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USAID ENERGY POLICY PROGRAM

POST-TRAINING EVALUATION BEST PRACTICES IN GRID OPERATIONS FOR NTDC PARTICIPANT TRAINING PROGRAM

OCTOBER 20 – 31, 2014

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Best Practices in Grid Operations for National Transmission and Despatch Company (NTDC)

Participant Training Program

Training dates: October 20 – October 31, 2014

Post-Training Evaluation

In this activity, Energy Policy Program (EPP) successfully delivered first of the three executive exchange training courses in Best Practices in Grid Operations for National Transmission and Despatch Company (NTDC) from October 20- October 31, 2014 in Washington, DC and Oregon, Portland. A total of twenty nine participants (four females and five male) from five key departments of National Transmission and Despatch Company (NTDC) including Design, Operation and Maintenance, Grid Station, Planning, and EHV -GSC.

Best practices in Grid Operations for NTDC course was designed to Improve capacity in the Pakistan power sector’s electricity grid through exposure to best practices in transmission operations, maintenance, and planning, including the integration and dispatch of renewable energy into the grid, while establishing professional relationships for NTDC to draw upon after the conclusion of the program.

Number of Participants trained: 09 participants (four females and five male)

At the end of the training course, post-training evaluation was conducted from 6 out of 9 participants, as three of the participants were absent due to their departmental exams during the post-test and post training evaluations. They were given a seven questions post-training evaluation form to explain their valuable experienced. Following are statistics, summaries and quotes of the participants’ responses.

Please tick in appropriate box: 5 outstanding, 4 very good, 3 satisfactory, 2 needs improvement, 1 did not meet expectations

| I. Program Rating | <i>Did not meet expectations</i> | <i>Needs improvement</i> | <i>satisfactory</i> | <i>Very good</i> | <i>outstanding</i> |
|--|----------------------------------|--------------------------|---------------------|------------------|--------------------|
| Relevance to your organization’s work area | 0 | 3 | 0 | 3 | 0 |
| Structure of the program | 0 | 1 | 4 | 1 | 0 |
| Topics covered in the program | 0 | 1 | 3 | 2 | 0 |
| Quality of class room interactions | 0 | 0 | 1 | 5 | 0 |
| Quality of training and reading materials | 0 | 0 | 3 | 3 | 0 |
| Appropriateness of reading materials | 0 | 0 | 4 | 2 | 0 |
| Quality of Speakers/Trainers | 0 | 0 | 0 | 3 | 3 |
| II. Program Content and Trainers | <i>Did not meet</i> | <i>Needs improvement</i> | <i>satisfactory</i> | <i>Very good</i> | <i>outstanding</i> |

| | <i>expectations</i> | | | | |
|-------------------------------|---------------------|---|---|---|---|
| Training Content & Relevance | 0 | 2 | 1 | 3 | 0 |
| Trainer/Speaker Effectiveness | 0 | 0 | 1 | 4 | 1 |

According to the rounded responses of all participants from the above stated table:

1. 50% of the participants rated “Relevance to your organization’s work area” as very good whereas, 50% % of the participants felt then need of improvements
2. 17% of the participants found “Structure of the program” very good, while 67% participant rated it as satisfactory and 17% of the participants felt need of improvement
3. 50% participants found the category “Topics covered in the program” satisfactory, 33% of them found it very good and 17% felt the need of improvement
4. 83% found “Quality of class room interactions” very good, 17% found it to be satisfactory
5. 50% of the participants felt “Quality of training and reading materials” was very good, 50% rated it satisfactory
6. 67% participants rated “Appropriateness of reading materials” as satisfactory and 33% finding it to be very good
7. 50% participants rated “Quality of Speakers/Trainers” as very good, while 50% rated it outstanding
8. 50% participants rated the “Training Content & Relevance” as very good, 17% rated it as satisfactory and 33% felt the need of improvement
9. 67% of the participants found “Trainer/Speaker Effectiveness” very good, and 17% participants found it satisfactory and 17% felt the need of improvement.

