Consultation on EMR data flows

We invite you to respond to the questions on this form. Please submit responses entitled 'Consultation on EMR data flows' to emr@elexon.co.uk by 5pm on 7 March 2014.

Your details

Respondent	Paul Gath (ElectraLink CTO)
Company name:	ElectraLink
Email address:	paul.gath@electralink.co.uk
Role of stakeholder represented	Please state the role of the stakeholder/stakeholders on whose behalf you are responding (delete as applicable): **Industry Central Body** Provider of the Data Transfer Service (DTS) which is the data transfer service used by ELEXON to communicate stage 2 settlement data with industry. The DTS is also used to support industry invoicing, including Green Deal. ElectraLink also provides an electronic invoicing service for Distribution Network Operators to invoice DUoS Charges to Suppliers and for Supplier to submit remittances in return.
Does this response contain confidential information?	No

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Consultation questions

Option 1: Sending files as email attachments	
Question 1.1	Do you agree that sending and receiving electronic data files as email attachments is an appropriate mechanism for parties who wish to minimise their investment in IT systems? If not, what alternative would you propose?

ElectraLink does not agree that sending and receiving electronic data files as email attachments is an appropriate mechanism for parties who wish to minimise their investment in IT systems.

Email is not an appropriate mechanism because email is not secure, reliable or robust. Typically, emails are plain text communications that can be read by any intermediary as they travel across the Internet. Email has a number of technical security problems including susceptibility to falsified headers, corrupted attachments, and so on. Non-repudiation, the ability to confirm that data came from who is says it came from, resulting in an inability of the source of the data to deny sending it at a later date is difficult to achieve with an email-based communication system. The transfer of email from sender to recipient will inevitably go through a number of intermediaries, which not only poses a security risk but also makes guarantees of delivery impossible, and performance difficult to predict. It is not uncommon for emails to incur significant delays, without either the sender or recipient being informed; email is not suitable for business critical communication. An alternative, secure data transfer mechanism is required for EMR; one which guarantees security and integrity of the data, automates the digital signing of data and provides a real time audit trail for senders and recipients, such as the DTS.

ElectraLink does not agree with the statement that the use of emailed documents minimises the investment required in sophisticated IT systems. The use of email as a mechanism for transferring data is, in effect, another network interface and would require development to interface into IT systems. Undoubtedly users of the EMR services will already have some form of corporate email, however costs will need to be incurred to automate the generation of emails and attachments, as well as extracting and processing them on arrival. Without any form of centralised validation, each user of the service will have to validate for themselves the content and structure of data before it can be used in back end systems. This all adds costs to EMR parties. An alternative would be to use an existing central data transfer service which already has data validation built in, such as the DTS.

Existing industry data transfer services, including the DTS, already provide simple and low cost interfaces for market participants. These interfaces have the additional benefit that they are both secure and auditable. A recent example of the rollout of such low cost interfaces was the introduction of the Green Deal. Green Deal Providers utilise the DTS to communicate with the Green Deal Central Charge Database via a secure tunnel through the public internet. Data is sent and received across the DTS through simple Windows 'drag and drop' functionality similar to that required to attach a file to an email. The regulated cost of a DTS Remote User Gateway (RUG) connection is only £480 per year per connection and all DTS charges are set in accordance with the Charging Principles defined in the Data Transfer Services Agreement (DTSA) which is overseen by Ofgem.

ElectraLink fully recognises the need to implement EMR data transfer and processing at low cost, particularly where smaller market participants are involved. IT system investment is one part of the picture. In the case of data transfer, the consequential costs and risks to market participants of unnecessary changes to their highly integrated systems and their ongoing operating costs of handling exceptions and correcting errors or system shortcomings are equally important; particularly so where localised savings may give rise to substantial costs for other industry players. ElectraLink is anxious to promote the broadest possible view of industry costs, and this is the context to our responses to the more specific questions in the consultation.

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It is unlikely that a new, one size fits all approach to EMR data transfer will be the most economic industry solution, and therefore ultimately more costly for energy consumers. ElectraLink is familiar with providing a 'Lite' version of its data transfer services for smaller users which does not place costly obligations on other parties. Accordingly, and for the avoidance of doubt, our responses are based on meeting the necessary requirements of both large and small users at minimum overall cost to the industry.

