

Allocating System Strength Costs

C5 PS2 Q8

Whose responsibility should it be to provide enough system strength services to ensure stable operations— transmission service provider or the generators? If the latter, then how does the generator provide this and how are costs recovered? Does making the generator responsible for system strength requirements create an entry barrier for renewable generators?

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The TNSP may be able to offer a more cost-effective solution

- The party best placed to provide the remediate a system strength issue will vary.
- The TNSP may be better placed to:
 - Assess the emerging needs in an area considering connection enquiries and potential closure of existing synchronous generation
 - To design and implement a centralised solution addressing the requirement for a number of generators (scale efficiency)
 - Assess the effectiveness of a system strength remediation measure.
- The generator is better placed to:
 - Develop a bespoke solution for there project particularly if there is no advantage from a centralised solution
 - Optimise the solution with the development of the generating system (eg include grid forming inverters or synchronous condenser).

Not all generators have the same need for system strength

- For stable operation IBRs (wind and solar) using grid following inverters require a minimum level of system strength at the connection point.
- Whereas grid forming inverters can operate stably with very low levels of system strength.
- Synchronous generators inherently provide system strength. This form of generation is likely to remain in the future even with the closure of fossil fuelled generators (eg Nuclear, Biomass, Hydro generators all utilise synchronous generators).
- To avoid free rider issues it is important that costs are allocated to those parties that create the need for system strength.
- Correct cost allocation should encourage efficient development in the long term, encourage innovation and the deployment of the most cost effective solutions.

Allocating System Strength Costs (NEM approach)

- Allocation of system strength costs should recognise the factors driving the need for system strength:
 - Minimum fault level:
 - correct protection operation
 - stable voltage control systems
 - maintain system security
 - Costs recovered from customers.
 - Sufficient system strength to maintain the stable voltage waveform:
 - efficient connection process
 - stable operation of grid following IBR
 - Costs recovered from grid following IBR.

