
Sharing of Inter-State Transmission Losses

Based on PoC Losses

**National Load Despatch Centre
Power System Operation Corporation**

Introduction

■ Procedure for Sharing of ISTS Losses

- Prepared by NLDC in compliance with Regulation 6(1)

■ The procedure aims to keep computation:

- Simple
- Non-Recursive

■ Loss Application on Regional Basis

- In line with existing practice
- No Pan caking.

■ Injection and withdrawal loss would be calculated for each zone.

New Methodology

- **Point of Connection Losses**

- Independent of Contract Path

- **50% PoC losses + 50% Uniform Losses**

- **Uniform Loss component**

- Based on Regional Losses of last week

- **Moderation of Losses**

- Based on **Actual All India Losses** of last week and Losses based on studies

PoC Loss Computation (1)

- **Computation of changes in losses in the system due to incremental injection / withdrawal at each node.**

$$\text{Marginal Loss Factor}_i = \frac{\partial \text{System Losses}}{\partial \text{Power generation / load at Node } i} = K_i$$

- **Loss Allocation Factor**

$$\frac{K_i \times P_i^g}{\sum_i K_i \times P_i^g + \sum_j K_j \times P_j^d} \text{ for generation node } i \text{ and}$$
$$\frac{K_j \times P_j^d}{\sum_i K_i \times P_i^g + \sum_j K_j \times P_j^d} \text{ for demand node } j$$

PoC Loss Computation (2)

■ Output of System Studies

- ❑ Loss Allocation Factor
- ❑ MW Losses assigned to each node
- ❑ Injection or drawal of the Node
- ❑ Weighted average losses (%) for each region

■ Zonal/Regional Entity Control Area Loss : Weighted Average of losses at each node

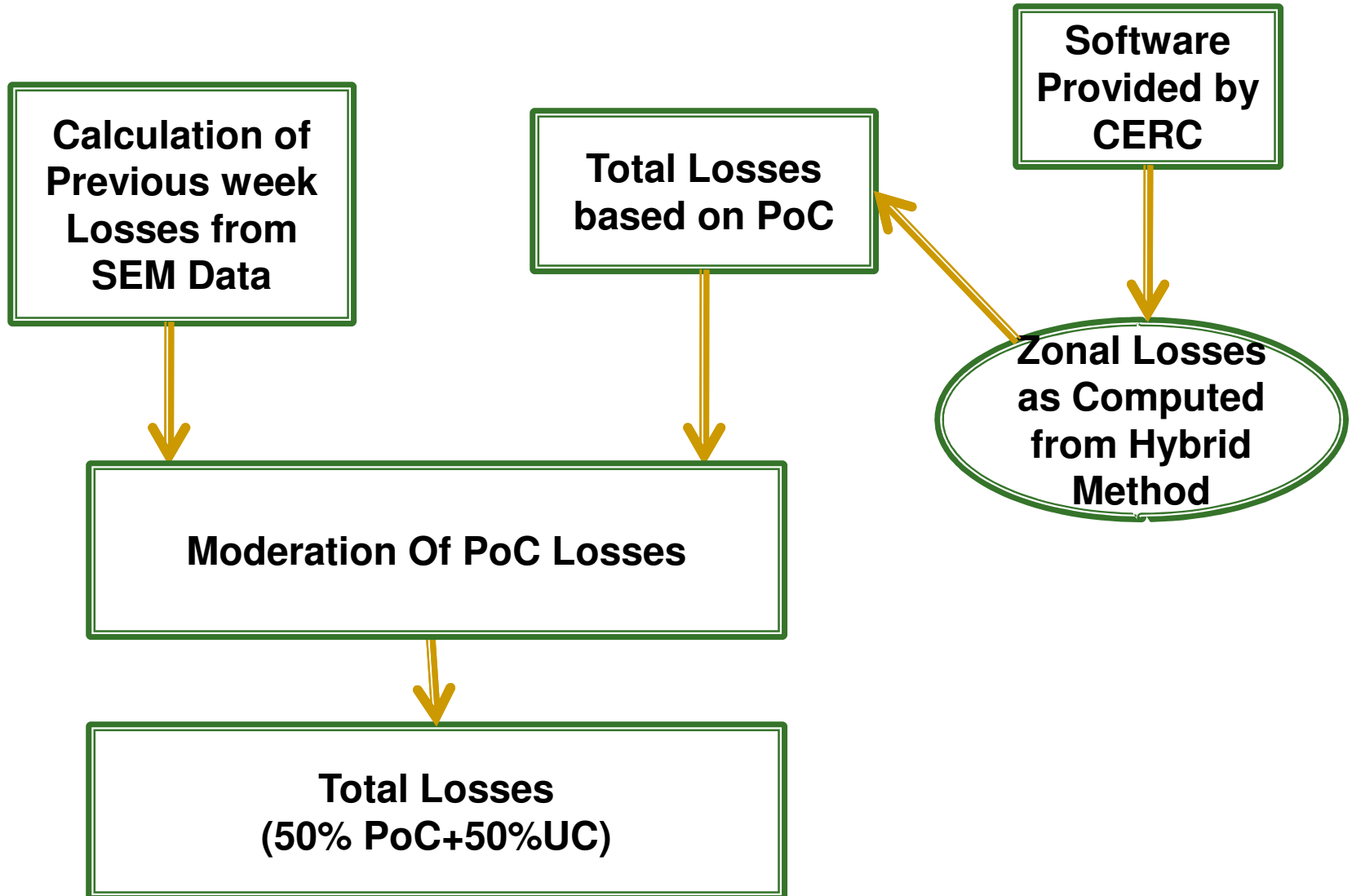
- ❑ Total injection/ Drawal of Regional Entity
- ❑ % POC loss for zone/Regional Entity