In summary, ElectraLink would recommend, as an alternative to using email, that the DTS should be used by EMR parties who wish to minimise their investment in IT systems.

Question 1.2	Would you be likely to use this mechanism yourself? If so, would you see this as a permanent solution, or a temporary workaround?

ElectraLink itself would not consider using this mechanism for the reasons given above. Whilst it is possible to envisage ourselves and the industry accommodating a very limited deployment of such an approach, we believe it is not operationally or economically viable for anything other than the smallest volumes of relatively inconsequential data.

Question 1.3	Do you agree that XML is an appropriate open standard to use for the data files attached to these emails? If not, what alternative would you propose?

We agree that XML is an appropriate open standard to use for the data files supporting the EMR processes.

The energy industry typically uses legacy, flat file formats for inter-company communication. This is a solution that was developed in 1998 when the consumer market first deregulated. It has served the industry well and continues to serve the needs particular to parties in our industry very well. However, if one was to design an inter-company communication interface in 2014, you would probably not choose to utilise a flat file format. A more modern alternative would be the use of XML. The following table compares the two file formats for use in the EMR service.

Flat File	XML
Familiar to industry for inter-company communication therefore low risk	New to industry for inter-company communication therefore high risk
Small and efficient in network transfer	Large and inefficient in network transfer
High compression rates – typically 6:1	Very high compression rates – typically 20:1
Not self-defining – needs an external catalogue to define the content and format of data	Self-defining – stands alone and unambiguously defines the content and format of data via schemas
Difficult to read by humans without reference to catalogue	Difficult to read by humans unless formatted correctly for that specific reason
Bespoke development required to generate and process	Freely available tools to generate and process
Small, efficient parsers – fast to process	Large, inefficient parsers – slow to process
Inflexible	Flexible

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The DTS already generates and delivers XML data as enhanced data validation reports. Following a recently completed technology refresh programme the DTS supports all standard TCP/IP protocols and as a result is capable of sending and receiving XML data.

ElectraLink is currently reviewing the DTS' support of XML for the existing Data Transfer Catalogue (DTC) flows and is planning to introduce this XML support as part of the DTS Transformation Programme, subject to DTS User Group approval. This XML functionality would be tested, deployed and fully operational in time to support the go live of EMR. The introduction of a small number of new XML messages on to the DTS is unlikely to incur any incremental costs for industry, either as a result of new message flows or the resulting data volume (although see our assumptions on data volume elsewhere in this response), as long as they are defined in the DTC or another suitable catalogue product such as ElectraLink's EFD (ElectraLink Flow Dictionary).

Question 1.4	Do you agree with our proposal that the settlement systems should also attach human-readable versions of each file (in PDF format) to outgoing emails?

As stated above, the DTS uses the latest network technology and is fully TCP/IP compliant. If the industry decides that PDF format files are to be used, the DTS can transmit these files, with EMR parties defining how these files would be routed around the industry.

Option 2: Other potential mechanisms for sending and receiving data

Question 2.1	What do you see as the pros and cons of the options outlined above? Which option(s) do you see as most appropriate?

The following table summarises ElectraLink's view of the three option outlined in paragraph 24 of the consultation.

Option	Pros	Con
1. **Secure FTP**	More secure than normal FTP	Not totally secure
	Cost effective secure FTP clients available	Only part of the solution, still needs definition of file formats, transport mechanism, encoding rules, validation, routing etc
	Simple drag and drop interface once file has been produced	Additional changes required to EMR parties' infrastructure, e.g. firewall rules, security changes etc
2. **Web Services**	Service definitions easy to document and share	Expensive to integrate
	Based on open standards	Change control more complex because parties' system changes need to be synchronised
		Only part of the solution, still needs definition of file formats, transport mechanism, encoding rules, validation, routing etc

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	Improved interoperability and code reusability	Transactions are stateless which may lead to problems should the client fail immediately after receiving information from the server
3. **Web portal**	Can be cheap if portal and access means already in place	Pull mode only
	Low cost to support	No service levels
		Only part of the solution, still needs definition of file formats, encoding rules, validation, routing etc Lack of an audit trail Difficult for EMR parties to provide an automated interface that remains consistent with changes to portal content

ElectraLink sees secures FTP as the most appropriate option of those outlined in this section, however this option would still require a secure transport mechanism, such as the DTS, to guarantee security and provide additional benefits such as audit and data validation.

