

TLAF Splitting Update

Alan Kennedy

Senior Engineer

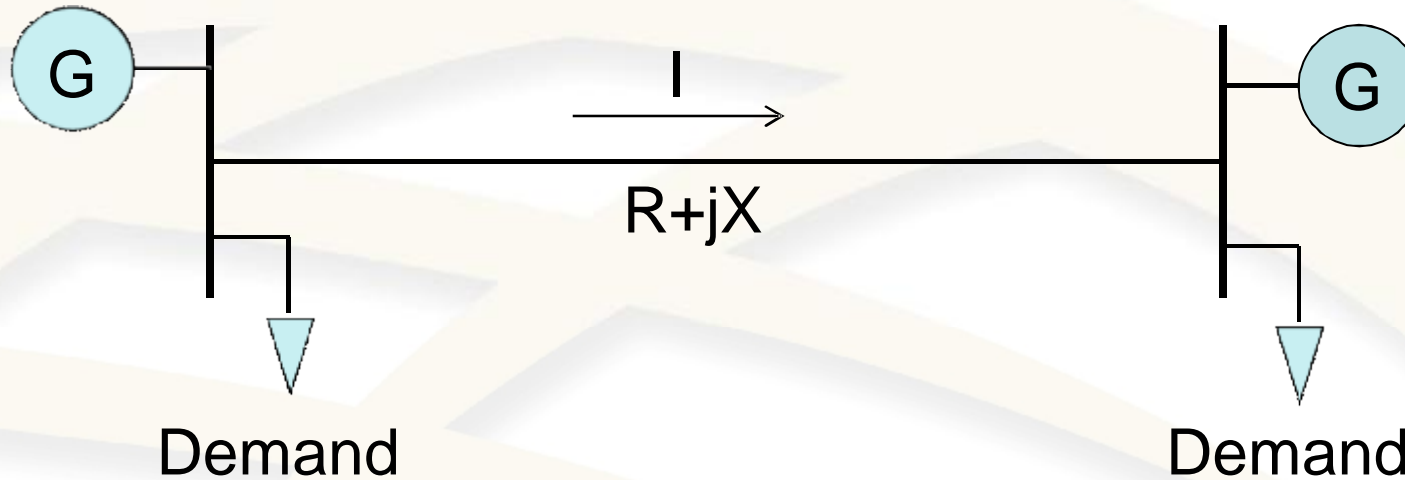
SONI Grid Ops Near Time



What are TLAFs?

- TSC Definition of Transmission Loss Adjustment Factor:
 - Means the factor for each Unit in each Trading Period to adjust the output or Demand of that Unit for the effect of Transmission Losses and as otherwise provided for in the Code, determined in accordance with paragraph 4.42A

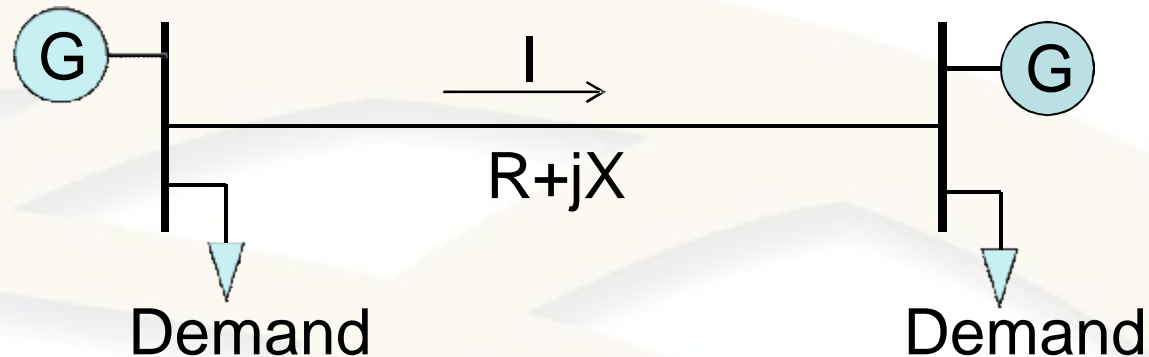
Losses – Some Basics



$$\text{Losses} = I^2R$$

$$\text{Generator MW o/p} = \text{Demand} + \text{losses}$$

Assessing Loss Factors



To calculate marginal losses for each dispatch scenario:
§ Total system demand is increased by 5MW;
§ In turn, each generator is designated as the swing bus (this means it will supply the increased demand plus the associated losses);
§ Additional factors are applied to arrive at the final TLAF figure.

The History Lesson

- Since SEM Go-Live, locational TLAFs have been applied on an All-Island basis,
 - Monthly and day/night; so 24 TLAFs per annum.
- The TLAFs are factored into a generator's bids and are applied to metered data,
- Since Oct 10, the locational TLAFs have been compressed to improve stability.

TLAF Splitting

- In October 10, the RAs published a TOR for assessing the impact of treating TLAFs separately in the market and operational arenas.

Purpose of Splitting

- Removing locational signal from the Market, introducing a stable loss factor,
- Improve the efficiency of the physical dispatch to minimise production costs.

TOR for Impact Analysis of Splitting

MARKET

- Impact on SMP
- Marginal plant
- Supplier cost and total pool revenue
- Changes to in-merit plant in market schedule
- Carbon emissions

OPERATIONS

- TLAFs in dispatch
- System changes required

TLAFs in Dispatch

- RAs have asked TSOs to identify
 - Changes in volume of losses incurred
 - We should be attempting to minimise production costs incl losses
 - It is feasible that an optimal dispatch may imply increased losses
 - Changes in constraint and DBC

System Changes Required

- SCUC and SCED are aspirational tools.
 - Security Constrained Unit Commitment
 - Security Constrained Economic Dispatch
- RCUC change request has been submitted to ABB
 - This will facilitate the application of individual TLAFs for each half hour as required

Progress to Date

- TSOs have engaged with the RAs to agree the specific work to be completed,
- This should be firmed up shortly.

Initial Analysis to be Completed

- Aimed at deciding if the splitting exercise is worthwhile,
- SONI's initial analysis will focus on the impact of increasing TLAf granularity,
- One representative week will be selected
- TLAfs will be derived as follows:
 - 2 per day
 - 4 per day
 - 6 per day

Production of TLAFs

- The production of TLAFs involves the following steps:
 - Based on a Plexos (long term unit commitment software) run, establish average dispatches for each TLAF period,
 - Insert each dispatch scenario and demand into a load flow model,
 - Solve the load flow model – (this bit is time consuming),
 - Run automated process to derive TLAF.

Testing of TLAFs

- The newly produced TLAFs will be inserted back into the Plexos model to derive the:
 - Production costs,
 - Losses,
 - Schedule,
 - Etc.

Next Step

- If this analysis suggests that no significant benefits accrue, then the exercise may be terminated,
- If the analysis shows potential production cost reduction then further analysis will be discussed and agreed with the RAs,
- Areas of interest are likely to include:
 - Investigation of TLAFs over a longer timeframe
 - Inclusion of changes to generation portfolio
 - Process automation

Timeframe

- Analysis must be completed by June 11 to facilitate a window for consultation,
- Decision from RAs to follow,
- System changes will be introduced in Oct 11 release,
- However, actual changes to TLAFs in the dispatch may not be implemented until all process issues have been addressed.

Thank You

Alan Kennedy

alan.kennedy@soni.ltd.uk

