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FIFTEENTH QUARTERLY PROGRESS REPORT

APRIL - JUNE 2014

PRODUCED BY:

USAID POWER DISTRIBUTION PROGRAM

FIFTEENTH QUARTERLY PROGRESS REPORT

APRIL - JUNE 2014

IRG, USAID contractor for the Power Distribution Program

House 23, Street 19, F-6/2

Islamabad, Pakistan

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TABLE OF CONTENTS

TABLE OF CONTENTS	I
ACRONYMS	III
SECTION 1: PROGRAM OVERVIEW	1
SECTION 2: PERFORMANCE	4
SECTION 3: COMPONENT 3 TASKS	10
TASK 1: COMMERCIALIZATION OF DISCOS	10
TASK 2: ENERGY CONSERVATION & DEMAND SIDE MANAGEMENT	18
TASK 3: COST OF SERVICE & NEPRA REFORM	19
TASK 4: CAPACITORS AT TUBEWELLS FOR POWER FACTOR IMPROVEMENT & LOSS REDUCTION	21
TASK 5: FEEDER OPTIMIZATION FOR LOSS REDUCTION	22
TASK 6: EXPANSION OF HIGH IMPACT OPPORTUNITIES & IMPROVED GOVERNANCE	23
SECTION 4: COMPONENT 2 TASKS CONTINUING IN COMPONENT 3	28
TASK 1: CONGESTED AREA IMPROVEMENT	28
TASK 2: HIGH TENSION POWER FACTOR IMPROVEMENT	29
TASK 3: GEOGRAPHIC INFORMATION SYSTEM SURVEY & ENGINEERING ANALYSIS.....	29
TASK 4: DEMAND SIDE MANAGEMENT PROGRAM.....	30
TASK 5: LOW TENSION CAPACITOR INSTALLATION PROGRAM.....	31
TASK 6: COST OF SERVICE STUDY.....	31
TASK 7: ORGANIZATIONAL ASSESSMENT AND RESTRUCTURING.....	31
SECTION 5: EVENTS	ERROR! BOOKMARK NOT DEFINED.
INAUGURATING POWER DISTRIBUTION CENTER AT IESCO	Error! Bookmark not defined.
APPENDIX A: TABULAR PERFORMANCE RESULTS	35

ACRONYMS

ABC	Aerial Bundled Cable
AMR	Automatic Meter Reading
AT&C	Aggregate Technical and Commercial
BOD	Board of Directors
CCTV	Closed Circuit Television
CEO	Chief Executive Officer
CFL	Compact Fluorescent Lamp
CIS	Customer Information System
COP	Chief of Party
CoS	Cost of Service
CoSS	Cost of Service Study
CPOP	Commercial Process Optimization Project
CPPA	Central Power Purchasing Agency
CSP	Completely Self-Protected
CT	Current Transformer
DISCO	Government-Owned Power Distribution Company
DSM	Demand Side Management
ELR	Energy Load Reduction
ERP	Enterprise Resource Planning
FY	Fiscal Year
FESCO	Faisalabad Electric Supply Company
GEPCO	Gujranwala Electric Power Company
GIS	Geographic Information System
GM	General Manager
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 Resources
HT	High Tension
IESCO	Islamabad Electric Supply Company
IGTDP	Integrated Generation-Transmission-Distribution Plan
IMR	Improved Meter Reading
IRG	International Resources Group
IT	Information Technology
KV	Kilo Volt
KVA	Kilo Volt Amperes
kW	Kilowatt
kWh	Kilowatt-hour
LAN	Local Area Network
LDI	Load Data Improvement
LESCO	Lahore Electric Supply Company
LT	Low Tension
MIS	Management Information System
MEPCO	Multan Electric Power Company
MVAR	Million Volt Ampere Reactive
MW	Megawatt
MWP	Ministry of Water and Power
NAB	National Accountability Bureau
NEPRA	National Electric Power Regulatory Authority
NESC	National Electric Safety Codes
NTDC	National Transmission and Dispatch Company
NPCC	National Power Control Center
OJT	On-the-Job Training
P&E	Planning & Engineering
PDC	Power Distribution Center
PDP	USAID Power Distribution Program
PEC	Pakistan Engineering Council

PESCO	Peshawar Electric Supply Company
PETSAC	Pakistan Electric and Telecommunications Codes
PT	Potential Transformer
QESCO	Quetta Electric Supply Company
RF	Radio Frequency
RFP	Request for Proposal
SEPCO	Sukkur Electric Power Company
TA	Technical Assistance
TESCO	Tribal Areas Electric Supply Company
US	United States
USG	United States Government
USAID	United States Agency for International Development
VFD	Variable Frequency Drive
VVO	Volt/Var Optimization

SECTION 1: PROGRAM OVERVIEW

The Fifteenth Quarterly Report of the United States Agency for International Development (USAID) Power Distribution Program (PDP) covers the continuing efforts of USAID and International Resources Group (IRG) to implement 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, nine DISCOs, and NEPRA, and developed Action Plans for future interventions and demonstration projects. Components 2 and 3 have focused on the execution of jointly-selected interventions identified in Action Plans as codified in the approved PDP Work Plan, with the goal of improving sustainability in the power sector.

PDP has had another successful quarter as we continue USAID's work to help reform the power sector in Pakistan and improve performance of government-owned DISCOs. Through technical and commercial loss reduction programs as well as policy reform work, PDP has helped save over 124.9 MWs, installed or repaired over 70,754 meters, and trained over 28,500 power sector policy makers, DISCO employees or consumers. In total, the program has generated \$157.6 million in income or savings and has impacted directly or indirectly the lives of over 1,873,500 Pakistanis.

PDP continued to see improved financial and operational performance at Peshawar Electric Supply Company (PESCO) as the DISCO confirmed an additional \$28.3 million in increased revenue / decreased losses over FY 2014 over FY 2013 (PESCO's fiscal year). PESCO's aggregated technical and commercial (AT&C) losses reduced by an additional 2.6% as compared with the same period last year while collections increased by 2.5%. This can be viewed as a strong indicator that FY 2012-13 results are being sustained well into FY 2013-14. It is pertinent to mention that this improvement in financial position will be confirmed once PESCO's financial statements are finalized in September 2014.

This quarter PDP received results of an independent review of the Load Data Improvement (LDI) conducted by Hagler Bailly-Pakistan (HBP), a leading energy sector consultancy firm in Pakistan. As a result of the three-month study, HBP found the LDI project was, in fact, having a profound impact on the power sector as well as the economy. HBP's findings determined the LDI project resulted in:

- An immediate decline in unscheduled load shedding by 85% as over 200 MWs have now been shifted from unscheduled to scheduled load shedding
- An annual increase of \$62 million annually in DISCO sales revenue as over 3,000 GWh per year are now allocated to better performing DISCOs
- Improved performance in the economy equaling \$180 million annually due to the effective elimination of unscheduled load shedding
- A reduction in overloading of grid components and resulting damage

- Improved service delivery and customer satisfaction
- Improved competitiveness in power market and promotion of the Government of Pakistan (GOP) reform agenda.

PDP completed work in support of developing a five-year Integrated Generation-Transmission-Distribution Plan (IGTDP) this quarter. PDP played a leading role in providing technical advisory services and coordination support to all DISCOs as they worked to prepare their individual distribution plans – an important tool for proper planning the power sector. PDP then worked to incorporate DISCO inputs into the holistic IGTDP, a tool seen as essential by the GOP, donors, and IFIs alike as essential to the GOP as they pursue goals as stated in the National Power Policy 2013. The IGTDP is a necessary precursor to establishing multi-year tariffs in Pakistan as its completion is a key milestone in meeting the International Monetary Fund’s (IMF’s) loan conditions.

This quarter PDP completed development of “NEPRA Guidelines for the Determination of an Electricity End-User Tariff,” which is in line with the National Power Policy 2013, the NEPRA Act 1997, and NEPRA Tariff Rules 1998. This methodology will achieve the objectives laid out in the National Tariff and Subsidy Policy 2014 through the determination of revenue requirements using well-established and standardized formulae, requiring Cost of Service Studies, cost-based rates; using standards to promote technical efficiency and rate structures to promote economic efficiency; applying a surcharge to ensure a transparent administration of subsidies, protecting consumers as a result; and improving the minimum filing requirements to streamline the tariff determination process. This methodology applies to both annual and multi-year tariffs.

We hope you enjoy the detail provided in our fourteenth quarterly report, and look forward to continue delivering a program that provides real results and impacts the lives of millions of people in Pakistan.

Best Regards,

Arthur C.

Sedestrom
Acting 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 \$141,699,409

