, PDP equipped NPCC with live monitoring of the real-time supply and demand of power by DISCOs, which will allow the organization to, for the first time, effectively control the distribution of power, without subjecting the system to unscheduled load shedding. As witnessed by the graph above, it is clear that unscheduled load has been significantly diminished resulting in additional revenue. Also in this year, PDP established PDCs at all the DISCOs except QESCO. Special emphasis was placed on the dashboard designed for PDC operators, DISCO CEOs and General Manager Operations, in order to provide DISCO management with a live, online data on power distribution system. For the first time in the history of these DISCOs, real-time MWs, received from the national grid are being displayed on the live data screens installed at the PDCs of the DISCOs. This information is being used by DISCOs for load management and planning activities, and will help in controlling and reducing unscheduled load shedding.
- **Outage Reduction Devices Project** – The reliability of electric power distribution systems is critically important for both DISCOs and the consumers they serve. Due to the current lack of sectionalizing devices in the distribution systems of DISCOs, consumers not in the vicinity of faults are also affected during power outages. PDP purchased improved quality outage reduction devices (ORDs) i.e. switches, fuses, fault indicators and low voltage protection switches. Additionally, PDP provided on-load and off-load gang operated and disconnect switches which DISCOs will install independent switches to isolate faulted line and reduce the outage time for unaffected consumers. Similarly, PDP-procured dropout cutouts will limit transformer and low voltage network faults from tripping feeder breakers at grid substations. Line fault indicators placed on sectionalizing switches and junction poles will aid in locating the areas of faults thereby speeding up outage reduction. DISCO planning engineers have been trained to use SynerGEE for system planning and analysis, by running load flow studies of the selected distribution system and generate proposals for the installation of the ORDs.

- **Improved Meter Reading at Two Power Distribution Companies** –

After the successful completion of HHU-based readings, MEPCO meter readers used HHUs for meter reading on all general consumers in Gulghast subdivision, which was provided with the latest HHU meter reading software after implementing modifications based on inputs from MEPCO. PDP also added extra reporting features to the software including the ability to report on new consumers, a list of defective meters, theft reporting/unregistered consumers, consumer list and other important reports. After successful consumer billing using HHU meter readings, PDP handed the project over to MEPCO. PDP also carried out HHU-based meter readings and general consumer billing at IESCO in collaboration with IESCO meter readers, before handing over the project to IESCO.



IESCO Meter Readers Using HHUs to Record Meter Readings

- **Creating an Independent Central Power Purchasing Agency** – PDP is assisting MWP in creating Central Power Purchasing Agency (CPPA) as an independent company that will act as an agent between generators and distributors. PDP is working on making changes in the CPPA's articles of association and forming the BOD for approving these changes. PDP advisors are also studying the CPPA's financial reports in order to develop a business plan for the way forward.

- **Institutional Development for the Ministry of Water and Power** – PDP completed three core tasks for MWP which include creating the draft Code of Corporate Governance for Public Sector Companies, pushing amendments in Electricity Act to make it more effective, and providing periodic power sector performance updates. The Code of Corporate Governance was adopted in March and PDP advisors met with SECP to discuss the rationale behind the changes and the way forward. With regards to the Electricity Act, it was passed by Parliament and is currently lying with the President for final approval. Finally, PDP's periodic performance updates to MWP help decision makers in policy making, identification of problem areas, and setting goals and objectives.



“To date, this program has replaced and / or re-fixed 44,867 meters nationwide. Not only are meters being replaced, they are also being adjusted to readable heights for meter readers. This is a small yet powerful intervention,” said John Pullinger, Field Operations Director, PDP.

(Pictured Above) Improving PESCO’s Commercial Viability: The Power Distribution Program successfully replaced 800 meters in PESCO’s Gulberg subdivision. PDP is replacing all electro-mechanical meters with electro-static ones and existing meters are being reinstalled with proper service drops. The purpose of this intervention is to improve PESCO’s commercial viability by reducing theft and improving the accuracy of energy billed to consumers, eliminating overbilling and under-billing in the process. By replacing these meters, the possibility of meter tampering is significantly reduced, leading to a reduction in losses and improvement in PESCO’s profitability.



SECTION 5: EVENTS

CUSTOMER SERVICES CENTER AT LESCO

UPLIFTING THE ENVIRONMENT FOR WOMEN:

PDP handed over a renovated and improved Customer Services Center to LESCO authorities. The new office is cleaner and provides women working at the center with a more conducive environment. Through glass partitions, women can now handle consumer complaints in a respectable manner.

