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Feasibility of extending LI secondary deliverables to lower voltage levels

Extension of Load Index to LV/HV Substations

Prevailing DNO View (prior to smart meter roll out):

- Limited scope for applying LI to distribution and, in particular, individual feeder level at present.
- Network load data not available on secondary network in the same way as on the primary network.
- Developing measure would be very resource intensive; secondary networks are more complex to model.
- Some other uncertainties to consider, e.g. value of assets at secondary voltages, impact of new industry arrangements, usefulness of thermal loading measure.

Extension of Load Index to LV/HV Substations

Alternative views:

- Extension of LIs could be feasible but would more likely be based on count of overloaded HV and LV feeders and overloaded substations.

- Output is likely to be a volume count based on demand forecast.

Extension of Load Index to LV/HV Substations

Alternative views:

- Feasible to develop measure of LIs to that used at major substations by comparison of maximum demand at the substation against substation **firm** capacity.

- Some issues to consider if doing this:
  - Determination of Maximum Demand
  - Concept of firm capacity not relevant for LV/HV substations
  - Scope for forecasting change in LIs

Extension of Load Index to LV/HV Substations

Possible impact of Smart Meters:

- Will facilitate collection of data on individual customer demands.
- Should improve accuracy of DNOs' analysis.

However:

- Actual data collected by smart meters still to be clarified.
- Unlikely to provide full visibility of loading on LV networks.
- Some data manipulation will be required to aggregate smart meter data. Not straightforward.
- Accurate measures of HV/LV substation demand would require installation of metering at substation itself.

Suitability of LIs to reflect impact of DG

Key issues raised by DNOs:

- Existing LI unlikely to remain meaningful as DG levels rise:
  - Maximum demand element of LI a measure of maximum load supplied by substation, not maximum usage by generation
  - Capacity element of LI represents available capacity at substation to secure load under 'n-1' events.
- Not all generation has export metering installed e.g. CHP schemes
- Voltage control and fault level capacity will affect ability to connect DG.

Suitability of LI to reflect impact of DG

Possible approaches:

- LI table to clearly indicate whether network or plant is demand or DG dominant.
- May be simpler to develop separate measures for the ability of networks to connect load and DG.
- System wide load growth model used at DPCR4/5 could be expanded.
- Three index measures could be made to work in most cases.


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