Total Project Funds Expended to Date: US \$119,268,100

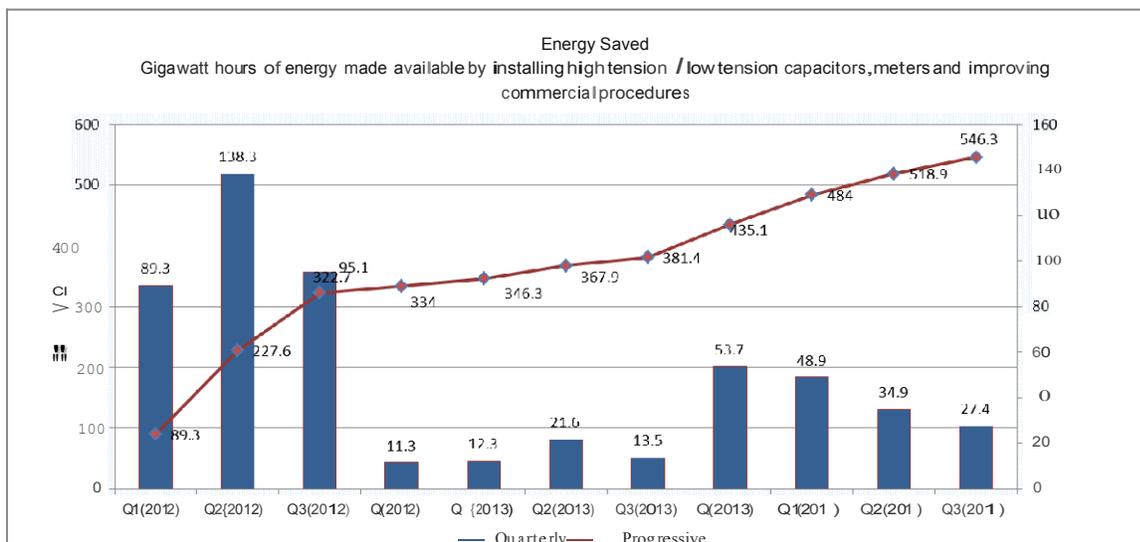
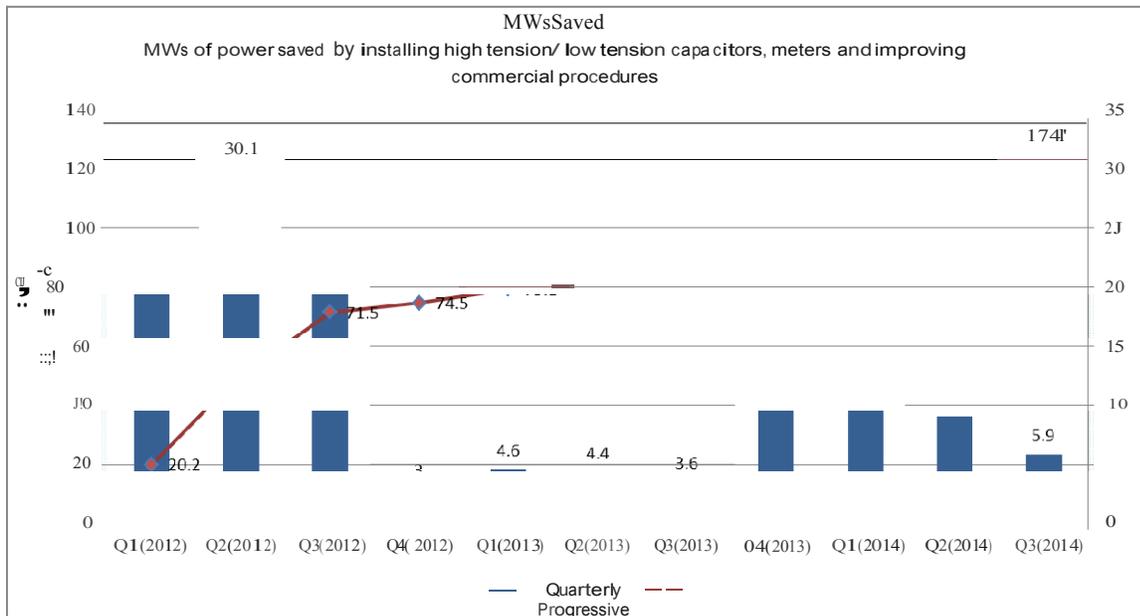
Project Funds Expended During the Quarter: US \$13,182,262

The report is produced using actual figures through May 2014 and estimated figures for June 2014.

Costs by DISCO

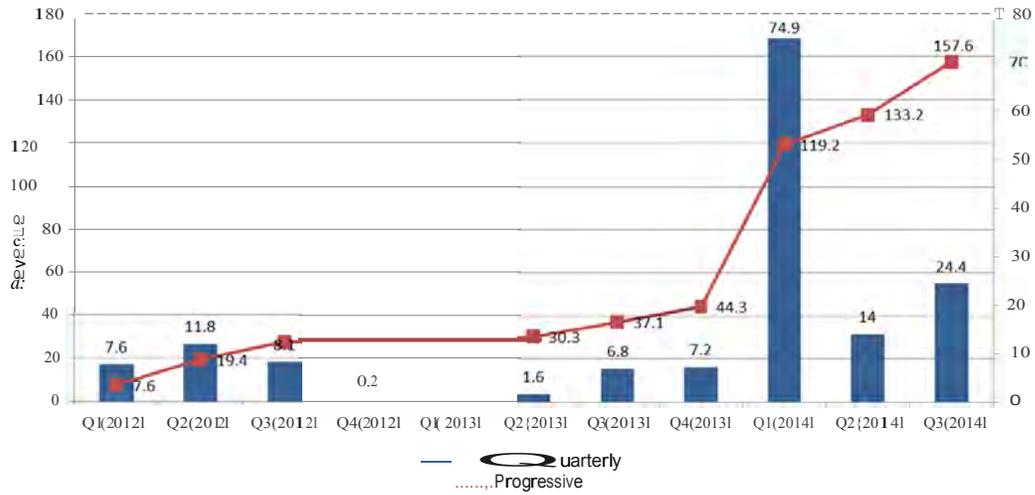
Project Inception to June 30, 2014	
DISCO	Amount (USD)
PESCO	27,734,993
LESCO	15,372,436
MEPCO	16,333,414
IESCO	9,751,197
HESCO	8,453,331
FESCO	7,498,118
GEPCO	6,195,440
QESCO	5,609,745
SEPCO	4,620,877
NEPRA/MWP	2,683,167
Stores *	15,015,383
TOTAL	119,268,100

SECTION 2: PERFORMANCE



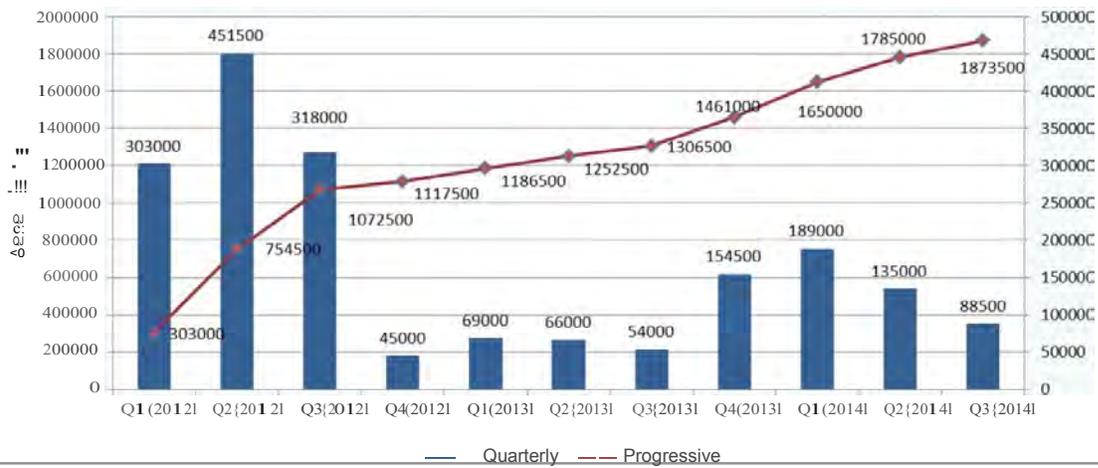
Revenue Generated

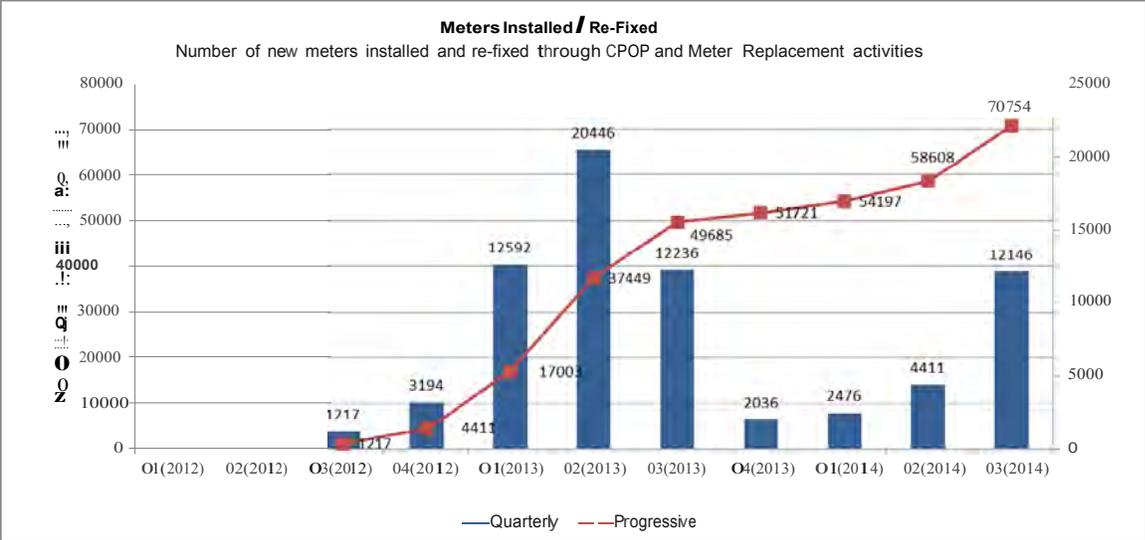
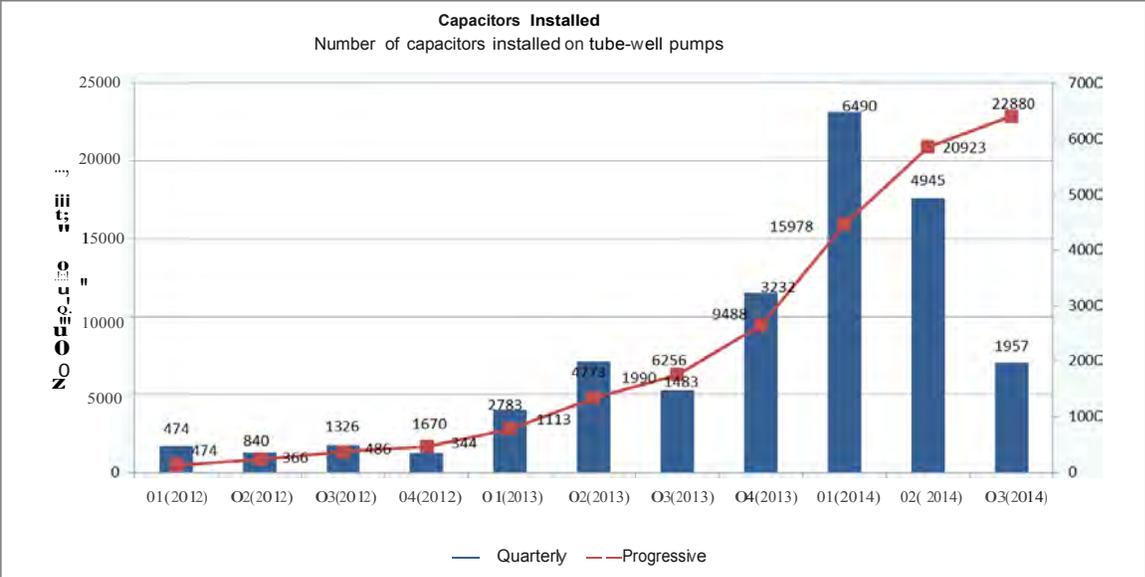
Revenue generated by installing HT/ LT capacitors, meters, improving commercial procedures and internal audit optimization

