Gerard Boyd
Commercial and Innovation Manager
SP Energy Networks
ScottishPower House
320 Vincent St
Glasgow
G2 5AD

Date
3rd October 2017

Anna Kulhavy
RIIO Networks
Ofgem
Commonwealth House
3rd Floor
32 Albion Street
Glasgow
G1 1LH

Dear Anna,

SP Energy Networks response to Ofgem's Distribution Innovation Rollout Mechanism 2017 minded to decision

SP Energy Networks summary position on the outcome of Ofgem's minded to position is summarised below:-

- Secondary substation monitoring - We understand Ofgem's decision but have some residual concerns about Ofgems understanding of the scope and specification of secondary substation monitoring that will be rolled out with only our RIIO ED1 funded activity. The wide scale rollout of secondary monitoring was not funded under RIIO ED1 and is a key enabler for Smart Grids and the transition to Distribution Network Operators.
- HOSS - We understand Ofgem's decision but have concerns about the completeness of information available to Ofgem regarding the scale of LiDAR implementation to date and the consequences for our customers and the industry.
- Dumfries & Galloway - We agree with Ofgem's minded to decision, recognising that this industry leading project meets the IRM criteria and delivers clear benefits for UK customers.

Enhanced Secondary Substation Monitoring (ESSM) – We maintain that a firm understanding of the capabilities of the LV network and the behaviors of connected customers, will be essential in mitigating the overall cost to customers of the low carbon transition.

The decision highlights the use of network monitoring as an existing ordinary business arrangement. We accept that there are commercially available products, that can provide improvements to existing MDIs and that we plan to install 1700 as part of our existing price control allowance. However included within our ESSM bid was the added functionality of an 'open-platform' operating system for monitors, which would allow 3rd parties to develop applications[1], providing a great deal of future proofing of any monitors installed. The ESSM project would also have developed a range of low cost communications solutions, this learning would have been of benefit to all UK DNOs and ultimately to UK customers.

It is also worth clarifying that our ESSM bid did not target 80% of our secondary substations as highlighted within the minded to position. Rather it was 80% of our larger substations (>200kVA), which corresponds to 29% of our total secondary substation fleet. Similarly the minded to position highlights that our existing ED1 allowance includes secondary substation monitoring for 12% of our assets, this is also based on larger substations with the 1700 units funded in ED1 accounting for 2% of our overall fleet.

Holistic Overhead Survey Strategy (HOSS) – The decision is reliant on the quality and completeness of the information request responses from other DNOs, it is our view that this process has not sufficiently drawn out the differences in scope and technology between our HOSS bid and fixed wing LiDAR trials or planned implementation. HOSS is not simply the adoption of fixed wing LiDAR, it is a complete holistic and integrated approach, utilising a range of LiDAR measurement techniques and digital pole testing to better inform the way in which we manage our assets. We have investigated the extend of LiDAR adoption by other DNOs and found that no other DNO demonstrates the level of ambition within the HOSS bid, which would have significantly advanced the capability of the industry. We fully expect that other DNOs will seek funding to implement a similar holistic approach during ED1 or as part of their ED2 business plans.

Implementation of the full range of holistic techniques within our HOSS bid would have provided substantial benefits for public safety and provided both the Health & Safety Executive (HSE) and Ofgem with extensive auditing tools for assessing our overhead line networks.

Integrated Network Constraint Management for Dumfries and Galloway –This ground breaking project will deliver customer benefits and will serve as a key learning point for UK network operators as we develop towards a more flexible distribution network, helping to meet the challenges of an increasingly decentralised energy system. I would also highlight that the final revised project cost provided to Ofgem was **£8,013,368** as presented at our bi-lateral meeting on the 14th August 2017 and the Final Decision should be adjusted accordingly.

Please find additional detail on the points raised in my response and a number of minor suggested corrections in the Appendix A below. I would also like to thank the Ofgem team for the level of ongoing engagement that took place throughout the IRM assessment process.

Yours Sincerely

Gerard Boyd
Commercial and Innovation Manager
SP Energy Networks

[1] Application examples could include, dynamic rating, fault location, demand forecasting, load disaggregation

Annex A – Detailed points of correction and clarification

Enhanced Secondary Substation Monitoring (ESSM)

Enhanced functionality

Included within our ESSM bid was the added functionality of an 'open-platform' operating system for monitors, this would likely be a sub class of the Android OS, so market entry requirements would have been relatively low. Therefore a range of 3rd party developers could have designed applications, providing both enhanced functionality and future proofing of any monitors installed.