Question 2.2	Are there any other options that we should be considering?

ElectraLink does not propose any additional options for consideration, other than the use of the DTS.

Option 3: Possible use of existing industry networks to exchange data

Question 3.1	Do you agree that the DTN is the appropriate mechanism for HHDAs to provide data to the settlement systems (provided that the obligation to do so is in the BSC)?

Yes, ElectraLink agrees that the Data Transfer Network (DTN), the infrastructure that supports the DTS, is the appropriate mechanism for the HHDAs to provide data to the settlement systems. The table below shows all HHDAs which are registered in Market Domain Data and confirms that they are all already connected to the DTS.

Market Participant ID	Trading Name - Overall	DTS User
BMET	BGlobal Metering Limited	Yes
CIDA	MRA Service Company TEST ID A	Yes
CIDB	MRA Service Company TEST ID B	Yes
CIDC	MRA Service Company TEST ID C	Yes
DASL	Siemens MCS	Yes
HYDE	SSE Plc	Yes
MIDE	E.ON UK Energy Services Limited	Yes
NEEB	Npower Limited	Yes

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SPOW	SP Dataserve Ltd	Yes
SSIL	Stark Software International Ltd	Yes
UDMS	TMA Data Management Ltd	Yes
UKDC	IMServ Europe Ltd	Yes
UPLH	Utility Partnership Ltd	Yes
UPLX	Utility Partnership Ltd	Yes
ZTAR	IMServ Europe Ltd	Yes

The DTS is already used to transfer aggregated settlement information between electricity market participants in a secure and reliable manner. In addition, the DTN supports electronic invoicing of DUoS charges and the transfer of Green Deal commercial data. As outlined in our response to question 1.3, the DTS, subject to User Group approval, will be able to support the XML type HHDA data flows being envisaged by ELEXON in time for the launch of the EMR systems.

Question 3.2	Do you believe it is appropriate to allow existing networks (i.e. DTN and/or CVA network) to be used for other EMR purposes (unrelated to the BSC or other existing industry codes)? Please provide your rationale.

ElectraLink believes it is appropriate to allow existing networks (i.e. DTN and/or CVA network) to be used for other EMR purposes (unrelated to the BSC or other existing industry codes).

The major rationale for this is the fact that the DTN is already connected to all electricity Suppliers and their Agents. ElectraLink estimates that **81%** of the parties that will need to exchange data for EMR purposes are already connected to the DTN. The incremental cost of connecting the 29 Parties not already connected to the DTN is outlined below.

The table below details ElectraLink's estimate of the type and number of parties that will need to exchange details for EMR purposes:

Proposed EMR Role	CM CFD	Likely existing market participant role	Likely information exchanged?	Numbers of Parties licensees	Currently connected to DTN	DTN Connection Required
Capacity Provider	CM or CFD	Generator	Invoice/credit notes; CM payments; Metered volumes (CM) CFD payments; Invoice notes; Credit Cover (CFD)	61 (Active Parties)	38	23
Capacity Provider	CM	DSR	Invoice/credit notes; CM payments; Metered volumes	unknown	unknown	unknown
Capacity Provider	CM	Storage	Invoice/credit notes; CM payments; Metered volumes	1 (Likely to	0	1

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				increase)		
Licensed Supplier	Both	Supplier	Invoice notes; Levy/CM payments; Credit Cover	63	63	0
Data provider	CM	HH Data Collector HH Data Aggregator (if metering option a) is employed)	Individual site generation/consumption volumes	9 HHDAs 9 HHDCs	18	0
Data provider	CM	SVAA? (although likely to communicate consumption info via SAA)	Aggregated HH volumes for individual sites	1	1	0
Data provider	CM	SAA	BM Unit volumes	1	0	1
CFD Counterparty	CFD	TBD	Contract details	1	0	1
Capacity Market Settlement Body	CM	ELEXON	Performance and compliance reports; Credit cover	1	1	0
Settlement Agent	Both	ELEXON	Invoices/credit notes; consumption/generation volumes; contract details; Credit cover; Payments; Reports	1	1	0
EMR Delivery Body	Both	National Grid	CM Auction Data; CFD allocation and contract data; reports	1	0	1
Ofgem	Both	Ofgem	Performance and compliance reports	1	0	1
DECC	Both	DECC	Performance and compliance reports	1	0	1
			Total	151	122	29