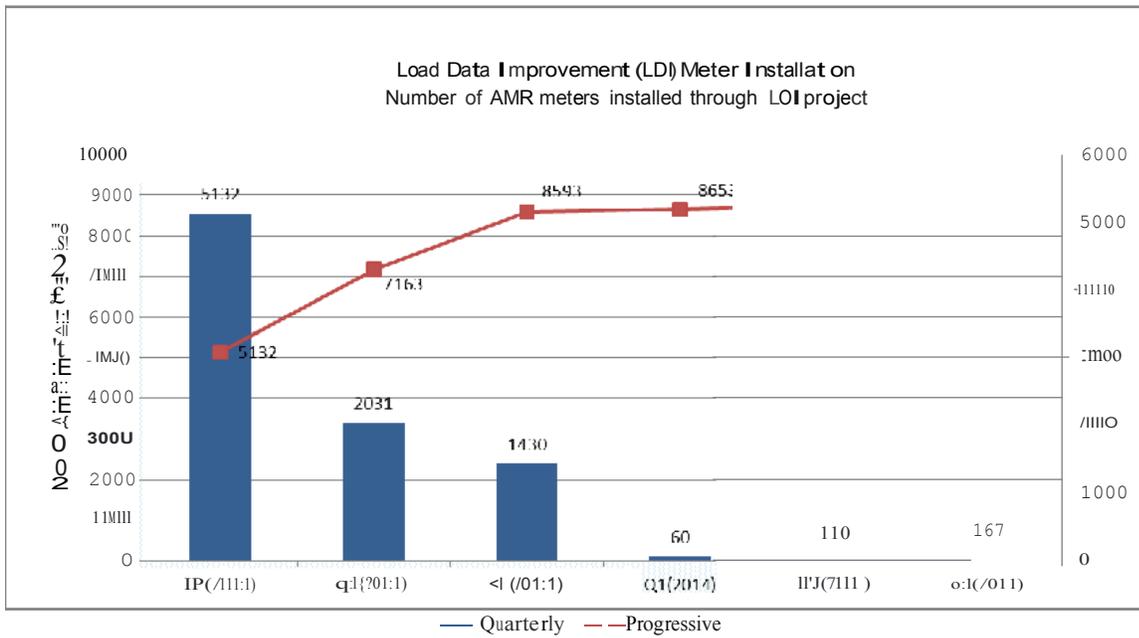
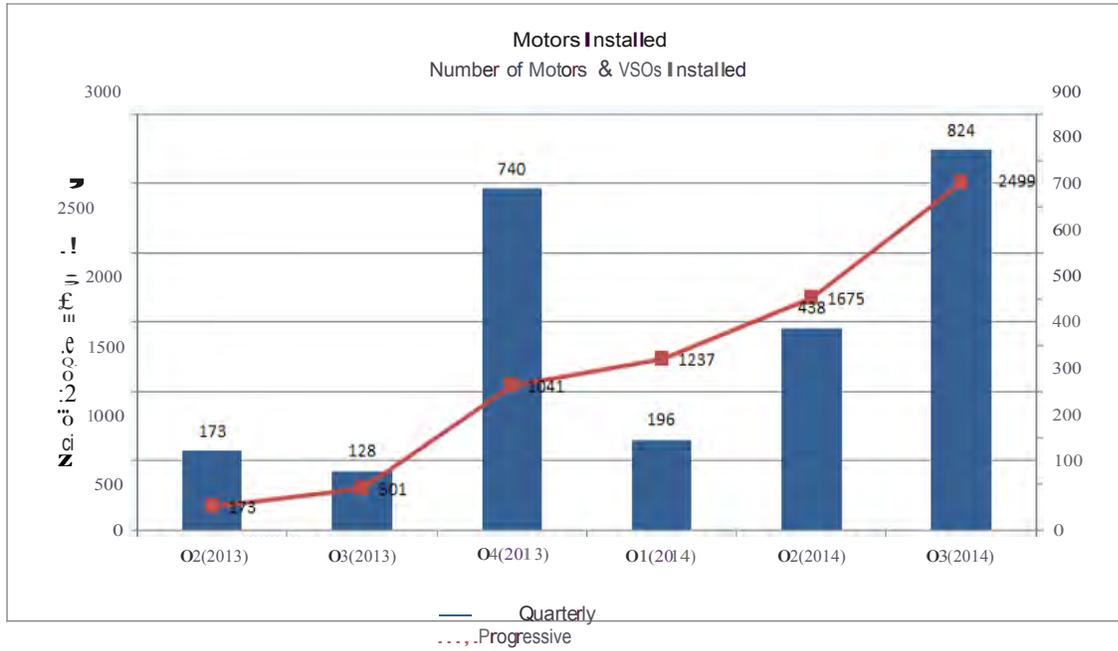


No. of Beneficiaries

Number of beneficiaries receiving improved energy services by installing HT/ LT capacitors, meters and improving commercial procedures

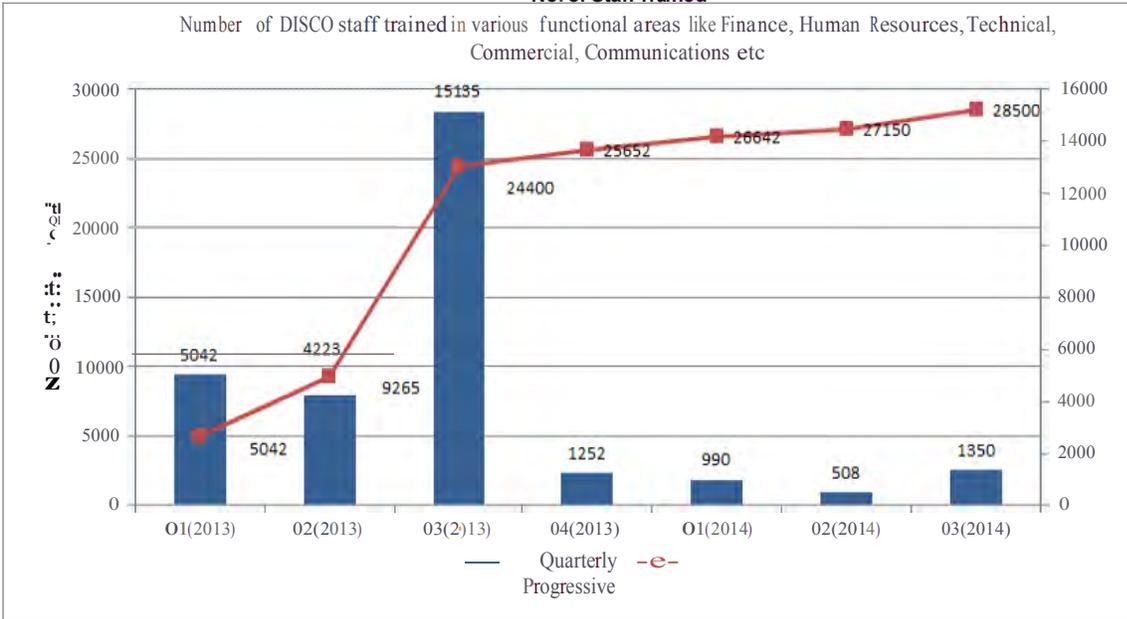






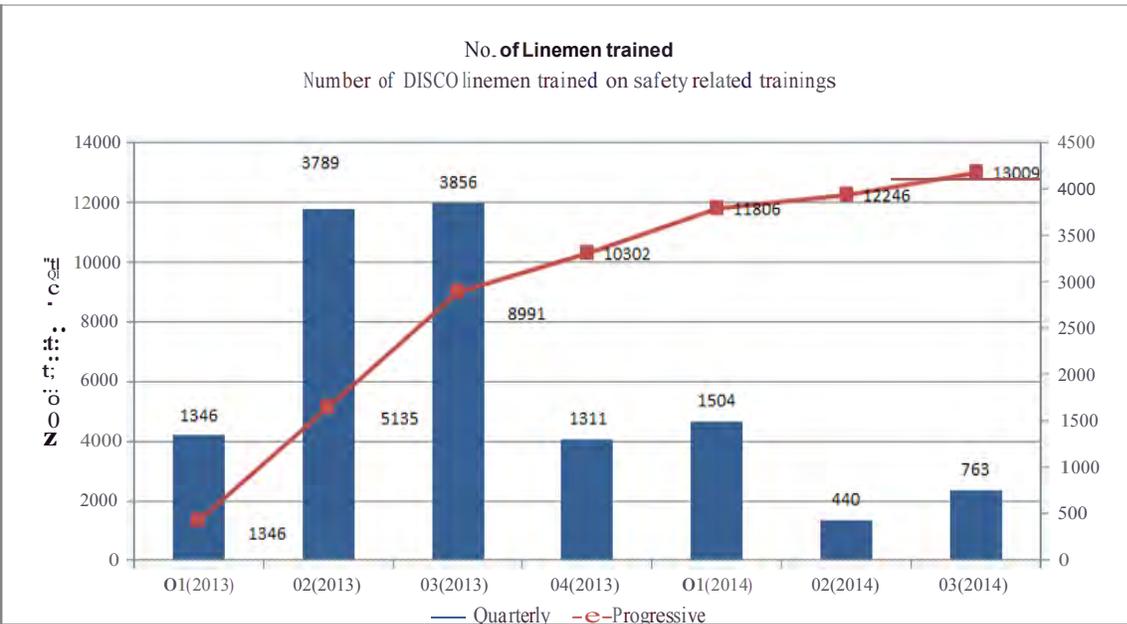
No. of Staff Trained

Number of DISCO staff trained in various functional areas like Finance, Human Resources, Technical, Commercial, Communications etc



No. of Linemen trained

Number of DISCO linemen trained on safety related trainings





- ***1,873,500 Beneficiaries Received Improved Energy Services...***
- ***\$157.6 Million In Savings And Revenue Generated by PDP's Interventions...***
- ***124.9 Megawatts (MWs) Saved Through Installation Of Capacitors, Pumps, Motors And Electronic Meters...***

