An important word on the potential for electricity smart meter data to be of benefit to customers and networks.

The daily data to be polled (uploaded and stored) from all meters should really be at a resolution that allows customers and suppliers (ESCOS) to examine daily consumption patterns and assess which of many tariffs might be best for them; and to understand how cost form demand arises (by day part, week part, occasionally , regularly, …). If the data is too granular – eg one total usage KWH per day or worse - then this simply cannot happen. And the opportunity is gone.

It would be best for customers if they had 1/.2 hourly data (48 separate aggregates per day). This respects much of the privacy of customers as one cannot really do any appliance inferencing etc at such half hourly resolution. But it does allow for distinctive behavioral patterns to be discerned: our work here at the University of Reading has shown this. For the suppliers, they should really classify customers' behaviour properly so as to design appropriate engagement and tariffs. At present far too much weight is placed on socio-demographics (eg Experion's Mosaic etc) or on the household type/assets (like type of dwelling) to infer estimates. Using data from smart meter trials our (unpublished work with a supplier) has shown very clearly that:

1. Such socio economic or asset based inferences are extremely poor indicators of consumer behaviour (some poor customers in energy poverty have volatile and large usage).
2. That all households, summarized over a single week (that is, 48*7 data half hourly points) , may be segmented behaviouraly into 10 or 20 groups. Each having a distinctive class of behaviour. Households are consistent over time.
3. Such data would be sufficient for anybody to evaluate new tariffs, with discontinuities etc at half hourly resolutions. To the clear advantage of customers.

Anything at the lower resolution of a day, a week, a month or a quarter is really useless in providing any clue as to the drivers of expense. And would be useless to consumers: they will come back ask for more! DECC would be in disrepute. DECC should, in my honest opinion, NOT allow this. It would prevent competition and now allow consumers to address their own issues and behaviour.

Finally there is a large advantage to the network s (DNOs), potentaily. Consider an LV grid supplying 200 households. All the users patterns are spiky and there are not enough of theme to smooth each other out (large of large numbers does not kink in to mollify the aggregates. So the aggregate may be fully iof peaks and uncertainties (it is much easier to produce a rolling forecast on 1000000 households than for 100 households!). Yet the households on a single LNV network are not independent either: perhaps the kids go to the same schools at the same time etc, or people work at similar places of work. Moreover clustering (keeping up the the Jones's) means that such local household may take up new assets (Evs or Pvs for example ) at similar moments. All this results in big impacts on the LV network. Bt to do anything smart the network will need live rolling forecasts, so it can react to peaks etc.. If smart meters don’t supply half hourly data every data, there is nothing to monitor and nothing to forecast with. And tius the network cannot be "smart" or adaptive or learning, in any real sense.

So Higher resolution data (sec by sec) is really not called for as far as I can see as standard (such data could be available via an API if required in the home where it may be useful (with recency) within the home. But the minimum standard for data collected locally or centrally from smart meters should be half hourly aggregates. Our analysis shows that there is value both to and customers + ESCOs (in underrating how usage patterns arise and are changing, and in which tarrits are best); and to the DNOs. Yet this is at a resolution that preserves privacy in terms of appliance usage. It also means volumes are no problem at all.

I would be happy to furnish details of these analyses carried out at the University of Reading: it is regrettable they are not yet within the public domain – but that situation will alter shortly.