■ Moderation of Zonal Losses

■ One PoC Loss for each entity per week

- ❑ Weighted average of peak and other than peak

Loss Sharing Mechanism



Moderation of Losses (1)

■ Need of Moderation

- ❑ Difference in actual and study scenarios
- ❑ Correct computation of injection and drawal schedule of various utilities.
- ❑ Scheduled losses to be closer to actual losses in the system so that system mismatch is avoided.
- ❑ Minimizing the mismatch between UI payable and receivable

■ Moderation at National Level

■ Moderation Factor

$$\text{Moderation Factor} = \frac{\text{Actual Losses of previous week (A}_{\text{act}}) \text{ (In \%)}}{\text{Regional Losses based on Studies (A}_{\text{s}}) \text{ (In \%)}}$$

- **Regional Losses as per SEM data (A_{act})**

- Weighted average losses of a region

$$A * 100 / (\sum G_{NG} \pm (\sum I_{IR}))$$

where A is Total MW losses of a region

$\sum G_{NG}$ = Total Injection in a region

$\sum I_{IR}$ = Inter Regional Exchange

Application of Losses in Scheduling

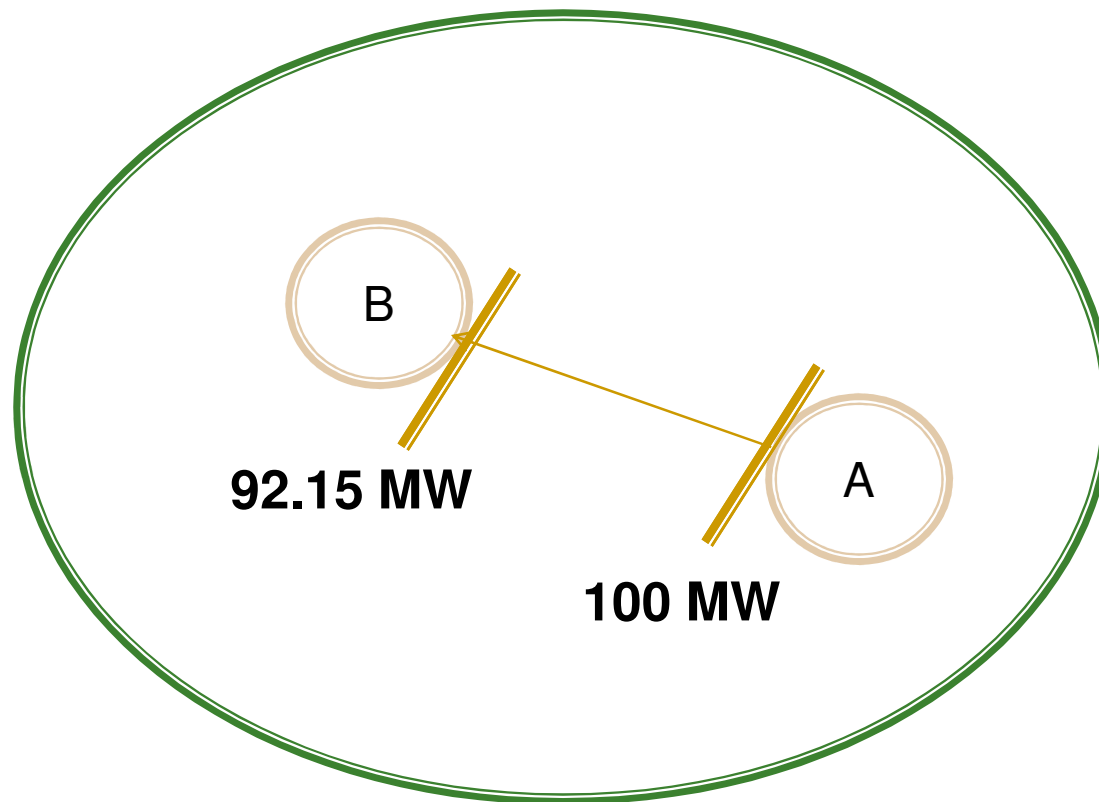
- **Net PoC Loss = 50% Moderated PoC Loss + 50% Uniform Loss**

- **Net PoC Loss to be applied on each regional entity**

- **Drawee Entity to bear full losses for :**
 - Long Term Transactions

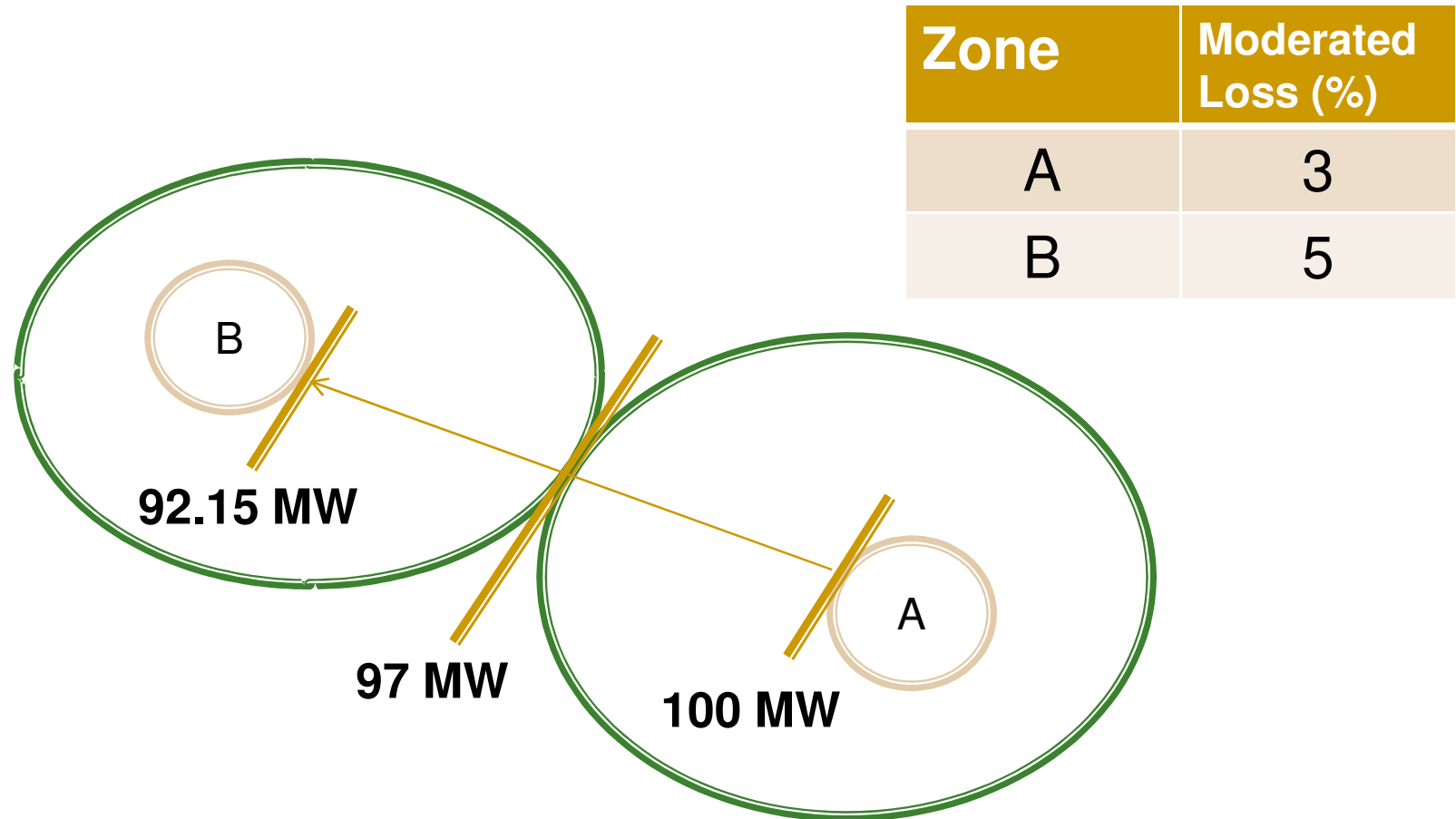
- **Injecting Entity and Drawee Entity to share losses for:**
 - Medium Term Transactions
 - Short-term
 - Bilateral Transactions
 - Collective Transactions