SECTION 3: COMPONENT 3 TASKS

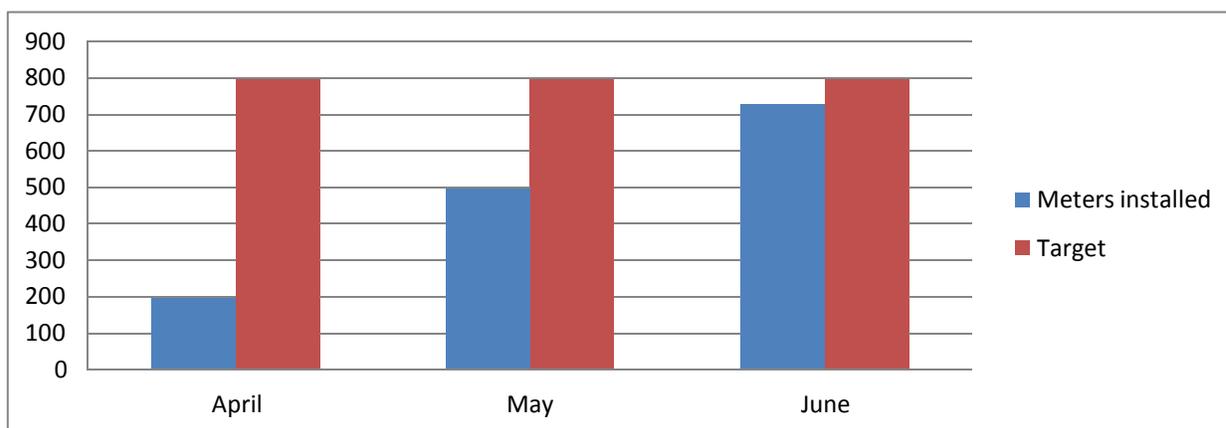
TASK 1: COMMERCIALIZATION OF DISCOS

Task 1 provides a two-pronged approach to commercializing DISCOs, focusing on improving performance of two Turnaround DISCOs (PESCO and MEPCO). PDP will modernize policies, processes, and procedures and provide a modern infrastructure that will allow these companies to improve their commercial, technical, and financial performance.

HIGHLIGHTS

- ▢ **Using PESCO Revenue Cell to Enhance Revenue** – One of PESCO’s primary challenges has been high losses due to power theft and poor revenue collection. To counter this and meet the Government of Pakistan’s (GOP) top priority in reducing AT&C losses, PDP developed an integrated approach to protect revenue and reduce losses. Continuing on the success of PDP’s established Revenue Protection Cell at PESCO’s Kohat Road subdivision, last quarter’s activities included theft surveys, theft surveillance, recovery of arrears, tracking cases of power theft and legal prosecution, and meter reading follow-up. The Cell currently operates in two divisions and will eventually encompass all of Peshawar Circle with its 29 subdivisions and consumer base of 450,000. Due to the nature of the Cell’s activities, this quarter PDP added key resources to its staff including a lawyer who is streamlining the legal and operational process required for theft detection and prosecution and a community mobilizer who is educating and motivating local communities against the theft of electricity. In a related capacity, PDP organized a workshop on the effective prosecution of electricity theft that was attended by all key stakeholders, including PESCO’s legal directorate, the police force, and the court magistrate. As a result of all these efforts, PESCO’s losses have experienced a three percent decline for the third consecutive quarter resulting in 3.25 million units saved and approximately \$480,000 in additional revenue. The Revenue Protection Cell also reported over a 450% increase in anti-theft cases over the previous period, resulting in approximately \$270,000 in direct revenue.
- ▢ **Automated Meter Reading Meters Installation at Two Distribution Companies** – This quarter, PDP installed 1,432 Automatic Meter Reading (AMR) meters with the chart below tracking the progress made each month. MEPCO’s lineman safety and installation training has been completed. The survey for identification of industrial and commercial connections was carried out by the Multan circle office and PDP-provided Planning & Engineering (P&E) and Geographical Information System (GIS) mapping capabilities that were used to identify utility poles, transformers, and consumers. These AMR meters are being installed on large use

industrial and commercial connections with loads above 20 kilowatt (KW). These installations were carried out and supported by MEPCO through the assignment of 32 linemen for this activity. The operations and maintenance activities of these AMR meters will be handed over to MEPCO field crews who will ensure proper meter functionality and operations. In a related activity, over 100 high-use and industrial based customers located within Peshawar Circle were identified and approved by PESCO for AMR meter installations. A prototype installation was designed, developed and presented to PESCO for review and approval prior to field installations. The meter supplier has reported that the meters have been configured and shipped to Peshawar and installation is expected to begin next quarter.



- **Automated Meter Reading on High-Use Customers** – This activity has been designed to assist MEPCO and PESCO to achieve significant improvement in commercial performance through integration of advanced metering processes and equipment. Both turnaround DISCOs have an outdated metering system largely based on old electro-mechanical metering prone to inaccurate readings and consumer tampering, which results in revenue loss. MEPCO and PESCO both lack the funding necessary to upgrade these meter systems with state-of-the-art technology. Under this activity, PDP is assisting both DISCOs to carry out a meter replacement program across their service territory. The AMR meters which are equipped with Global System for Mobile Communications (GSM) / General Packet Radio Service (GPRS) enabled communications are targeted for all high-use residential, agricultural, commercial, and industrial customers with loads of more than 20 kW. This group of meters include three-phase whole current AMR meters with remote disconnect and connect capability and AMR Current Transformer (CT) / Potential Transformer (PT) meters. These AMR meters will have two-way communication capabilities that transmit power data information that will be used to improve load management capability. These meters will also have the capability to record peak / off-peak demand usage as well as an ability to be programmed to automatically disconnect / reconnect power flow.
- **Geographic Information System Mapping Continues in Peshawar** – This quarter, PDP continued the GIS high tension (HT) and low tension (LT) network mapping in PESCO and

other DISCOs, with a focus on helping PESCO to complete GIS mapping of all HT feeders. PESCO's engineering staff is now fully trained and capable of completing this activity with PDP providing minimal on-the-job support. In Component 2, PDP carried out feeder mapping and analysis of one subdivision per DISCO with the goal of enabling the DISCOs to develop a geodatabase with accurate network mapping and asset location information. Under Component 3, PDP is continuing this effort and building PESCO and MEPCO's capacities to map entire divisions and circles. During this quarter, PDP extended its GIS efforts to Mardan, Hazara and Khyber Circles which totals over 200 feeders being mapped using the new tools implemented by PDP.

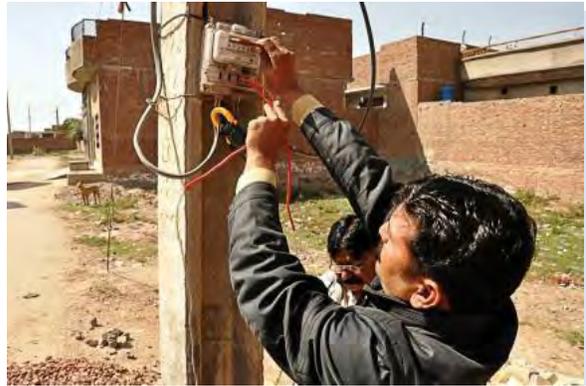
- ▣ **Enterprise Geographic Information System Mapping Continues in Multan** – All PDP created P&E computer centers at DISCOs' headquarters have been made operational and the mapping function transferred to operational staff that will assist with consistent updating of the distribution network system. The GIS field data is available to field engineers responsible for system construction, maintenance, and operation. This quarter PDP and MEPCO identified how the existing GIS IT infrastructure could be enhanced to facilitate remote data access. PDP will expand the GIS infrastructure to the circle level at MEPCO. The Deputy Director Technical has been assigned the responsibility to update the data base as needed. In a related activity, PDP during the quarter extended HT GIS mapping to three additional circles of MEPCO, including Bahawalpur, Vehari, and Sahiwal. PDP advisors provided on-the-job training (OJT) to MEPCO's Planning Engineers, Operational Staff and Field Surveyors to ensure project's sustainability. MEPCO's P&E Department is now capable to use GIS maps for network optimization, calculating HT and transformation losses, and using the SynerGEE power analysis tool. Additionally, PDP also completed the GIS mapping of the LT network of five feeders identified for meter replacement and around 300 site locations (approximately 300 kilometers) for Aerial Bundled Cable (ABC) installation.
- ▣ **Aerial Bundled Cable Installations Begin in Multan Electric Power Company** – PDP is currently supplying MEPCO with 500 kilometers of ABC which will be used as a theft deterrent. This quarter, contracts for the cable installation for 462 identified locations were developed and initiated. In the selected areas, the installation will help reduce electricity theft, reduce losses, increase revenue and will increase system reliability and public safety.
- ▣ **Installation of Insulated Cables in Peshawar Electric Supply Company** – The use of illegal wires/hooks – called "kundas" – to steal electricity is common in congested consumer areas where the electricity lines pass close to house roofs and balconies. These unshielded wires and hooks pose a safety and potentially life-threatening hazard to residents. To control illegal connections and improve consumer safety, PDP-trained linemen continued installing quadruplex-insulated secondary cables to support this effort. This activity began last quarter and continued this quarter. This cabling replaces the current bare-wire lines and low voltage secondary cables, thus reducing non-technical losses and improving revenues. The existing

bare LT secondary conductors were replaced on nine of the 64 transformers on PESCO's Wapdaga feeder, which was selected as the prototype for this project. Field surveys for the remaining transformers were completed, remaining work orders issued and work began on replacing bare conductors with insulated conductors. Recognizing the benefits of this activity and to add to the performance of this feeder, PESCO began replacing all meters with electrostatic meters on this feeder.

▣ **Customer Information System Development Gains Momentum** – The Customer Information System (CIS) is a fully automated system that aims to increase the efficiency of the billing and collections processes, including setting up new connections and managing existing ones. The computerized system will revolutionize the way DISCOs conduct their business through reductions in operating costs, improved customer service, and enhanced employee efficiency. It will also help minimize the time needed to process customer energy consumption data into billing and billing into revenue, while dramatically reducing paperwork. Augmented with handheld meter reading devices (HHUs), the CIS generates accurate consumer bills and provides a one-window customer service center, enabling improved customer service. This quarter, PDP completed HHU implementation at PESCO's Kohat Road subdivision where, as a first step, subdivision staff were trained on the HHUs and associated software. Also this quarter, the contract for the supply and implementation of an off-the-shelf CIS was awarded. In parallel, project preparation activities including setting up training rooms, short-listing project staff from PESCO, and conducting end-user information training workshops were also completed this quarter.