Historically DTS volumes have grown on average by 6% per annum and the DTS Transformation Programme, due to be completed in 2014, will introduce service improvements via secure 'cloud' based services that provide the capability to accommodate incremental growth in DTS volumes at very low incremental cost. The DTS is designed to accommodate further new users, new data flows and changes in usage patterns quickly and efficiently and we have demonstrated this flexibility. In light of the headroom that the DTS currently operates at, ElectraLink is confident that the service would be able to support additional XML formatted EMR data flows without incurring additional incremental cost to industry.

ElectraLink appreciates that precise volumetrics for EMR relating to message numbers, data volumes and users have yet to be evaluated, but can speak from our own experience and an initial assessment of ELEXON's 'Appendix

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1-EMR Settlement Data Flows with Frequency v1 0.pdf' document and the associated 'Strawman for CfD Billing Payment Documents v 1.0.pdf'. The documents state that data flows will be on a daily, weekly or monthly basis. The documents do not describe any large or very large data sets and whilst there is no sizing information for each data flow, it is reasonable to assume that volumes for daily, weekly and monthly data flows (even in XML format) will not be greater than the current DTS volume headroom. Once firm volumetric information has been made available to ElectraLink we will undertake a full impact assessment to confirm our assumption.

Assuming that total EMR data volumes can be accommodated within the headroom currently available on the DTS, the incremental cost to industry of connecting those EMR parties which are not already DTS users would be the following:

- A one off estimated cost of £60k to amend the DTSA to allow Generators to sign the agreement;
- A cost of £14k per annum to connect the 29 EMR parties not already connected to the DTS with a RUG connection.

If the total EMR volumes cannot be accommodated within the headroom currently available on the DTS, then as stated above, incremental capacity can be implemented on to the cloud-based DTS, following completion of the DTS Transformation Programme in 2014, at low cost and low risk by the nature of the leveraged, cloud services. ELEXON has provided some detail about how the implementation of the Settlement Agent will be funded http://www.elexon.co.uk/reference/electricity-market-reform/

"*Although many EMR 'players' will also be BSC Parties, the arrangements are covered under different governance and funding arrangements. During the set up period, DECC will put in place a Grant arrangement; this will ensure that BSC Parties are not required to shoulder the implementation costs. It is expected that ELEXON's operating costs will ultimately be recovered from electricity Suppliers however, the precise arrangements have yet to be finalised.*"

If the DTS is chosen as the transport mechanism for EMR data transfers, ElectraLink will investigate whether some or all of the legal fees identified above could be paid for by the DECC grant.

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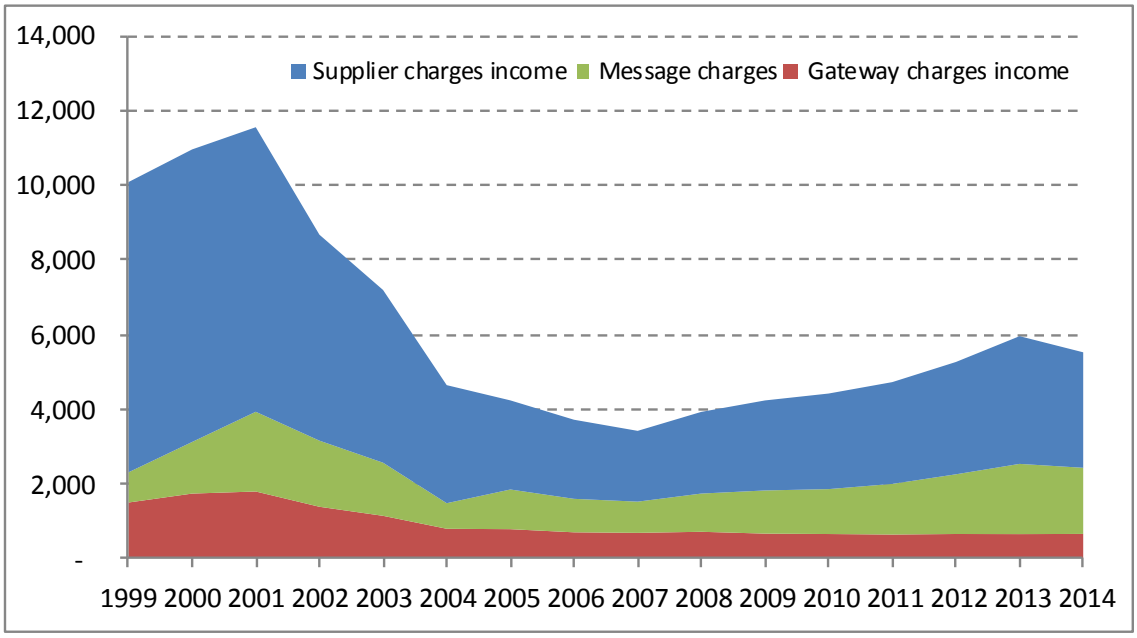
The graph below details the evolution of the cost of DTS to industry over the period 1999 – 2013.