Case I : Intra-Regional Long Term Transactions

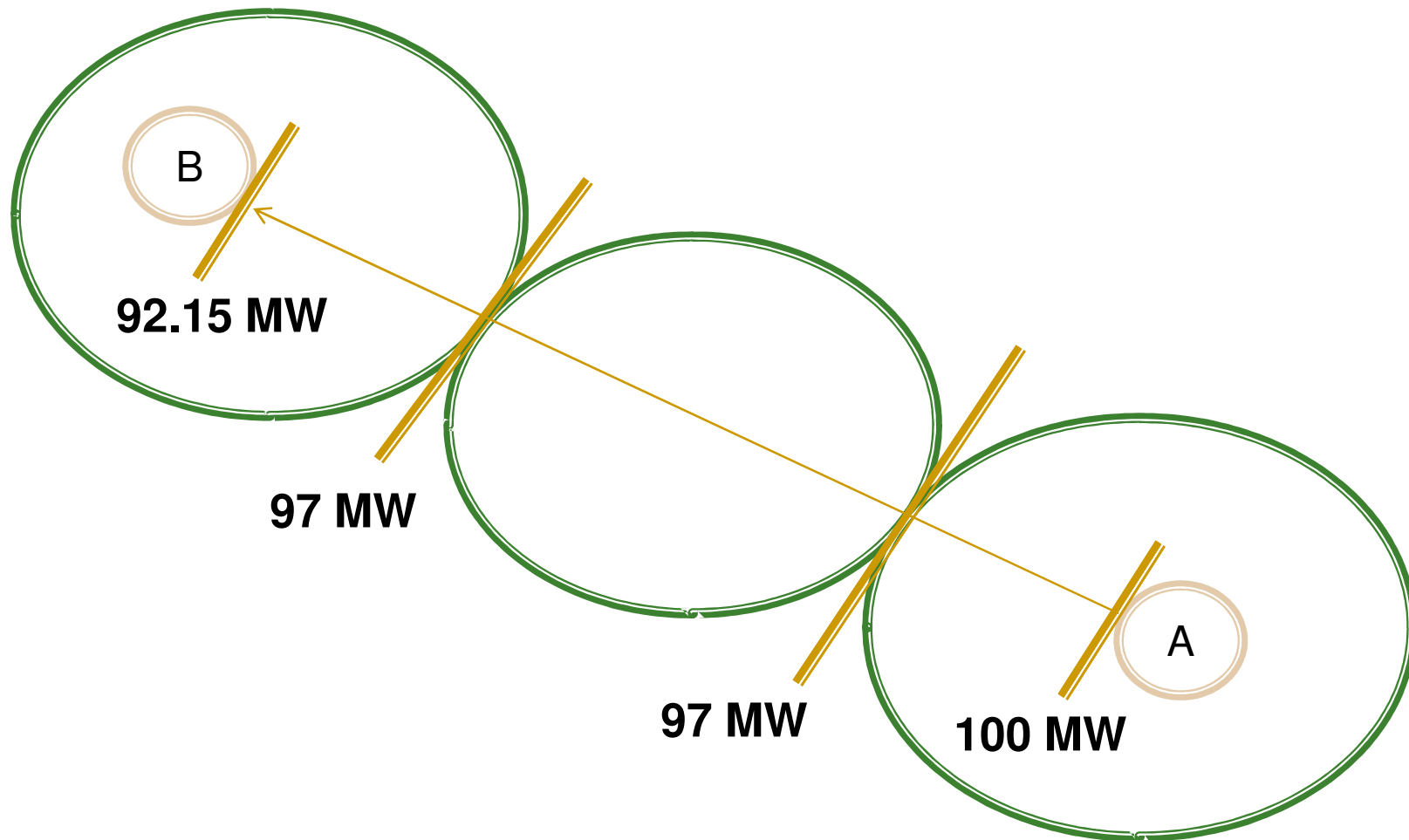


Zone	Moderated Loss (%)