▣ **Enterprise Resource Planning Rollout at Turnaround Power Distribution Companies** – Existing DISCO back office operations are incapable of providing timely information required for making effective managerial decisions or for properly monitoring and controlling utility operations. DISCO cost/revenue centers are dispersed geographically, adding to the delay in reporting. Additionally, collection, validation, compilation, and data processing processes are inefficient. The automation of back office operations through an Enterprise Resource Planning (ERP) system will streamline processes, improve workflow efficiency, and produce reliable and precise financial and management information. This quarter, PDP's ERP implementation vendor for the PESCO implementation was finalized and the contract awarded, with work to begin early next quarter with Oracle's E-Business suite and the customer care and billing system. Also this quarter, 50 master users for the ERP and CIS systems were identified and basic Information Technology (IT) trainings were provided, with an additional 400 users expected for trainings before the end of the first quarter in 2015. Also this quarter, ERP implementation proposals for MEPCO's ERP were received from seven vendors. These proposals were evaluated and final contract negotiations began with the selected implementation vendor. To support this initiative, MEPCO appointed a Project Manager and Deputy Project Manager and established Core and Functional ERP Implementation Teams, and began documenting the current workflow processes in finance, material management, procurement, human resources, and payroll applications.

□ **Effective Meter Reading and Surveillance Program Continues at Multan Electric Power Company** – As part of PDP’s efforts to improve the quality of meter reading at DISCOs, PDP, during the quarter, delivered and additional four sessions of its “Effective Meter Reading and Surveillance Program” at MEPCO. The program focuses on the duties and responsibilities of meter readers and techniques for reading electromechanical and various other types of meters. The training program also enhances the knowledge, skill set, and work attitudes of the commercial and line staff employees related their duties and responsibilities as meter readers, commercial staff, technicians, and customer service representatives. The course also addressed the impacts of accurate meter reading, what actions can be performed to resolve meter-related issues, a description of the prevailing practices for controlling energy theft, and the preventative methods that can be used in the field. Thus far, over 105 participants from MEPCO subdivisions have been trained, with participants expressing strong interest in attending additional Effective Meter Reading training programs.



A Meter Reader Testing and Verifying a Consumer Meter During a Surveillance Activity in Multan.

□ **Theft Control at Peshawar Electric Supply Company** – Due to the high losses that PESCO sustains as a result of electricity theft, a joint taskforce team comprised of PESCO commercial staff, local police, and PDP program staff continued, during the quarter, with implementation of the anti-theft control initiative. To support this intervention, a comprehensive mass media anti-theft campaign continued using newspaper advertisements, TV commercials, infomercials, billboards, and streetlight pole streamers. The campaign is ongoing in major locations in Peshawar and press coverage has appeared in the region’s leading newspapers. The campaign is rooted in the new ordinance passed by the government designed to curtail power theft. A similar campaign is planned for MEPCO beginning in July.

□ **Energy Conservation Campaigns Continue to Support Turnaround DISCOs** – The PDP Energy Conservation Drive continued this quarter, focused on children in Peshawar. Attractive audio-visual presentations were produced and shown to all students. The team, comprised of senior PESCO staff and PDP’s Communications Team, reached out directly to over 8,000 students, with an expected indirect reach of conservation messages to over 20,000 persons that include the students’ families, friends, relatives and neighbors. The take-home material, distributed to the students, included conservation tips, plus guidelines on being “energy responsible” and motivational messages. PESCO plans to continue this activity throughout the year, noting the program’s long-term positive benefits. In a related activity, MEPCO distributed over 5.7 million compact fluorescent lamp (CFL) / energy saver light bulbs among its

consumers. These CFLs will replace older, inefficient incandescent bulbs and thereby reduce energy demand. PDP, in collaboration with MEPCO, continued with a media campaign to promote the use of energy savers and the benefits of energy conservation among MEPCO's consumers. The campaign included newspaper advertisements, cable TV and FM channel public services messages, airing of a MEPCO documentary, streamers and banners within Multan, and displays of standees and banners in all MEPCO's circle offices. This ongoing CFL campaign not only promotes MEPCO as a consumer-friendly DISCO, but will also facilitate MEPCO in meeting its goal of reducing consumption by 230 megawatt (MW). The activity was greatly appreciated by MEPCO senior management who, during the quarter, requested additional consumer awareness material from PDP including information on energy conservation, new connection procedures, and using appliances efficiently to reduce the demand of power.

□ **A One-Window Customer Service Center at Multan Electric Power Company** – As part of its

CIS initiative at MEPCO, PDP this quarter converted the customer services center at MusaPak division into a one-window customer services facility. This Component 2 activity was expanded in Component 3 after MEPCO was selected as the second Turnaround DISCO. The one-window customer service center has already increased customer satisfaction by over 125% through a major decrease in the average time taken to resolve complaints. Over 4,000 customers accessed the center's services during this quarter, up from 1,300 visits last quarter and the center was handed over to MEPCO. PDP is extending the intervention to other division offices within the Multan circle and a supporting project plan and cost proposal were finalized during the quarter.



One-Window Customer Service Center at MEPCO's Musapak Subdivision

□ **Commercial Activities Move Ahead in Multan Electric Power Company** – This quarter, PDP started the implementation of performance improvement initiatives that included expansion of Improved Meter Reading (IMR), HHU projects in the Multan Circle, and surveillance activity for revenue enhancement. Work started in four divisions of Multan Circle (Musa Pak, Cantt, Mumtazabad, and City), which includes 19 subdivisions and over 500,000 customers. The initial performance results, from these subdivisions, are very promising with monthly losses reduced in 16 subdivisions and progressive losses reduced in 14 subdivisions. Also, more than 9,800 defective meters were replaced during this quarter. Under the surveillance initiative, the PDP commercial team, with the help of MEPCO staff, identified 388 illegal connections and 1,957 direct hooks (Kundas) which MEPCO is proceeding to remove.

▢ **Meter Reading Using Handheld Units at Peshawar Electric Supply Company** – Meter reading data integrity is fundamental to the sustainability of DISCO billing and financial operations, and ensures that energy sold is accounted for properly, and builds trust between the customer and the company. The current practice is for meter readers to record their readings on hard copy registers which need to be reentered twice before they are keyed into the billing database. This practice provides opportunities for data manipulation and transcription errors. In order to provide reliable consumption data for consumer billing, handheld meter reading devices are being introduced into the DISCO. PDP continued with its implementation of HHUs at PESCO's Kohat Road subdivision and completed the transition from paper-based meter reading to the handheld meter reading system. Also this quarter, MEPCO's subdivision staffs were trained on the HHU operations and supporting software and the new HHU application was integrated with the legacy billing the system. Parallel runs of all meter reading batches were completed and validated thus providing a clean billing file to produce consumer bills from. The HHU project has resulted in a significant improvement in billing and collection of the subdivision and work efficiency has improved by over 20%.

▢ **Preparing a Strategic Business Plan for Multan Electric Power Company** – PDP's MEPCO improvement initiatives include development of a five-year strategic business plan for MEPCO that will provide a roadmap for implementing specific and measurable improvements.

In defining MEPCO's strategic objectives and related goals, the business plan will identify key activities required to meet them. This quarter, PDP continued its series of workshops for senior management that were designed to educate and instruct them on the development of a business plan's strategic objectives and goals. Upon completion of the workshops, the goals and objectives were reviewed by senior management to help develop a more informed understanding of the goals and the challenges associated with achieving them. Senior management accepted the goals and objectives and forwarded them to the BOD for approval.



A Workshop on Business Planning for MEPCO Senior and Middle Managers.

▢ **Professional Development Workshops for Women in Leadership** – This quarter, PDP held two workshops for MEPCO's female employees and interns. The objective was to promote professionalism, integrity, and leadership qualities in employees. Work ethics, organizational dynamics, and changing concepts and perceptions were discussed in interactive sessions. Current challenges facing women in the workplace and related consequences that hinder efficiency and productivity were discussed.

□ **Internship Program Supports Turnaround DISCO Initiatives** – PDP positioned 12 internees at MEPCO who are assisting and supporting the work PDP is doing under its Enterprise Resource Planning intervention, wherein the DISCO’s legacy financial systems are being replaced by automated processes. Additionally, three interns are working with the P&E Department to support the GIS and Load Data Improvement (LDI) interventions and two interns were positioned with the Human Resources (HR) Department to support PDP’s training programs. PDP’s internship program was designed to instill best practices and increase the number of qualified young professionals in the energy sector to facilitate a bottom-up transformational change in DISCOs.

□ **Computer Lab under Development at Multan Electric Power Company** – This quarter, following on from PESCO’s successful computer lab launch, PDP began preliminary work for developing a similar computer lab for MEPCO. Purchase Orders were issued for commencement of civil works and procurement of furniture, while proposals for IT equipment and the development of a Local Area Network (LAN) infrastructure were evaluated. Additionally, PDP has provided furniture, three laptops, 25 desktops, mainframe server, high-speed printer / scanner, and multimedia screens for the computer labs. These computer labs will provide employees the opportunity to learn new skill sets and will enhance the professional capabilities of individual DISCO employees and also contribute to improving MEPCO’s overall business operations. The labs will be primarily used for ERP training along with other IT trainings that support PDP IT interventions.

□ **Building Corporate Communications at Turnaround DISCOs** – To educate its consumers and employees regarding MEPCO and PEPCO goals, responsibilities, and recent reforms, PDP is assisting in improving corporate communications. This effort includes a information and branding campaign including DISCO branded stationery, calendars, diaries, notebooks, file covers, etc. This quarter, both turnaround DISCOs moved into the second series of the weekly FM radio talk show program “Behtri Ka Safar” (Journey to Betterment), designed to build awareness among DISCO consumers on the positive developments and initiatives being taken at distribution companies. The programs are structured in a way that attracts the attention of their listeners by hosting senior management from their respective DISCO departments to discuss activities within their responsibility. Past discussion topics have included the new connection procedures, load shedding, and consumer billing, etc. Twenty-six episodes have been aired on three different radio channels in the Khyber Paktunkhwa and South Punjab provinces.



Director General Public Relations Speaking on the Significance of Energy Conservation During a Live Radio Talk Show

- ▢ **Establishing Consumer Complaint Center at Peshawar Electric Supply Company** – PDP assisted PESCO in renovating its existing consumer complaint center this quarter in an activity that was greatly appreciated by both the DISCO and its consumers. Previously, all activities were done manually in cramped spaces with no waiting areas in the complaint centers for customers. Currently, there is now an improved customer friendly environment with comfortable waiting area and a fully trained and customer focused staff. Consumers are now able to get their complaints swiftly handled, reducing difficulties for both management and consumer, resulting in increased customer satisfaction. In addition, PDP renovated the one-window customer service center in PESCO’s Kohat Road subdivision to facilitate consumers with better services. Customer satisfaction has improved by over 42% as a result of this initiative.