DTS Charges 1999-2013 (£'000)



The downward trajectory of DTS Charges in the period 2004-2007 reflected the combined impact of a reduction in resources required to deliver the DTS due to the stability of the market and the operating cost profile within the service provider contract. This downward trajectory bottomed out in 2007.

In 2008 DTS Charges started to increase reflecting the emergence of smart metering, the commencement of a technology refresh programme and a re-baseline of the service provider contract. ElectraLink, recognising a changing and evolving market commenced a programme of strengthening the delivery team. The impact of this market change and the corresponding strengthening of the delivery team coupled with the commencement of investment recovery meant that charges from 2008 started to increase.

In 2011 DTS Charges were impacted by the "exceptional costs" incurred to support activities outside the day to day operation of the DTS (e.g. Smart Metering Implementation Programme support, security reviews) which resulted in the continuous upward trajectory of DTS charges. In 2011 ElectraLink agreed with the DTS User Group to recover Exceptional Costs annually in arrears and defer the recovery of the value of outstanding technology refresh programme investment. This recovery in arrears arrangements means there is a 1 year lag in Exceptional Cost impacts. With the re-negotiation of the service provider contract and other cost savings, ElectraLink has been able in 2014 to reduce DTS charges by 10% and is looking to maintain this downward trend in the cost to industry of the DTS over forthcoming years.

As detailed in our response to question 1.3, the DTS already supports all standard TCP/IP protocols. Subject to User Group approval, ElectraLink will introduce support for XML for all current Data Transfer Catalogue (DTC) flows at the start of 2015 prior to the rollout of EMR. The inclusion of XML flows relating to EMR could form an extension to that dataset or new flows could be managed outside the MRA via an alternate catalogue such as the ElectraLink Flow Dictionary (EFD) which currently support a number of industry data flows including Distribution Use of System (DUoS). Support of this catalogue provides exactly the same functionality as DTC defined flows.

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Utilisation of an existing, secure, functionally rich and reliable network with interfaces that are already understood by industry will reduce risk to the implementation. The DTN already provides a number of low cost interfaces that mitigate barriers to entry into the market. Its processes are well tested and will place risk with those best placed to deal with that risk.

From the data flow categories detailed in Appendix 1 of the consultation we have detailed those flows of a similar type currently transferred across the DTN.

Category	DTN Equivalent	Existing
Metered Data	D0010 – Meter Readings	✓
Power Market Data	No	X
EMR Contract Data	D0011 – Agreement of contract terms	✓
Bank Transactions	DUOS billing information	✓
Settlement Reports	Various SVA Settlement Information	✓
Credit Notifications	No	X
Pre-defined Reports	Various Reconciliation, Supplier Settlement reports	✓

In conclusion, expanding the scope and, should it prove necessary, capacity, of the DTS could be accommodated at low cost. The aggregate incremental charges to connected parties using the DTS for EMR data will be low, as will the aggregate internal costs they incur for their own related development and operation. This is for a proven, secure and therefore low risk solution.

Question 3.3	Do you agree that the costs incurred in using networks in this way should be recovered from parties who choose to make use of this option? If so, should this apply to all such costs (including for example the costs of including appropriate functionality in the settlement systems.)? Or should it apply only to those costs directly attributable to individual data recipients (e.g. DTN data transfer charges)?

