ElectraLink Ltd.

3rd Floor
Northumberland House
303-306 High Holborn
London WC1V 7JZ

The EMDH Delivering Half Hourly Settlement

Paul Gath, CTO and Director of Operations, ElectraLink

Introduction

Issued on August 13th 2019, Ofgem's Request for Information on the settlement reform is seeking views on the cost impact of settlement reform based on the preferred Target Operating Model (TOM). ElectraLink is the current provider of the data infrastructure used to communicate data related to retail settlement and we have assessed the impact of half-hourly settlement on our service. The Data Transfer Service (DTS) is part of ElectraLink's Energy Market Data Hub (EMDH), an accessible, extensible, scalable and secure platform which has been designed to fully meet the needs of industry, including the requirements of market-wide Half Hourly Settlement (MHHS).

ElectraLink has estimated that the rough order of magnitude of the incremental cost of using the DTS to support MHHS is between £500k and £1m per year. These costs will be recovered through DTS charges levied on the users of the service. ElectraLink therefore believe that there is no need for the industry to procure an additional network or for market participants to incur the cost and risk of integrating with a new solution in order to deliver MHHS. This paper will outline how the EMDH, which has been competitively procured by ElectraLink, is a scalable, cost-effective and secure solution for MHHS by explaining how MHHS will be managed by the EMDH and the cost implications of delivering the requirements as documented in the Target Operating Model[1] (TOM).

The Ofgem Request for Information (RFI)

Within the RFI, Ofgem is seeking views on the impact of MHHS on market participants. We have therefore laid out in this white paper how using the EMDH to transmit and provide access to MHHS data can reduce some of the potential costs and risks of the introduction of MHHS.

Stability and scalability

The introduction of settlement reform will significantly increase the volume of settlement traffic that the BSC, suppliers and other market participants use. We estimate that the monthly settlement traffic will grow by 2,600GB, if all domestic properties were to be settled on a half hourly basis. This is more than 100 times the current half hourly data processed by the market. Although this significant increase in traffic would present the industry with a challenge, the EMDH has been designed to accommodate this increase. It is a highly scalable platform, built on open source, cloud-native applications and hosted in a public cloud environment. This means it is naturally elastic and scalable to support the increased new data volume throughout. This architecture enables ElectraLink to support changes in volume quickly and cost-effectively, as containerised code can grow and shrink its resource requirements automatically as the demand fluctuates. As evidence of this scalability,

[1] https://www.ofgem.gov.uk/publications-and-updates/design-working-group-preferred-tom-report

ElectraLink successfully implemented an additional 20% capacity to support the recent growth in HHS traffic as a result of P.272 without raising the cost of the DTS to industry.

Cost

First and foremost, by using the EMDH to deliver MHHS there would be no need to procure or build a new network from scratch, thereby stripping out a significant percentage of cost to industry. Also, as all settlement-critical market participants are already connected to the EMDH and already have the EMDH embedded into their own systems, this would reduce cost impacts on market participants.

One common misconception is that as DTS traffic increases, the costs of using the service increase in proportion. This is not true. Increases in data volume incur only incremental cost increases, if any, and therefore while the total cost of the service remains about the same, the price per unit of volume significantly reduces.

As the EMDH has effectively a fixed technology cost, concerns that the increased level of settlement traffic will result in the charge for the use of the DTS increasing at the same rate are unfounded. The underlying costs of the DTS are broadly fixed and do not increase in proportion to usage. In fact, as the volume of traffic increases, the unit charge reduces — the more the DTS is used, the less it costs per transaction — therefore removing cost-shock relating to increased or uncertain data volumes.

Moreover, ElectraLink is completing the process of transitioning to the EMDH including the continued expansion of new ways to access data, such as the addition of APIs. As a result, much of the change required to support MHHS has already been embedded into the EMDH infrastructure.

Therefore, the additional cost of using the EMDH to deliver MHHS would be incremental. To support the mHHS, the DTS would need to add additional storage (to support the growth in data), additional load balancing (to ensure that the DTS can handle peaks in traffic at any one point in time) and additional communication capacity (to allow specific DTS users using physical Gateways to send and receive large volumes of data).

We have modelled the impact of MHHS on data volumes and included in our assumptions underpinning this model a 'worst case' scenario (if all data was sent at once, each information flow requires a separate data flow across the EMDH, that each central service was a separate party and they had to transfer data between parties across the EMDH) to ensure that we considered the total costs of the impact of mHHS on the EMDH. Included in these costs is the assumption that users can use APIs, if they wish not to send data to each party.