- ▢ **Customer Services Excellence Continues at Multan Electric Power Company** – As part of PDP’s initiatives to improve the concept of customer services at DISCOs, PDP delivered two training sessions of its “Customer Services Excellence Program” at MEPCO. The sessions were focused on service excellence and discussed a customer services model aimed at improving customer care increasing customer satisfaction. The program also provided an environment for participants to practice their new skills while learning from peer feedback and experience. This quarter, 50 participants, including seven women, from different MEPCO subdivisions were trained in this program. Participants have thus far expressed keen interest in additional training sessions. Many participants stated that this was the first time in their careers that they were trained in customer service / customer satisfaction workshops.

- ▢ **Consumer Census Helps Update PESCO Database** – Under PDP’s CIS intervention, PDP is using consumer censuses to ensure the consumer database reflects accurate customer data. This quarter, PDP continued consumer enumeration at Peshawar circle’s Chok Yadgar subdivision and enumerated over 4,700 consumers. In addition, PDP secured the services of a contractor as well as designed an Android mobile application for consumer data collection using electronic handheld devices. The application has built-in data validation protocols, is GPS enabled, and allows for photographs to be taken, thus resulting in clearer and more accurate data to be captured. This quarter, over 11,000 consumers in Charsadda division were enumerated using this process. Further, more than 3,700 Meter Change Orders and 15 tariff cases have been processed for Cantt Division resulting from this enumeration activity.

TASK 2: ENERGY CONSERVATION & DEMAND SIDE MANAGEMENT

Pakistan is facing the worst power crisis in its history. The country’s power supply falls significantly short of the estimated demand from consumers year-round. The capacity shortfall



18.5 KW Tubewell Motors awaiting Replacement

has resulted in eight to ten hours of load shedding in metropolitan cities such as Lahore, and as much as 16 hours of load shedding in rural areas. In the face of such challenges, energy efficiency and Demand Side Management (DSM) can contribute significant benefits and often, within 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 Variable Speed Drives. Industrial motors are estimated to contribute between 60-80% of industrial electricity consumption in most Pakistani industrial sectors. PDP installed 1,539 industrial motors and replaced 749 Variable Frequency Drives (VFDs) over the course of the program that concluded this quarter. This activity resulted in saving 12.54 MW of power.
- **Loss Reduction on Feeders** – MEPCO has serious problems managing reactive power and proper voltage on lengthy feeders. To improve this situation, PDP has designed a Volts/VAR Optimization (VVO) program. With the introduction of VVO devices, it is expected to achieve about 5% loss reduction on individual feeders where these devices will be installed.

TASK 3: COST OF SERVICE & NEPRA REFORM

This task covers two activities: Cost of Service Study (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 a utility incurs, 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 Completed for Four Power Distribution Companies** – PDP completed Cost of Services Studies for MEPCO, Faisalabad Electric Supply Company (FESCO), Lahore Electric Supply Company (LESCO), and Gujranwala Electric Power Company (GEPCO) this quarter, and working sessions were subsequently held with these DISCOs in order to finalize cost predictions for the next quarter. Based on these predictions, the Cost of Service Study results for fiscal year (FY) 2014-15 are being used as the basis for the next set of tariff petitions for these DISCOs. Once implemented, the new tariffs will be more

cost effective and will result in the elimination or reduction of inter-category cross-subsidization.

▢ **Formulation of NEPRA Guidelines for Determination of Consumer Tariffs** – This quarter PDP proposed the development of “NEPRA Guidelines for the Determination of an Electricity End-User Tariff,” which is in line with the National Power Policy 2013, the NEPRA Act 1997, and NEPRA Tariff Rules 1998. This methodology will achieve the objectives laid out in the National Tariff and Subsidy Policy 2014 through the determination of a revenue requirements using well-established and standardized formulae, requiring Cost of Service Studies, cost-based rates; using standards to promote technical efficiency and rate structures to promote economic efficiency; applying a surcharge to ensure a transparent administration of subsidies, protecting consumers as a result; and improving the minimum filing requirements to streamline the tariff determination process. This methodology applies to both annual and multi-year tariffs.

▢ **Identifying Under-Billing in Power Distribution Companies Results in Massive Savings** – During the CoSS analysis, PDP discovered that all DISCOs were under-billing select customer groups through the use of incorrect billing formulae. Time of Use consumers paying a fixed rate were being billed based on the determination of average demand, rather than NEPRA’s determined tariffs for maximum demand, resulting in lower consumer bills and less revenue for DISCOs. This practice was instituted for both commercial and industrial consumers who are billed based on both consumption and maximum demand and resulted in up to \$47 million in losses, has been a part of the current system for well over a decade, and would have gone unnoticed for longer except for PDP’s discovery. Subsequently, after reviewing the evidence and supporting documentation supplied, NEPRA concurred with PDP and ordered all DISCOs to immediately correct this situation through a change in their billing formula. This correction was made in April 2014 and DISCOs started billing the correct amount to their consumers. Based on system-wide Management Development Institute-based billing data for FY 2012-13, this change is expected to increase the combined revenue of DISCOs by \$42 million annually and resulted in savings of \$7 million this quarter.

▢ **Reevaluating Organizational Assessment and Restructuring at NEPRA** – Currently, NEPRA’s organizational structure is non-competitive and non-growth oriented, resulting in low staff retention, limited skill development, and low employee morale. The absence of a mechanism for individual assessment and growth with a perpetually readjusting organizational chart has resulted in significant employee dissatisfaction. This quarter, PDP submitted a Job Description manual to NEPRA which clearly details organizational hierarchies



Training on Developing Job Descriptions for NEPRA staff.

and scope of responsibilities for 190 organizational positions. Also this quarter, PDP developed two models for its performance management system, which is expected to be implemented in July pending approval from the Authority. PDP's newly developed Training Needs Assessment Report contains information on hierarchical and departmental training needs, and identifies potential training facilitators in addition to training courses.

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 via tubewell pumps accounts for about 12% of the total annual energy consumption, with significant variation from one DISCO to another. Tubewell pumps used in Pakistan have low-rated power factors, in the order of 80-85% even when new. Frequent rebuilding of pumps 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 Tubewell Installations at PESCO

HIGHLIGHTS

- **Capacitor Installation at Five Power Distribution Companies** – Under its Capacitor Installation Program, PDP is installing capacitors on tubewells throughout the country. The PESCO project concluded with the installation of 2,367 capacitors as did the Quetta Electric Supply Company (QESCO) project with the installation of 15,809 capacitors. The preferred bidder for the installation of 45,000 capacitors in MEPCO was selected this quarter and the contract is in the final stages of approval. The planning for installation of capacitors in Sukkur Electric Power Company (SEPCO), Hyderabad Electric Supply Company (HESCO), and Islamabad Electric Supply Company (IESCO) is also being planned and will be implemented during the next quarter. The capacitor installation program will result in substantial reduction in technical losses.

TASK 5: FEEDER OPTIMIZATION FOR LOSS REDUCTION

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

PDP's P&E program will focus on MEPCO to perform feeder power flow analysis using new software technology and install 11 kilo-Volt (kV) HT capacitors. This task will include installation of HT capacitors on feeders and in grid stations.

HIGHLIGHTS

▣ **Area Planning Using Geographical Information Systems** – The distribution network underwent tremendous growth in the last year, but lack of effective planning resulted in a maze of feeders essentially serving the same area. GIS provides planners with a vision of ground realities and conditions, enabling them to properly manage feeder and transformer loads. The SynerGEE software simulates the conditions and allows planners to test different network arrangements prior to fieldwork. Planners at each DISCO are now using GIS to better visualize ground conditions and generate proposals. PDP also coordinated effective area planning activities with all DISCOs, and this quarter, PESCO planned a load shifting exercise involving multiple feeders, revealing the real benefit of GIS mapping and power analysis tools and affirming that incorporating their use in area planning and other planning tasks leads to better and more feasible network optimization plans. The initial plan created by PESCO's P&E staff prior to GIS mapping was double the cost and lacked a significant reduction in annual energy losses. GIS revealed another grid station in close proximity to the feeder, which provided a more cost-effective solution resulting in Rs1.27 million in savings.



Area Planning Using GIS and SynerGEE

▣ **Planning and Engineering Capacity Building** – This quarter, a series of On-the-Job Training (OJT) field training sessions were conducted in order to further strengthen DISCO knowledge in GIS mapping and load flow analyses using SynerGEE. These sessions, 71 in total, spread across five DISCOs, focused on facilitating users in processing spatial data captured through field surveys and subsequent processing so that it can be used in SynerGEE. PDP has

provided training to all DISCO P&E centers and as a result, approximately 200 plans were generated in the last fiscal year. This activity is expected to save around 100 MW though this number will be confirmed after possible adjustments and reported in the subsequent quarter's report.

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 Program – PDP successfully achieved its LDI program's objective, i.e., to reduce unscheduled load shedding through the installation of AMR meters at all nine DISCOs' grid substations. Following the establishment of the Tribal Area Electricity Company (TESCO), the MWP asked PDP to integrate its power utilization intervention with the LDI project. This quarter, PDP began installing AMR meters in the tribal areas – thus far, a total of 8,930 meters have been installed across all DISCOs, including TESCO. These meters will help provide each DISCO Power Distribution Control Center (PDC) and the National Power Control Center (NPCC) with near real-time data on current loads, critical to making quick adjustments to load management issues as they arise, an initiative that has almost eliminated unscheduled (forced) load shedding. PDP also installed specially designed executive screens in Chief Executive Officer (CEO) and General Manager (GM) / Chief Engineer Operation offices at all DISCOs. Screens displaying live load data were also installed in the offices of GM NPCC. For the first time in DISCO history, real-time MWs received from the national grid are



Delegates Being Briefed About the Functioning of IESCO's PDC Center

displayed on these live data screens, instrumental 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 DISCOs’ distribution systems, consumers outside the vicinity of power faults are also affected during outages. Additionally, the installation of 105 fault indicators in strategic locations will assist in reducing the time it takes to determine the source of the fault in the distribution system. PDP is allocating four ground-operated gang switches for installation on critical and sensitive feeders, 48 disconnect switches for installation on main feeders and 450 additional units for installation on branches, and 1,500 fused cutouts for installation on distribution transformers. These devices will reduce the customer outage time while the switches will help in isolating only the affected section and not the entire feeder, therefore reducing the outage time to the remaining customers on that feeder. Design and work orders for 34 feeders were completed and released this quarter with the remaining in progress. PESCO has allocated 10 linemen for installing these switches. The installation work for these switches has already begun and will pick up after Ramadan. Similar efforts are ongoing at MEPCO, HESCO, IESCO, LESCO, FESCO, and GEPCO.