Please share any other observation or comments regarding the trainer/training program/logistics:

Participants were asked to share their observations and comment regarding the trainer, training and logistics, all of them have shared their observations. Almost all the participants found the training very beneficial for them while mentioning:

“The training schedule for presentations/lectures/visits was a bit hectic followed by a long flight hours. The rest was perfect”

“The trainers were very effective, though there is a need of a wide array of subjects. The program became a bit hectic due to tough schedules. Our resource person in US Ms. Tricia Williams was very helpful”

“Training program was very well organized, fulfilled the given agenda of the program”

“Training program should be started with a presentation on the model of US Energy Sector. The scheduling of the topics was good but some portions of grid maintenance practices should also be included”

Before you received this training, how would you describe your knowledge of grid operations and maintenance system procedures?

Keeping in view all the responses it showed that before this training most of the participants had limited knowledge and after the training all of them have developed significantly, participants said:

“I had very little knowledge of grid operations and maintenance before the start of the training program”

"I had no idea about the bigger picture of grid operation and maintenance systems. My vision has broadened regarding the management of assets, new technologies, smart grid and automated grid systems"

"I had very little knowledge about the renewable, green energies and their penetration systems, and SCADA system"

"I learned new information concerning system planning and new technologies like AMI meters, PMUs, but there was less information related to my area of work i.e. design. There should be more topics related to design section for design department participants"

What specific skill did you gain as a result your exposure to best practices in transmission operation, maintenance and planning, including the integration and dispatch of renewable energy into the grid during your training??

Participants were asked to address the specific skills that they have gained during this training; and they wrote:

"Integration of wind power to National Grid"

"The session including the integration of wind forecast arrange by Alstom was very technically informative. It was a concept which can easily be implemented in Pakistan as well"

"Specific skills about the penetration of renewable and green energies into the system and knowledge about the contingency systems"

"With the integration of the renewable energy, NTDC has to modernize its grid and install devices like wind forecasting, PMUs, PDCs"

"Gained a deep insight and understood a lot about the open and dynamic power system/market. Integration of renewable/wind energy in every power system by observing the reliability standards as for successful implementation"

How will your organization benefit from the training in both the short term and long term?

The training strategy was based on organizational improvements so that the staff and the organization can achieve their set targets, objectives and both personal and corporate goals. Participants were asked to express how their organization will be benefited from Grid Operations training in short and long term, they shared:

"Learning from US power system is overall a vital experience. Recommendation in terms of policy implementation techniques learnt from NERC, FERC, PJM etc. will benefit NTDC both in short and long term"

"On short-term basis the exchange of information between different entities is useful for all parties included. In Long-term the information we learned can eventually become a part of future energy policy of NTDC"

"In long-term, our people got the opportunity to look into the energy market that is open at whole sale level. In short-term, we got the motivation to work more positively, think more positive with a good attitude"

"Have interactive session between departments and peers to further enhance the knowledge by brain storming sessions. To write a report on the gained learnings, challenges faced, and suggest practical solutions to NTDC"

What was missing from the Training?

Participants shared their respective views and stated:

“Training duration was short and training content required more time for better understanding. Proper time should have been allocated to every topic”

“The maintenance practices of Grid maintenance schedules and the technology used should be highlighted”

“We got the overview of the different working entities like RTO, market monitoring center. In depth analysis of at least one technology like HVDC, Ems software should be arranged as well. There should be more site visits like HVDC converter station and control rooms”

“Topics related to substations design, modelling, and site visit of substations was missing. I wanted to learn more about substations layout designs. A visit to a solar facility or wind farm would have been plus”

Do you have any suggestions for how we could improve future Operation and Maintenance trainings?

All the participants have different views about how to improve future Grid Operations and Maintenance trainings, most of the participants have complained about the time duration they thought the time period for such technical training should be increased, as they mentioned:

“EPP can improve future trainings by incorporating a more diverse range of subjects and arranging more site visits”

“Training should include an overall overview of US energy market so that the participants can clearly relate and understand the role and responsibilities of each entity”

“Grid maintenance practices should also be included”

“There should be more site visits and meetings for better understanding of the international practices about the Grid’s Operation systems”

“Provide the presentations and other training material in soft copy as well”

“Training duration should be increased keeping in view the lengthy training content which needs time for better comprehension”

“Similar training should be organized for maximum number of engineers from WAPDA to improve the skill set in achieving the organizational goals”

“EPP should organize these types of training on a regular basis”

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