The estimated rough order of magnitude of the incremental cost of these changes is likely to be between £500k and £1m per year, spread across the whole market. For context, the DTS currently costs in the industry approximately £7m per year.

The EMDH meets the programme's requirements

ElectraLink meets all the technical requirements of MHHS as outlined in Ofgem's report:

1. **"Common Interfaces" between all participants**: ElectraLink provides an independent, flexible, secure and low-cost data transfer service between UK energy market participants which delivers all data transfer requirements relating to settlement-critical market processes. These processes include customer switching, settlement, agent management and meter administration. ElectraLink's platform currently provides the functionality for non-Domestic HH settlement as well as elective HH Settlement to the domestic market. ElectraLink's EMDH currently connects to 271 industry participants which includes every HH Settlement party.

2. **"Options to stream data" including "APIs and file transfer":** Through 20 years' experience of managing the DTS, and now the transformative EMDH, ElectraLink has gained significant understanding of the main barriers to the sharing of data, as well as the establishment of governance arrangements to ensure effective sharing of those datasets. Through the DTS and now the EMDH, ElectraLink has provided the functionality for file transfer between all relevant MHHS actors since 1998.

Since 2012, ElectraLink has been working with industry participants to create analytical solutions (including APIs and file transfer) for the industry. Through collecting and storing data for the benefit of the energy market, ElectraLink has been building a detailed governance framework to support innovation and provide data to those who require it whilst also protecting the data controllers. This dataset and governance framework are agnostic of technology and are currently being implemented through event-driven data transfer from:

- a process (e.g. the sending of all relevant data in the data store to agents from the EMDH following their appointment);
- APIs, where data is accessible to users immediately for real time decision-making – removing the reliance on bilateral data transfer; and
- online dashboards to provide high level views.

3. **"Allow future innovation options…to access Meter level data":** ElectraLink's ability to collect all DTS data flows enables ElectraLink to store, enrich and analyse the DTS dataset. We do so to provide insights which drive business value and operational efficiency for UK energy market participants, including settlement agents and suppliers, as they enter the smart flexibility market. Moreover, the governance structure of

the DTS, namely the Data Transfer Services Agreement (DTSA), enables ElectraLink to provide secure access to settlement data to market actors to facilitate innovation and drive market transformation. This approach has driven innovation.

An example of key use cases for access to the settlement data within the DTS dataset, include:

- National Grid's utilisation of ElectraLink's Embedded Generation dataset to support Grid's forecasting of Embedded Generation output;
- Ofgem's tracking of eServe ECO submissions; and
- ELEXON's use of settlement data to support their performance assurance.

4. **"Robust governance layer":** The DTSA includes a flexible governance structure that allows the EMDH to operate data exchange defined across a number of industry codes (currently SPAA, MRA, BSC) and between bilateral parties through flows defined using FlowBuilder, a tool within the DTS to define new message structures. This governance structure would facilitate the changes to the HHS message definitions within existing codes to the new MHHS arrangement.

A structured, mature governance arrangement for data sharing, such as the DTSA, reduces data risks (e.g. the wrong people accessing the data) and ensures independence and competitiveness, as the industry itself governs how industry data can be used. For ElectraLink, the governance arrangements of the DTS dataset ensures that the data sharing is provided flexibly and **always to the right people**, including new market actors. The rules of data sharing can be updated, as appropriate and agreed by the industry, and this mechanism has been used to provide settlement data to new market actors, such as Innogy, to support their DER offerings.

The industry, via the DTS User Group, and Ofgem retain oversight of the DTSA and therefore would have direct visibility of any EMDH performance, service or governance issues relating to its support of the MHHS.

5. **"Role based access controls":** The EMDH security controls ensure that access to the services are user-specific and each user's access controls are based on the role of the user.
6. **"Auditing and monitoring":** The EMDH contains audit functions and a data store to provide assurance and monitoring capabilities to understand the effectiveness of change as market participants move to market-wide HHS and, more specifically, a smart, flexible, coordinated system.

ElectraLink also supports the overall programme aims set out by Ofgem:

7. **Promotes a cost effective and competitive solution:** ElectraLink competitively procured the EMDH on behalf of industry, compliant with OJEU procurement procedures.