- **Improving Safety for Linemen in Power Distribution Companies** – This quarter, under its Linemen Training Program, PDP trained 239 linemen from across all nine DISCOs on safety techniques and meter installations using PDP-provided safety tools and equipment, and trained 173 PESCO line staff in hazard identification safety. Basic tools and safety equipment were provided in two subdivisions, one each in HESCO and GEPCO, with further distribution of tools and equipment planned for 29 PESCO and 37 MEPCO subdivisions next quarter. In a related activity, 42 senior managers from all DISCOs were trained on safety management for linemen. These “Executive Safety Leadership” workshops were designed to bring awareness about the responsibilities of senior managers regarding the occupational health and safety of their workforce. A good portion of technical losses in DISCOs result directly from DISCO management’s lack of attention to linemen training and training facilities and the inadequate investment in tools, materials, training, and procedures. Poorly trained line workers using tools unsuited to their tasks are attempting to keep the system operational, resulting in damaged transformers, escalating line losses, and a rising injury and death toll. PDP’s Linemen Training, Tools, and Equipment program is an essential intervention for transforming the DISCOs’ frontline operations, creating a safe working environment with the right tools, thereby minimizing line losses and ultimately, loss of life. Under its Safety Improvement Project, PDP provided 70 rickshaws and 30 Suzuki Ravis to PESCO and is organizing the dispatch of ladders, tools, and other equipment that will support loss reduction and improve outage response times.

- **Meter Installation and Replacement Program Advances** – PDP’s meter replacement program replaces electromechanical meters for electrostatic meters. The aim is to improve DISCOS’ commercial viability through theft reduction and more accurate consumer billing. It eliminates the possibility of meter tampering, rampant in electromechanical meters and leads to a reduction in commercial losses and improvement in utility profitability. PDP has completed meter replacement in different subdivisions of LESCO, FESCO, and PESCO, thus far, replacing/re-fixing 20,382, 8,610, and 14,716 meters, respectively in these three DISCOs. During this quarter, two more contracts for the installation of 40,000 and 30,000 electrostatic meters in PESCO have been awarded to Creative Engineering and M.Z. Awan and Sons respectively. Both the contractors have been mobilized and commenced installations. A new initiative to replace electrostatic meters with Radio Frequency (RF) meters was launched in LESCO’s Niaz Baig subdivision and completed with the installation of 6,417 meters.

- **Creating and Institutionalizing an Independent Central Power Purchasing Agency** – PDP is assisting MWP in the re-creation and operationalization of the Central Power Purchasing Agency (CPPA) as an independent company that will act as an agent between generators and distributors. The new entity, now known as “CPPA Guarantee Limited,” was created in December 2013. For this purpose, PDP developed Interim Market Rules, including settlement procedures that could govern how CPPA Guarantee Limited would operate in the market. These rules only hold valid until the newly elected Board of Directors produces its own Market Rules. PDP also produced the Business Transfer Agreement, for transfer of assets from CPPA to CPPA-G. These interim Market Rules as well as the Business Transfer Agreement have been prepared by PDP’s regulatory and legal consultants, with help from PDP, and as of now, have been submitted to MWP for relevant action.

- **Formulation of National Electric Safety Codes** – PDP continued assisting in the formulation and development of the national electric safety codes (NESC) in collaboration with the Pakistan Engineering Council (PEC), a statutory body for regulating the engineering sector in Pakistan, in order to implement safe work practices in the power sector and Pakistan’s telecommunications sector. The intent is to minimize accidents that occur due to failed safety equipment and poor work practices, resulting in the loss of 200 lives per year. The NESC encompass all processes from generation to end consumers. This quarter, all sub-groups of the taskforce submitted their final draft of the NESC and, in a unanimous decision, changed the name of the NESC to Pakistan Electric and Telecommunication Safety Codes (PETSAC). The PETSAC draft was forwarded to the Institute of Electrical and Electronics Engineers, USA or international vetting and standardization, and was placed on the agenda for the upcoming PEC governing body meeting for formal approval, which once obtained, will result in its mandatory adoption across all utilities.

- **Instituting an IT-Friendly Environment at the Ministry of Water and Power** – PDP is expanding the existing IT infrastructure at the MWP, an initiative aimed at improving overall

power sector performance and loss reduction. This intervention will significantly improve MWP's workflow, efficiency in processing cases, and the quality and speed of its interactions with affiliate or subsidiary organizations. This system was designed to serve as a building block for the MWP's MIS Department, to handle both internal and external communication, administrative processes, records and archives. Because MWP plays a key role in implementing power sector reform, its improved efficiency will also benefit other reforms. In this regard, 80% of MWP staff has already been equipped with the latest desktop computers and related software and RFPs have been issued for the procurement of IT equipment to equip the remaining staff. Implementation of PDP's state-of-the-art video conferencing solution has helped MWP reduce travel and other operational costs, yet enabled communication between all power sector players has been well-received and is being increasingly used for meetings and conferences. MWP staff members are also training on basic IT system usage and IT security. Development of a web-based dashboard application to allow the MWP to automate information flow between DISCOs and the Ministry has been completed and is currently going through a trial and testing phase. Once operational, this application will help the MWP to monitor and enforce Key Performance Indicators as detailed in the performance contracts of each DISCO.



“It would have been simply impossible to have learned as much as we did in these two Cost of Service workshop sessions, even if we were given two months. The USAID Power Distribution Program’s initiative is highly beneficial for all DISCOs,” said Khalid Mehmood, LESCO DG.

(Pictured Above) Participants Learning about Cost of Service and Tariff Design: The Power Distribution Program conducted two working sessions with LESCO, MEPCO, and FESCO, to analyze the results of its Cost of Service (CoS) Study, and finalize and review the tariff petitions and revenue requirements for the next tariff period. The sessions involved a hands-on CoS analysis and interactive discussions on the pros and cons of alternative cost structures, which will consequently form the basis of LESCO’s next tariff petition. For the first time in Pakistan, Cost of Service Studies have been completed for all DISCOs where all stakeholders, i.e. DISCOs and NEPRA have jointly finalized all methodologies.

SECTION 4: COMPONENT 2 TASKS

CONTINUING IN COMPONENT 3

TASK 1: CONGESTED AREA IMPROVEMENT

Under Component 2, congested area work is underway at PESCO, HESCO, and LESCO. Under Component 3, PDP will assist the DISCOs in planning congested areas, focusing on the two Turnaround DISCOs, and installing ABC cable to extend HT lines by shortening LT lengths, plus installing new high efficiency transformers, switches, and outage reduction equipment. To achieve this improvement, PDP will purchase and install the bulk of the material with DISCO participation. This activity will lead to reduced losses and increased revenue in congested and high theft areas, resulting ultimately in improved customer safety and satisfaction.

HIGHLIGHTS

- **Installation of Completely Self Protected Transformers** – PDP’s intervention to install 45 Kilo Volt Amperes (KVA) Completely Self Protected (CSP) Transformers aims to reduce overloading existing PESCO transformers, while reducing the low voltage secondary length in order to reduce losses on lengthy LT lines. This quarter, PDP provided and allocated 30 transformers for installation on PESCO’s distribution system, of which 25 were installed in the field by the end of this quarter. Field survey, design, work orders with maps, and related material were released for all 30 transformers. PESCO supported the intervention through the provision of five linemen to exclusively work on the installation of these transformers. The five remaining transformers have a few right-of-way issues that PESCO is trying to resolve – should the company be unsuccessful, alternate locations will be chosen and new proposals and work orders will be generated. In a related activity, PDP provided 47 75KVA rated transformers for installation on PESCO’s distribution system, with the accompanying field survey, design, work orders with maps, and other material released for 10 transformers. The design work for the remaining transformers is ongoing and work orders will be released as the survey and other necessary steps are completed. The



A 45 KVA CSP Transformer Being Installed in PESCO’s Peshawar Circle

installation will be done by the same line crews tasked with the 45 KVA installations and will commence shortly after all the 45 KVAs are installed.

TASK 2: HIGH TENSION POWER FACTOR IMPROVEMENT

Under Component 2, the DISCOs have committed to repair or replace installed HT capacitors. PDP will continue under Component 3 to assist the DISCOs to complete this ongoing effort. Improved distribution system power factor will reduce technical losses and reactive power (MVAR) demand with improved voltage resulting in customer satisfaction. DISCOs have not assessed current requirements for HT power factor correction. Yet the feeder loads have changed with continuous loads of air conditioners, motors, CFLs, and other appliances, resulting in poor power factor on many feeders and lost revenue, low voltage, high technical loss, and customer dissatisfaction. PDP will focus on PESCO and MEPCO to conduct feeder power flow analysis, using new software to determine the requirement for installation of HT capacitors on feeders and congested area strategies on high-loss feeders. At MEPCO this activity is coupled with voltage regulators for the introduction of the VVO Program as part of the Energy Loss Reduction (ELR) program.

HIGHLIGHTS

- **Energy Loss Reduction Program Begins at Multan Electric Power Company** – Under the ELR program, a mix of switched HT capacitors and HT voltage regulators will be applied to improve MEPCO's voltage and power factor problems on critical feeders. During the quarter, 125 units of 450 KVAR-switched HT capacitor orders were developed and issued. The specifications for 125 32-step voltage regulator units were developed and are in final review; procurement is expected to begin in early July.

