



Our Demand Response Journey

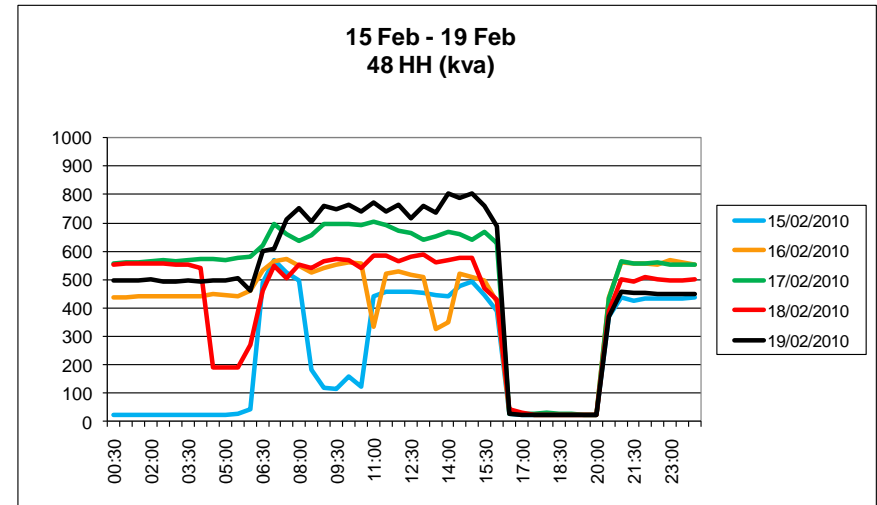
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2009/2010 Trial for winter reinforcement

- Single customer
- Very compliant to contractual signals
- Continues to operate in this manner due to red, amber and green signals in new distribution charges



2010/11 Trial for summer reinforcement

- Customer with own generation provided response by increasing generation - very successful, demonstrating greater responsiveness than anticipated

Learnt that price point too low for many customers

- ✔ Contracted with a leading aggregator and energy management specialist to offer customers package of demand side response and energy efficiency services
- ✔ Electricity North West request reduction in demand at certain times via aggregators state-of-the-art control room who schedule load for firms while minimising disruption to their businesses
- ✔ First location specific contracts of this kind in the country
- ✔ **Early learning - price point is often too low for intrusion frequency and duration**
- ✔ **Contracts continue where customers have other drivers to participate**

- Electricity North West and National Grid commissioned Pöyry to explore the implications for network companies of the different values ascribed to demand response by different procurers of DSR (ie National Grid, Suppliers and DNOs)
- Energy related price signals in general outweigh those of local networks related to network capacity. This, on its own, would tend to drive investment in network assets



Network capacity signals are amplified when there is network depletion. However frequency and duration of depletion varies across the voltage levels of the network

Figure 2 – Scale of value of DSR to the users across the scenarios, thus reflecting the rate payable to provider (1 = highest value, 4 = lowest value)

Scenario	DNO	TSO	Supplier
Shaving peak demand to avoid network investment			
Case A	4	-	-
Case B	3	1	2
Boost peak demand to accommodate wind and optimise prices			
Case C	3	2	1
Case D	3	2	2
Modify demand to accommodate low wind period			
Case E	-	3	1
Modify demand to compensate for a generation trip			
Case F	-	1	2
Case G	-	1	2
Modify demand to compensate for a transmission constraint			
Case H	-	1	-
Modify demand to compensate for a distribution network fault			
Case I	1	-	-
Modify demand to cope with volatile demand net wind profile			
Case J	-	1	2

Under network depletion conditions (faults or planned outages) it is possible that DNO price signals will be sufficient to drive customer or generator behaviour, although the market will need to be designed to allow this to operate

Capacity to Customers is innovative, low risk, maximises utilisation of the installed network capacity and has the potential to deliver the requirements of the low carbon economy

New Commercial Contracts



- To retain customers' security of supply we will utilise innovative demand side response contracts
- These contracts will allow ENWL to control the consumption of customers on a circuit at the time of fault

- Demand response to be provided by new connections customers and/ or existing customers
 - New connections customers avoid reinforcement costs with demand response capability
 - Existing customers receive ongoing demand response payments for demand response capability
- C₂C tests customers' willingness to enter into 'post-fault demand response' contracts across the range of high, medium and low fault rate HV circuits
- C₂C is providing useful customer behaviour data against the variables of price, frequency of call and payment mechanism
- **Initial findings demonstrate great interest and contract terms as important as price**

- Flexible electricity demand can be used by DNOs
- Demand Response now part of our business-as-usual tool-kit for planning engineers
- Trials have shown price point, offered, was too low for most customers
- Pöyry work showed DNOs can't compete, except when network is depleted
- C₂C proposes low intrusion delayed restoration type demand response