MESSAGE DELIVERED

Currently, less than one percent of employees in the power sector are female. This center will not only help improve working conditions for the 18 female employees positioned at the center, but will also ensure efficient operations of the center in the future.



U.S. SECRETARY OF STATE VISITS IESCO GRID SUBSTATION

FACILITATING LOAD DATA IMPROVEMENT:

U.S. Secretary of State, John Kerry and MWP Minister Khawaja Asif visited IESCO's Zero Point grid substation and received a briefing on PDP's LDI project. This project has received prominent interest from both the US government and the Government of Pakistan (GOP). Mr. Kerry declared the project a major success for USAID and the Ministry. Recently, the GOP included it in its National Energy Policy.

MESSAGE DELIVERED:

The smart metering system installed in the grid substations will help IESCO and the eight other DISCOs to better anticipate and manage loads which will help in providing more people with electricity on a more reliable basis. This system also enables DISCOs to determine the power being supplied, quantum of load shedding and DISCOs coincident demand at any time. This system has helped in almost eliminating unscheduled load shedding from the system.

APPENDIX A: TABULAR PERFORMANCE RESULTS

Indicator	Unit	FY2013 (Oct 12- Sep 2013)				Annual (Oct 2012- Sep 2013)	Life of Project (FY 2012- FY2013)
		Quarter 1	Quarter 2	Quarter 3	Quarter 4		
Power and Energy Saving							
MWs of power saved by installing high tension/ low tension capacitors, meters and improving commercial procedures	MW	4.6	4.4	3.6	10.3	23	97.4
Gigawatt hours of energy made available by installing high tension / low tension capacitors, meters and improving commercial procedures	GWh	12.3	21.6	13.5	53.7	101.1	435.1
Revenue saved or revenue generated by installing high tension / low tension capacitors, meters and improving commercial procedures	\$ million	1	1.6	0.8	3.4	6.8	34.5
Revenue saved by Internal Audit Optimization Project (Co-sourcing)	\$ million			6	3.8	9.8	9.8
Beneficiaries							
Number of beneficiaries receiving improved energy services by installing high tension / low tension capacitors, meters and improving commercial procedures	No.	69,000	66,000	54,000	154,500	345,000	1,461,000
Capacitors							
Number of capacitors installed on tube-well pumps	No.	1,113	1,990	1,483	3,232	7,818	9,488
Pumps & Motors							
Number of pumps installed in municipalities	No.	6	0	0	40	46	179
Number of motors installed	No.		210	230	204	644	644
Number of variable speed drives (VSDs) on motors	No.	0	0	300	97	397	397
Load Data Improvement (LDI) Project							
Number of Automatic Meter Readers (AMR) meters installed	No.		5,132	2,031	1,430	8,593	8,593
Meter Installation							
Number of new meters installed through CPOP and meter replacement activity	No	7,070	15,286	8,918	2,036	33,310	37,721
Number of meters re-fixed with new service drops and proper fixing brackets through meter replacement activity	No	3,047	4,908	3,414	188	11,557	13,970

Total new meters installed and re-fixed through CPOP and meter replacement activity	No	10,117	20,194	12,332	2,224	44,867	51,691
Census							
Number of consumers enumerated	No.	11,727	0	0	0	11,727	48,528
Number of theft cases observed through census	No.	98	96	0	0	194	1,099
Wrong tariff cases identified through census	No.	83	0	0	0	83	146
Lineman Training							
Number of linemen trained on proper safety techniques by PDP	No.	194	139	356	136	825	1,575
Number of linemen trained on proper safety techniques by DISCO through PDP's trained trainers	No.	252	3,650	3,500	1,175	8,577	8,727
Percent reduction in fatal accidents (maximum in a month)	%	70				70	71
Percent reduction in non-fatal accidents (maximum in a month)	%	65				65	66
Functional Training							
Number of DISCO staff trained in various functional areas like Finance, Human Resources, Technical, Commercial, Communications etc.	No.	4,442	7,010	6,565	2,571	20,588	25,652
Governance							
Number of policies analyzed and issued	No.	0	1	0	0	1	17

USAID Power Distribution Program

House 23, Street 19, F-6/2,

Islamabad, Pakistan