It may be helpful, as we believe this question implies, to separate the industry's total costs of existing, and potential EMR data transfer arrangements from the question of who pays. Total industry costs are a matter of aiming to achieve the economic minimum which meets industry requirements. 'Who pays' is in some ways a more complex matter of fairness and providing drivers for efficient user behaviours; efficient user behaviours should mean not simply their impact on shared costs but how their practices may impact the internal costs of other parties. ElectraLink's response to this question focusses on the impact on total DTS costs of accommodating EMR data transfer and how DTS costs are allocated to market participants.

Without a full understanding of the functional requirements being proposed for EMR it is difficult to respond specifically to the materiality of any additional DTS costs (see response to Q3.2) other than to state that the costs of the DTS are largely fixed and do not flex with the growth in data volumes carried by the service. However, we have laid out below some history of the way that ElectraLink operates cost recovery and charging for the DTS.

Since 2003, when the DTS Service Provider changed through competitive procurement, ElectraLink negotiated a pricing regime which did not include a usage element. This pricing structure was carried forward to the most

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recent contract re-negotiation with the current Service Provider in 2013. ElectraLink therefore has, in effect, a fixed price contract with its Service Provider for provision of the DTS within broad limits of network capacity. The principles by which ElectraLink recovers its costs (the Charging Principles in the DTSA), however, mandate a charging regime which includes a usage element (Volume Charges).

This cost recovery arrangement is legacy and was established by Ofgem to ensure fair and reasonable apportionment of ElectraLink's costs. ElectraLink is currently reviewing the Charging Principles with a sub-group of the DTS User Group to investigate alternative means of recovering ElectraLink's costs. ElectraLink expects to propose formal changes to the Charging Principles to the DTS User Group later this year which will require Ofgem consent. One option being considered by the Users is to remove all DTS traffic charges to ELEXON and ElectraLink charging these instead directly to industry. This is in recognition that the DTS Charges to ELEXON are, in addition to ELEXON's overhead for administering them, ultimately passed through to industry as part of their BSC charges.

In addition to the assumption that the use of existing industry networks to support EMR will result in incremental costs, the consultation also assumes that the use of existing industry networks will generate additional costs through the modification of existing settlement systems to support 'legacy' file formats. ElectraLink has demonstrated in its response to Q3.2 how EMR data transfers can be implemented at little incremental costs to industry. Similarly, ElectraLink in its response to Q1.3 has shown that the DTS will be XML ready prior to the launch of EMR and therefore the issue of the allocation of additional settlement system costs is moot.

EMR Parties not already connected to the DTS would be required to accede to the DTSA. Subsequently, costs incurred by that Party would be administered and charged directly by ElectraLink to that Party, mitigating the need for ELEXON to incur incremental costs in subsequent cross charging to industry. The Charging Principles that govern the DTSA costs are set by the DTS User Group on which EMR Parties would be represented.

Question 3.4	What changes would be needed to existing codes or Licenses to allow the DTN and/or CVA network to be used in this way?

In order for the DTN to be used for other EMR purposes (unrelated to the BSC or other existing industry codes) minor changes would be required to the Data Transfer Services Agreement (DTSA), which governs provision of the DTS. The changes needed would be to allow market participants who are EMR service users to accede to the DTSA. In effect, this would add generators and, possibly, Demand Side Response customers to the list of market participants who currently use the service. No further changes to the DTSA are expected.

ElectraLink recently made similar changes to the DTSA to allow Green Deal Providers (GDPs) to use the DTS. This change was made over a 6 month period at a cost to industry of £60k. ElectraLink was able to connect the first 16 GDPs to the DTS through a Letter of Intent, whilst the legal changes were being approved. The number of GDPs connected to the DTS since the launch of the Green Deal in January 2013, is 71, including the original 16. In a similar way, we expect that if the DTS is used in a regulated role supporting EMR no change will be required to the MRA and implementation would be completed within a similar time frame and at a similar cost to Green Deal. The introduction of EMR itself (i.e. not specifically due to the use of the DTS) could well have consequential impacts on the MRA via the MRA Change process (as and when MRA Parties raise changes against the DTC). Other than that, there should be no direct impacts on the MRA, assuming that MRASCo is not asked to act as an agent (as was the case for the Green Deal). Any costs associated with DTC changes will be managed as part of the MRA change process.

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