In the EMDH, the industry has a competitively procured network service connected to 100% of the SVA settlement participants, that can deliver the functionality required to meet the current and future needs of the MHHS at limited incremental cost. ElectraLink believes, therefore, that the most cost-effective solution for industry is to re-use this network as the communication mechanism for the MHHS.

ElectraLink firmly believes that its management of the DTS over the last 21 years demonstrates a clear centre of excellence in the procurement and delivery of data transfer services to support the UK energy industry. We believe that the most cost-effective way of delivering communication infrastructure to support the MHHS is to include MHHS communication in the scope of the EMDH and we have therefore factored this requirement into the EMDH.

Combined with the opportunities to support innovation (point 3 above), the EMDH already removes barriers to competition for new entrants through low cost connections and a trusted service that is undifferentiated between the largest and the smallest market participants. (Connections to the EMDH are provided for as little as £480 per year.)

8. **Reliability of the transition**: It is important to monitor performance across the transition to the new arrangements and to publish how suppliers and market actors are performing. Existing market monitoring can incur an overhead on market participants as they must 'self-report' performance to the regulator. Self-reporting can lead to inconsistencies. ElectraLink has successfully demonstrated how market monitoring can be delivered centrally with reporting derived from the collection of DTS data supporting ELEXON's PAF process, Ofgem's eServe monitoring and National Grid's monitoring of embedded generation growth. The continuation of the EMDH as the communication mechanism for HHS would allow the EMDH to continue providing these monitoring services. This would also allow the EMDH to support monitoring of the new settlement arrangements' performance.

The Energy Market Data Hub (EMDH)

ElectraLink operates at the heart of the UK energy market with unique insights into the challenges and opportunities the industry faces. For over 20 years, ElectraLink has supported the evolution of the UK energy market with the consistent and reliable delivery of the Data Transfer Service (DTS). From its inception in 1998, the DTS has underpinned competition and growth in the market through flexible, secure and trusted data transfer. Always staying ahead of the technology curve, the DTS adopted virtual private cloud technology and open source platforms in 2013 to ensure it can support dramatic growth while reducing costs to industry.

However, this is only one aspect of what ElectraLink has been delivering during this time. Since 2012, ElectraLink has had permission to collect DTS data flows (from April 2012) and retain this data. This data lake is used to support settlement processes (such as ELEXON's PAF process) and the transition to a smart, flexible network (by proving Half-Hourly data to National Grid to support its forecasting of embedded generation output). Through the DTS, ElectraLink is already connected to and integrated with all settlement-critical market participants and currently provides the system architecture that supports the data transfer for all relevant retail settlement processes, such as agent appointment and meter reading data.

Beyond this, with all the necessary and appropriate governance in place, we were able to make use of our unique position to monitor and identify trends in the energy market, providing a level of transparency and insight into the challenges and opportunities the industry faces. This allows us to support industry to develop solutions, facilitate innovation and reduce costs to consumers. These solutions are under the governance of the Data Transfer Service Agreement (DTSA), a multi-party agreement overseen by Ofgem.

The EMDH data lake enables key innovative data transfer solutions to be delivered to market. The EMDH can facilitate physical data transfer where participants require it; however, the data lake also enables data exchanges to be performed using other methods such as through service platforms. The EMDH already offers the ability to access data via APIs (meeting the TOM requirements) and the recent re-procurement will also allow innovators to develop their own products and services for the benefit of the utilities industry.

The EMDH is our way of bringing together all the products, services and solutions we offer in one place. ElectraLink believes that it is critical that access to industry data falls under industry governance and is centrally available, from a trusted entity, to ensure that all participants have equal, timely and secure access to industry data. It is noted that ElectraLink already fulfils this trusted, governance-bound role for the provision of the settlement system architecture.

Conclusion

The EMDH can support all the communication needs of retail settlement as defined under the MHHS consultation. Our service is competitively procured and is designed to support the changing requirements of the smart, flexible system. In an increasingly fragmented energy market, ElectraLink facilitates vibrant competition by ensuring that the communication of and access to data is provided on a low cost, reliable and secure interface. Moreover, through the flexible, yet secure and robust, governance structures of the EMDH, access to data has been established to support the changing nature of the market.

ElectraLink does not believe there is any business case to procure another UK energy market communications network in support of half hourly settlement. We believe that the EMDH can deliver these communications requirements at low risk and cost, a service already procured on behalf of the UK energy industry by ElectraLink.