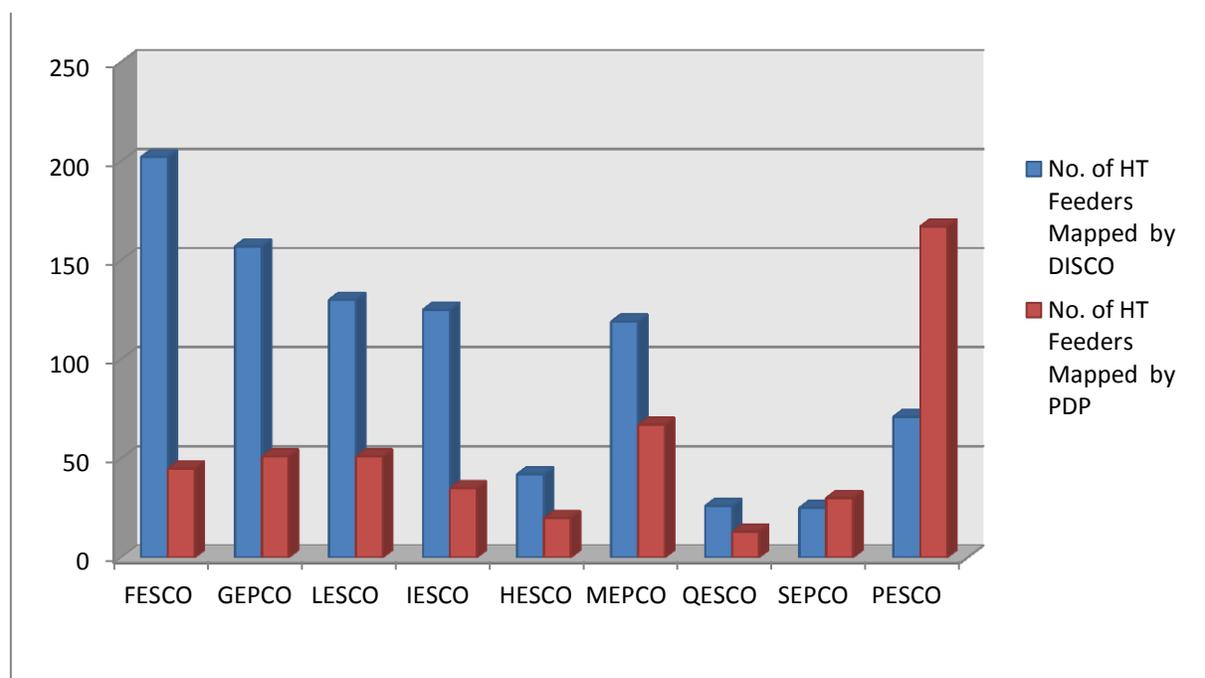
TASK 3: GEOGRAPHIC INFORMATION SYSTEM SURVEY & ENGINEERING ANALYSIS

In Component 2, PDP carried out feeder mapping and analysis of one subdivision per DISCO. PDP initiated a program to enable all nine DISCOs to develop a geodatabase with accurate mapping with locations of all field installations. To date, nine DISCO P&E computer centers have been made operational. Under Component 3, this effort will continue and PDP will build the capacity in DISCOs to map entire divisions and circles. Planning engineers will be encouraged to concentrate their engineering software analysis on these areas to produce more accurate feeder/area rehabilitation plans, based on field GIS data.

HIGHLIGHTS

□ Data Collection and Database Development Continues at all Distribution Companies –

The creation of a GIS database of the power distribution facilities at all DISCOs is essential for improved governance and resource management. This quarter, work continued at all DISCOs where individual data per feeder is being collected and processed into a GIS database suitable for mapping and engineering analysis. Seven DISCOs are, with PDP's assistance, now using their own personnel to conduct GIS work, with PDP providing OJT only. PDP's GIS trainings focused on facilitating staff in processing spatial data captured through field surveys and subsequent processing for use in SynerGEE, the power flow analysis tool. Thus far, over 1,300 feeders have been mapped across the country, with the DISCOs mapping an increasing number of feeders themselves. The chart below provides a comparison between feeders mapped by DISCOs and those mapped with PDP's assistance.



TASK 4: DEMAND SIDE MANAGEMENT PROGRAM

Industrial motors contribute an estimated 60-80% of industrial electricity consumption in most Pakistani industrial sectors. Under the rollover program and through funding from the Energy Efficiency Program, PDP in Phase 1 of its 'Motors in Industry' program, installed 811 energy efficient motors and 641 VFDs in industries throughout Pakistan (except Baluchistan) until December 2013. In Phase 2, PDP installed 729 motors and 108 VFDs; this phase concluded on May 31, 2014. Another program activity was the replacement of inefficient pump sets in the publicly-owned water and sewerage utilities. Under Component 2, PDP replaced 135 inefficient

municipal pump-sets of Islamabad’s Capital Development Authority Islamabad, and 75 large tubewell motors and pumps in the Karachi Water & Sewerage Board. This activity concluded in December 2013.

TASK 5: LOW TENSION CAPACITOR INSTALLATION PROGRAM

Under Component 2’s Capacitor Pilot Program, PDP installed 24,000 LT capacitors on agricultural tubewells for the purpose of improving pump set power factor in MEPCO, FESCO, LESCO, IESCO, and QESCO. Based on the successful results of that project, PDP has started the national capacitor installation project under Component 3 with the installation of 81,812 LT capacitors on tubewell motors, addressing the challenges faced during the pilot project, to maximize the nationwide program’s success and peak demand savings and technical loss reduction.

TASK 6: COST OF SERVICE STUDY

Having completed the CoS Study with IESCO, PDP is currently working on CoS studies at eight DISCOs – LESCO, FESCO, GEPCO, MEPCO, HESCO, PESCO, SEPCO, and QESCO. The methodology used with IESCO and approved by NEPRA will be applied and amended to meet the needs of each DISCO. Financial, commercial, and load data will be used to populate the model. AMR meters will have been procured and are being installed on all transformers of selected feeders in each DISCO for establishing coincidence and contribution to the DISCO’s demand. An appropriate methodology for calculation of weighted average cost of capital will be used to determine market based rate of return.

TASK 7: ORGANIZATIONAL ASSESSMENT AND RESTRUCTURING

A similar project was undertaken at MEPCO under Component 2. Understanding that all DISCOs share similar structures, the assessment work conducted at MEPCO will be validated for PESCO with minimal assessment performed in areas where there might be discrepancies or inconsistencies. The project will focus on the implementation of approved proposals / structures.

HIGHLIGHTS

- **Organizational Assessment and Restructuring at Multan Electric Power Company** – PDP continued its support for MEPCO’s organizational restructuring. With MEPCO’s buy-in last quarter, PDP this quarter developed Request for Proposals for nine additional proposals. These include “Job Descriptions & Key Performance Indicators,” “Performance-Based Evaluation System,” “Training and Capacity Building,” “Training Function Development,”

“Recruitment Policy,” “Employee Handbook,” “Rewards and Recognition Policy,” “HR Help Desk,” and “Identification of Anomalies.” The project is expected to begin by July through an outsourced management consultancy firm.



□ “The new Customer Service Center has provided us with a first-class working environment, which has in turn led to improved performance when dealing with customers. It has streamlined our work and helped in increasing customer satisfaction, which is really motivating for us,” said Mohammad Asad, PESCO Customer Services Representative.

(Pictured Above) Newly Renovated Customer Service Center at PESCO: This month, the Power Distribution Program, under its Customer Services Improvement Plan, established a Customer Service Center at PESCO’s Kohat Road subdivision. The new center facilitates customer service representatives in providing better services, while streamlining the process for handling customers and their complaints, in a more professional and open working environment.



SECTION 5: EVENTS

INAUGURATING POWER DISTRIBUTION CONTROL CENTER AT IESCO

ELIMINATING UNSCHEDULED LOAD SHEDDING:

In an event attended by the USAID Acting Mission Director, Nancy Estes, PDP handed over its newly created Power Distribution Center to IESCO.

MESSAGE DELIVERED:

With live monitoring screens presenting continuous actual data load from all IESCO's grid stations and feeders, PDC operators, for the first time, have an immediate display of the power grid's real-time load data and feeder load shedding status. This information will enable IESCO to monitor its planned load shedding and stay within its NPCC allocation quota. Also this quarter, a USAID delegation led by Deputy Mission Director Skip Waskin visited SEPCO's newly established PDC.

APPENDIX A: TABULAR PERFORMANCE RESULTS

Indicator	Unit	Start of Project to End of Previous Quarter	Current Quarter (April-June 2014)	Start of Project to End of Current Quarter
Power and Energy Saving				
MWs of power saved by installing high tension/low tension capacitors, meters and improving commercial procedures	MW	119	5.9	124.9
Giga-watt hours of energy made available by installing high tension / low tension capacitors, meters and improving commercial procedures	GW-h	518.9	27.4	546.3
Revenue saved or revenue generated by installing high tension / low tension capacitors, meters and improving commercial procedures, internal audit process optimization and advising PESCO on a corporate level	\$ million	133.2	24.4	157.6
Beneficiaries				
Number of beneficiaries receiving improved energy services by installing high tension/low tension capacitors, meters and improving commercial procedures	No.	1,785,000	88,500	1,873,500
Capacitors				
Number of capacitors installed in tube well pumps	No.	20,923	1957	22,880

Pumps & Motors				
Number of pumps installed in municipalities	No.	210	0	210
Number of motors installed	No.	1,018	521	1,539
Number of variable speed drives (VSDs) on motors	No.	657	92	749
Load Data Improvement Project				
Out of the target of 8075 meters, number of AMR meters installed	No.	8,763	167	8,930
Meter Installation Improved Meter Reading & Meter Replacement Activity				
Number of new meters installed through improved meter reading & meter replacement activity	No.	44,306	11,670	55,976
Number of meters re-fixed with new service drops and proper fixing brackets through meter replacement activity	No.	14,302	476	14,778
Total new meters installed and re-fixed through improved meter reading and meter replacement activity	No.	58,608	12,146	70,754
Percent reduction in complaints	%	76%	42%	76%
Miscellaneous Installations				
Number of outage reduction devices	No.	246	206	452
Number of automatic meter reading meters	No.	230	1,432	1,662
Number of transformers	No.	9	16	25
Meters of quadraplex cables	meter	700	3,300	4,000
Revenue Protection Cell				
Total number of FIRs lodged	No.	24	95	119

Total number of theft cases / illegal hooks detected	No.	434	564	998
Improved Meter Reading				
Number of theft cases detected	No.	-	3,352	3,352
Number of consumer premises checked	No.	-	25,294	25,294
Number of meters replaced	No.	-	9,814	9,814
Census				
Number of consumers enumerated	No.	48,528	11,152	59,680
Number of theft cases observed through census	No.	1,099	-	1,099
Wrong tariff cases identified through census	No.	146	15	161
Linemen Training				
Number of linemen trained on proper safety techniques	No.	12,246	763	13,009
Percent reduction in fatal accidents (maximum in a month)	%	71%	30.7%	71%
Percent reduction in non-fatal accidents (maximum in a month)	%	66%	23.5%	66%
Functional Training				
Number of DISCO staff trained in various functional areas like Finance, Human Resources, Technical, Commercial, Communication etc.	No.	27,150	1,350	28,500
Governance				

Number of policies and international best practices analyzed, developed and issued	No.	30	7	37
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USAID Power Distribution Program

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

Islamabad, Pakistan