A	3
B	5

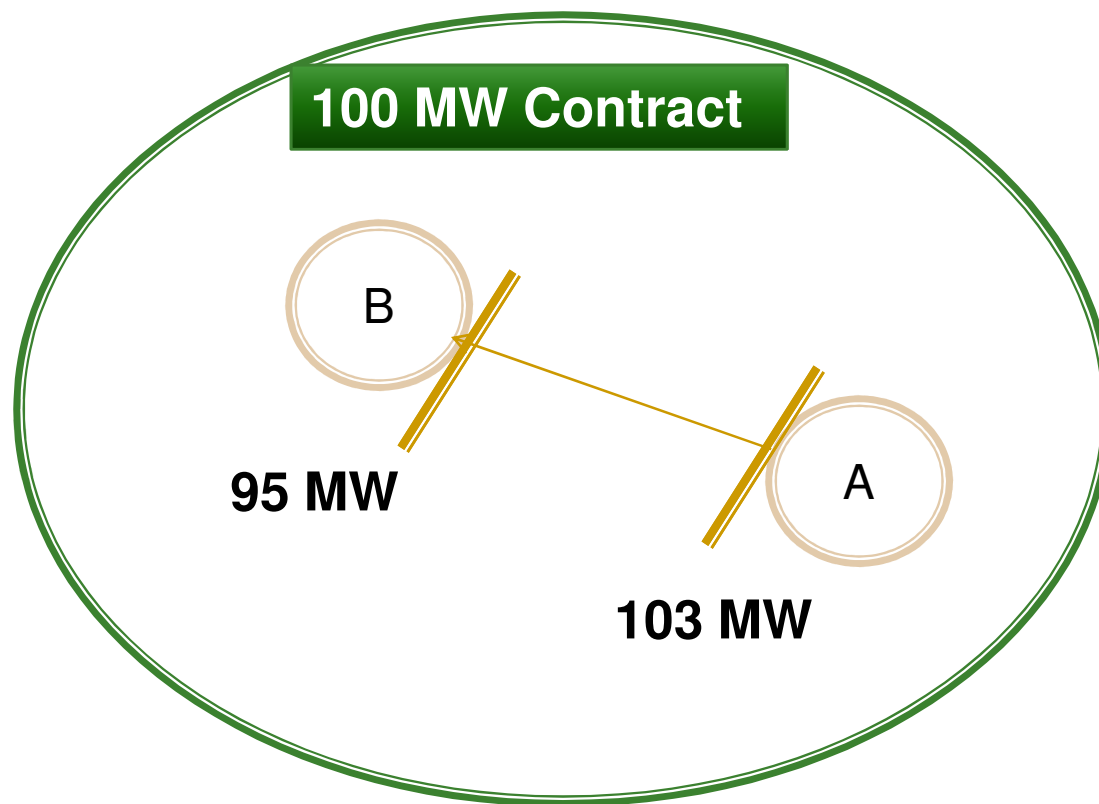
Case II : Inter Regional Long Term Transactions



