

## Concept Paper

### Webinar on “Power System Losses Evaluation and Mitigation”

#### 1. Background:

Technical and Non- Technical losses are unavoidable part of Electricity Transmission and Distribution System. Such losses can be reduced through formulation of policies, rules and regulation, regulatory mechanism and technical upgradation.

#### 2. Introduction:

Power system losses may be either technical or non-technical.

Non-technical losses in the electricity may be because of unethical and illegal direct connection from distribution system and meter tampering by consumers.

Technical losses may be because of (1) Lengthy Distribution lines (2) Inadequate Size of Conductors of Distribution lines (3) Installation of Distribution transformers away from load centers (4) Low Power Factor of Primary and secondary distribution system (5) Bad Workmanship (6) Feeder Phase Current and Load Balancing (7) Load Factor Effect on Losses (8) Transformer Sizing and Selection (9) Balancing 3 phase loads (10) Switching off transformers (11) Other Reasons for Technical Losses etc.

Proper evaluation of power system losses and identification of potential remedies for minimizing the losses is important. This difference in the generated and distributed units is known as Transmission and Distribution loss. Transmission and Distribution loss are the amounts that are not paid for by users.

$$\text{T\&D Losses} = \frac{\text{Generated} - \text{B}}{\text{Generated}} \times 100 \%$$

Power system losses can be predicted by using simulation software as well.

Total losses in the system may be more than 50 % in worst cases but can be reduced into 2-3 % in best practice cases. Utility organizations of SAARC member countries are suffering economic and financial losses from power system losses. Minimization of losses in these countries will give lot of benefits.

Reduction of power system losses is equivalent to installation of new power house. Cost of leakages detection and minimization will be highly cost effective. Potential benefits of such projects is shown in the box. There are around 25 % losses in Nepal, 19 % losses in India and 17 % losses in Pakistan electricity system.

(Source : <https://www.indexmundi.com/facts/indicators/EG.ELC.LOSS.ZS/rankings>).

#### 3. Objectives:

The objective of the proposed webinar is to discuss on potential methods for power system losses detection and methods for minimization of those losses. Brief discussion on existing practices and success stories will be shared in the webinar.

#### 4. Major Aspects/Topics to be covered during the Webinar:

Webinar may cover following topics but not limited.

- Understanding of Losses
- Evaluation/ Assessment methods for losses
- Minimization of Technical Losses
- Controlling Non-Technical Losses
- Storage Technology for minimizing power system losses
- Smart grid for minimizing power system losses
- Regulatory Issues
- Project Design for losses control ( Team size, experts, budget, technology etc)
- Success Stories within South Asia and Outside South Asia

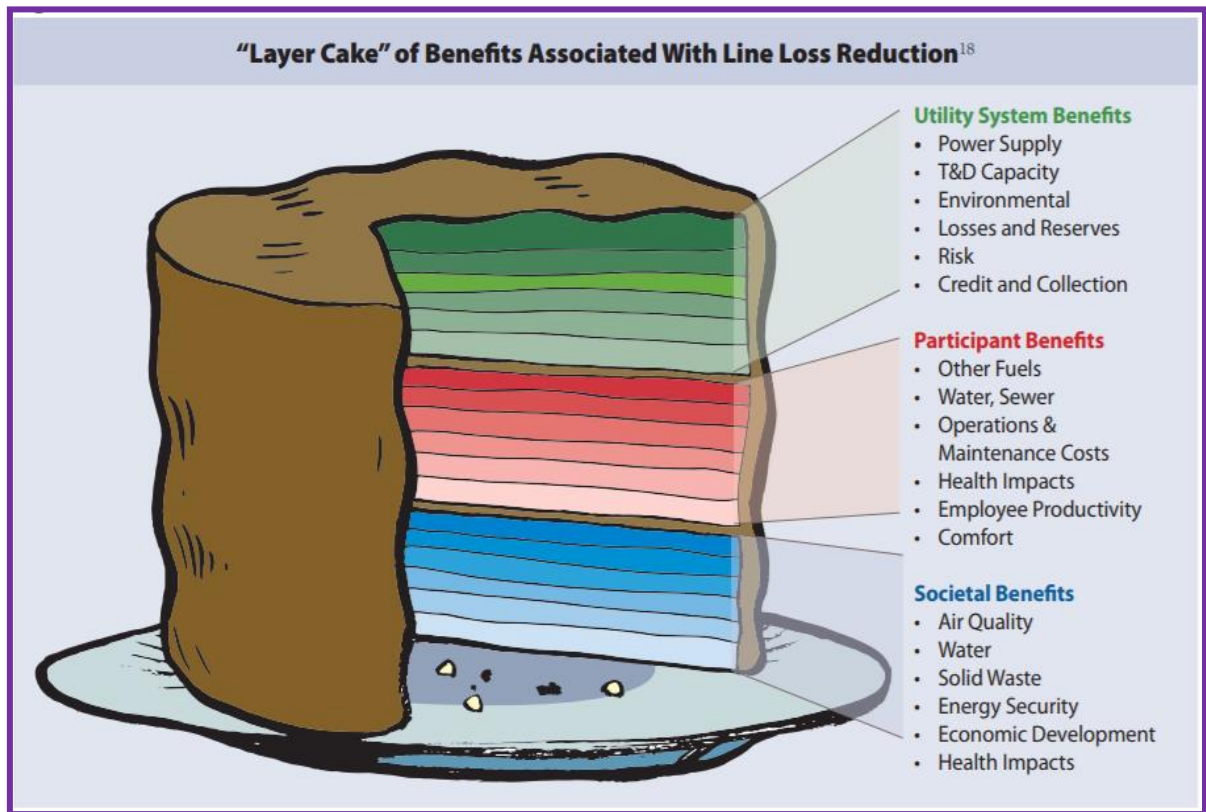
#### 5. Venue of the Webinar:

Webinar will be organized at SEC, Islamabad premises.

#### 6. Activity Wise Time Schedule (Monthly Milestones):

Activities	M A Y	J U N	J U L
1. Webinar announcement			
2. Resource persons identification and preparation of presentations			
3. Dissemination of Webinar Information to participants			
4. Mock webinar			
5. Holding of webinar			

## Annex



**Box: Benefits from reduction of System losses**