Storage & Networks

Day 2 - 4th LV workshop & TVCC seminar

Nigel Bessant 2nd March 2017



SHED (Sustainable Home Energy Development)



(Independent project not associated with SSEN)

Locally Balancing Supply & Demand

Local networks are hard to predict?



Example Energy Storage requirements





Local Energy



Forecasting for better performance

'Simple' set point control

- Peak 1 successfully managed
- Peak 2 excessive reduction, expires before peak ends
- Peak 3 excessive recovery introduces new peak!
- Needs constantly high SOC





Optimal – scheduling algorithm

- All peaks managed
- Only stored energy when required to reduce overall demand



Control algorithms in action



A validated 30 Customer aggregation

1

Time (Half Hours)

• Over 3 weeks of actual data the peak demand is reduced 97% of the time.

2

x 10



For demand reduction of 25% only need storage 5% of the time (if perfect forecasts are available!)

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Everyday use of storage on Networks



Thoughts on local network application

- Must continue to focus on the needs of all customers (end consumers), particularly the vulnerable
- Storage should be considered alongside all forms of "flexibility" including ANM, CMZ, DSR, bulk-storage etc...
- Increasingly complex local systems balancing supply with demand, considering constraints, stability requirements and existing connection arrangements at a local level
- The local DNO is best placed to support efficient connection and utilisation of flexible resources below GSPs; taking charge of local planning decision making to meet the interests of all their customers
- DNOs will need to transition to new roles



