Methodology Options for Losses

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Introduction

- Losses are incurred on the transmission system

- More/less losses depending on point of connection to the grid

- How to reflect these losses and allocate appropriate charges?

- Number of Options discussed

- Objectives: Cost Reflectiveness; Transparency; Predictability; Volatility; Short-term Efficient Dispatch

Introduction

- June 2005 – SEM High-Level Design Decision Document:

  - Outlined Design of Single Electricity Market (SEM) and included a decision requiring that 'Transmission losses in the SEM be accounted for using a consistent methodology involving the application of locational loss factors to the outputs of generators'.

Options for Treatment of Losses

1. Current SEM Nodal Model for Losses

2. Zonal Losses Option

3. Uniform Losses Option

4. Purchase of Losses Option

1. Current SEM Nodal Model

- Loss Factors calculated for each node on the network (ex ante)

- Transmission Loss Adjustment Factors (TLAFs) are calculated using Marginal Loss Factors (MLFs)

- MLF = $\dfrac{\text{Change in System Demand}}{\text{Change in Output of Generator}}$

- Power flow modelling software for individual generator marginal loss studies

1. Current SEM Nodal Model

- Scaling applied to MLFs to ensure recovery of modelled losses and forecast system losses

- Loss factors vary day/night and for each month – possibility of using trading period loss factors

- Should lead to optimisation of losses on the system if loss factors reflect reality in real-time

1. Current SEM Nodal Model

- Highly cost reflective and moderately transparent

- Can be volatile with low predictability

- Should lead to an efficient dispatch

- TLAFs currently only apply to Generators – Provision for losses for Suppliers also exists

2. Zonal Losses Option

- Similar to current TLAF approach
- One zone = one loss factor (ex ante)
  - Can differentiate by day/night, month/season/year
- Criteria for selecting zonal areas?
  - Subjective
  - Extensive/comprehensive analysis required
- Possible to split fixed and variable losses into uniform and zonal

2. Zonal Losses Option

- Moderately cost reflective and transparent

- More predictable and less volatile

- Moderate short-term efficient dispatch potential

- Proposed future methodology for Great Britain

3. Uniform Losses Option

- Equal TLAF allocated to every participant – socialised allocation

- Minimum variability, not volatile

- Highly predictable and transparent

- Not cost reflective - Individual participant's impact on losses not reflected

3. Uniform Losses Option

- May lead to inefficient short-term dispatch

- No locational signal - Not compatible with June 2005 SEM High-Level Design

- Methodology currently used in Great Britain

4. Purchase of Losses Option

- Currently SMP inc cost of losses
  - Paid for by Suppliers
- If no TLAFs
  - SMP does not inc cost of losses
  - Generator costs > Revenue from Suppliers
  - TSO covers difference, buys the losses at the SMP
  - Cost recovered through TUoS tariff

4. Purchase of Losses Option

- Commonly used methodology e.g. mainland Europe

- Highly transparent, predictable and non-volatile

- Inefficient short-term dispatch

- No difference in cost of losses between participants – not cost reflective

Comparison of Losses Options

	Cost Reflective	Transparent	Predictable	Non Volatile	Efficient in the short term (Efficient Dispatch)
Uniform Losses	L	M	H	H	L
Loss Adjust. Factors	H	M	L	L	H
Zonal Losses	M	M	H	H	M
Purchase & Social. of losses	L	H	H	H	L

Questions

- Questions regarding any of the 4 Options
- Other Suggestions