Case III : Long Term Transactions Involving Wheeling Region

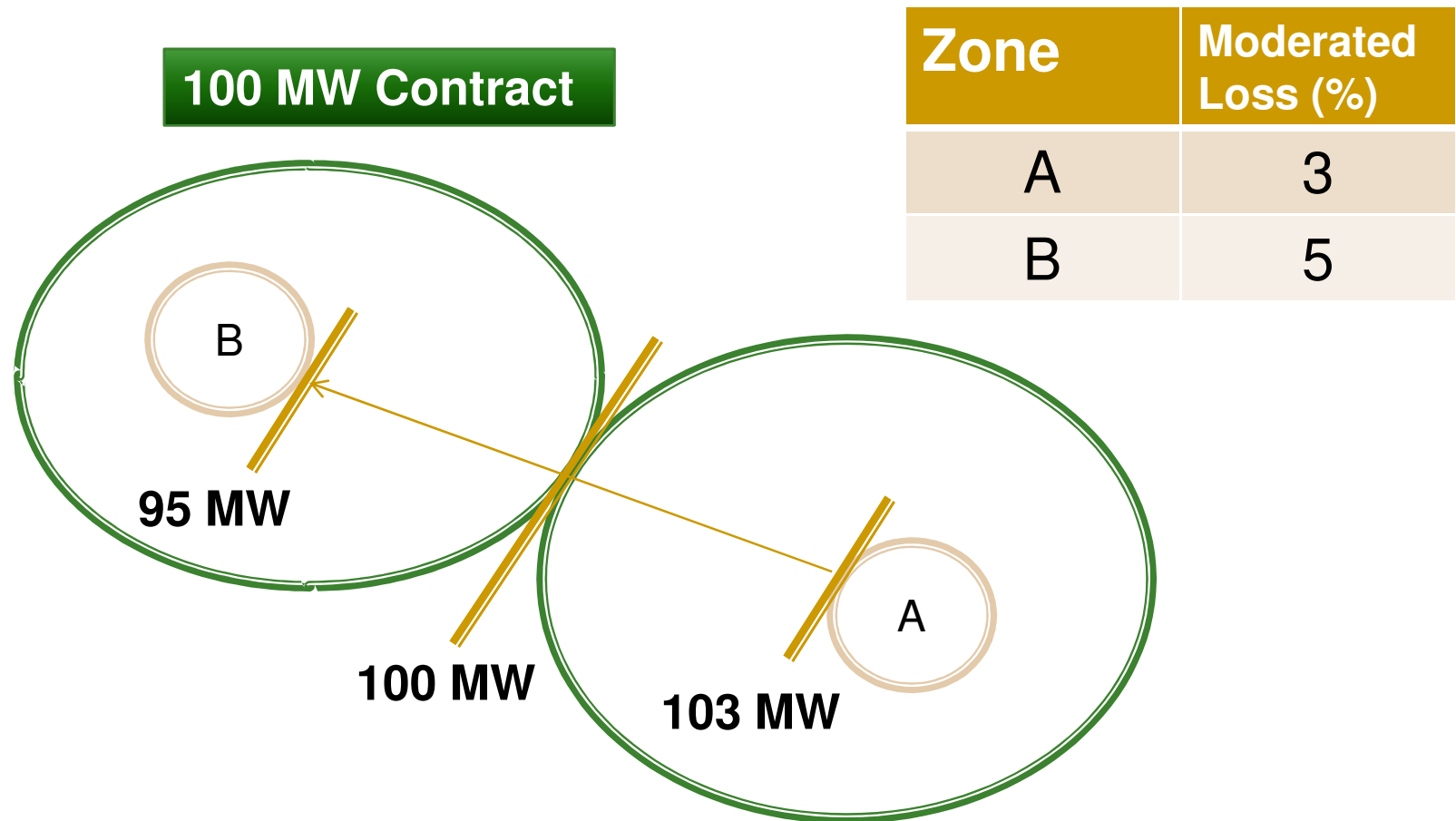


Case IV : Intra-Regional Medium / Short Term Transactions

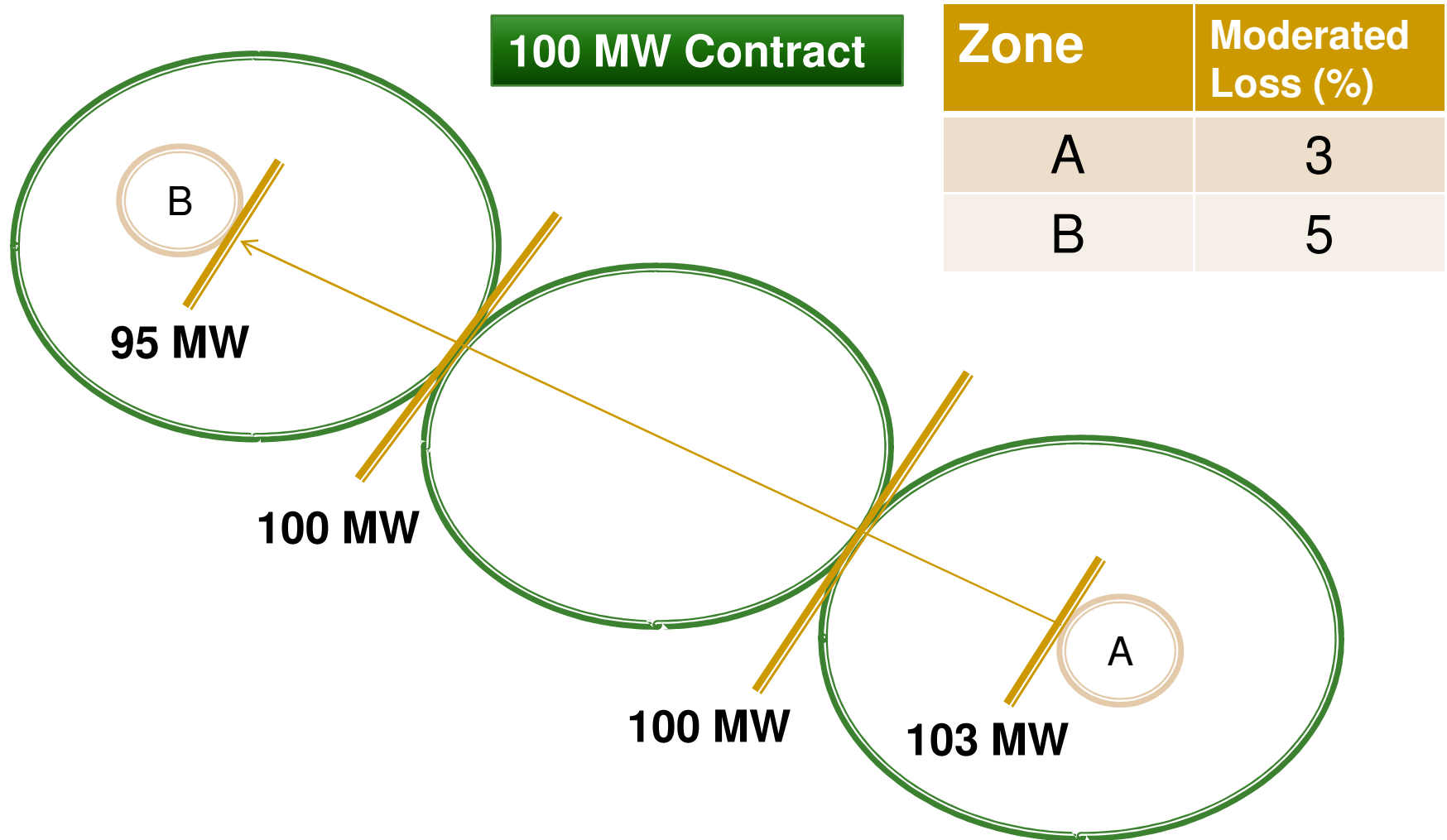


Zone	Moderated Loss (%)
A	3
B	5

Case V : Inter Regional Medium/Short Term Transactions



Case VI : Medium/Short Term Transactions Involving Wheeling Region



THANK YOU