Examples of applications that could be developed to enhance functionality:-

- fault location – utilising monitor data to accurately locate distance to network faults
- Losses and electricity theft – pinpointing sources of potential electricity theft
- EV charging management – Managing a key enabler of the EV rollout
- cloud-based public data – Providing (suitable secure and data privacy approved) public data

Volume of secondary substations targeted

The figure of 80% referenced from our ESSM bid and highlighted in the question does not refer to 80% of all secondary substations. This value refers to 80% of our larger substations (substations with capacity >=200kVA), where we foresee the greatest benefits in deploying enhanced secondary substation monitoring. The table below summarises the scale of our proposed rollout against our total secondary substation population:-

Licence	Total Secondary substations	Secondary substations (>200KvA)	ED1 ESSM monitors (no.)	ED1 ESSM monitors (% total)	ED1 ESSM monitors (% >200kVA)
SPD	41547	17408	9087	22%	52%
SPMW	44839	13366	6985	16%	52%
SPEN	86386	30774	16072	19%	52%

A further 28% of our larger substations will be targeted in ED2:-

Licence	Total Secondary substations	Secondary substations (>200KvA)	ED2 ESSM monitors (no.)	ED2 ESSM monitors (% total)	ED2 ESSM monitors (% >200kVA)
SPD	41547	17408	4839	12%	28%
SPMW	44839	13366	3707	8%	28%
SPEN	86386	30774	8546	10%	28%

Across the ED1 and ED2 periods we propose to install enhanced secondary substation monitoring in 29% of our secondary substations (80% of our >200kVA substations). In addition our RIIO ED1 funded secondary substation monitoring rollout (1700 units) accounts for 2% of our total population.

Holistic Overhead Survey Strategy (HOSS)

The minded to position cites in paragraph 2.60 that *'several DNOs have told us that they have adopted LiDAR technology and data analytics into business as usual to varying degrees as part of their overhead network management practices'*. Whilst we agree with this statement, we think it is important to consider both the scale of adoption to date and the availability of LiDAR as a workable solution prior to the commencement of RIIO ED1.

Adoption of related technology

As stated above HOSS is not simply the adoption of fixed wing LiDAR, it is a complete holistic and integrated approach, utilising a range of LiDAR measurement techniques and digital pole testing to better inform the way in which we manage our assets. The range of separate activities encapsulated by the HOSS bid were outlined within our bid in detail but are summarised below:-

- Fixed wing LiDAR
- Helicopter based oblique LiDAR
- Ground based LiDAR patrols
- Digital pole residual strength testing

To our knowledge only fixed wing LiDAR has been adopted and implemented by UK DNOs. The reason to develop and implement additional technologies comes from the limitation of fixed wing LiDAR, it cannot for example provide sufficiently high resolution models to manage pole defect data outside of tree infringement, conductor height or leaning poles. Our HOSS bit also included two additional products that could be of benefit to UK customers:-

- Tree growth models
- Overhead line thermal capacity models

Additionally paragraph 2.61 *'there is also evidence that at least one DNO has implemented a wide roll-out of LiDAR to survey its full overhead network'*, to our knowledge we are the only DNO that has carried out accurate fixed wing LiDAR surveys of our LV overhead line network.

History of LiDAR applied to distribution networks

The development of LiDAR as an inspection tool for distribution networks has been driven largely by NIA funded projects, commencing after the start of ED1. LiDAR was not an option before ED1 due to the high cost for processing and was not implemented as part of the business plans of any DNO in the RIIO ED1 price control. The developments of our Virtual World Asset Management (VWAM) project pushed the boundaries of LiDAR data analytics being applied to wood pole overhead lines, allowing the identification of LV wood pole networks (initially ~40% accurate).

Finally, the implementation of the full range of holistic techniques within our HOSS bid would have provided substantial benefits for public safety and provided both the Health & Safety Executive (HSE) and Ofgem with extensive auditing tools for assessing our overhead line networks.

Integrated Network Constraint Management for Dumfries and Galloway

IRM funding request

As highlighted in our covering letter the final revised project cost provided to Ofgem was **£8,013,368** (total project cost of £9,677,086) as presented at our bi-lateral meeting on the 14th August 2017 and the Final Decision should be adjusted accordingly. The following sections within the minded to position should be adjusted accordingly:-

- Pg 5: says "during the assessment of its application, SPEN reduced its IRM funding request from £9.1m to **£8.5m**".
- Paragraph 2.50 and 2.51
- Paragraph 3.1 and 3.2, table in 3.2 to be updated

CBA Benefits

In paragraph 2.29 the figure of £9m benefits is incorrect, the total gross benefits are £38.42m. Even excluding the direct benefits to existing DG (£7.4m), there is still £31.0m benefit to UK customers. Provided below is a further breakdown of the sources of benefit:-

- Carbon benefit: £21.3m
- Reduced system imbalance: £2.2m
- Value to existing DG: £7.4m
- Local economic benefit: £1.5m
- Future avoided expenditure: £6.0m

Transmission Constraint

The minded to position references transmission constraint as a singular constraint, the Dumfries and Galloway area is subject to a number of separate transmission network constraints. It is recommended that the Final Decision be updated to reflect this.

- Pg5: summary description to be updated
- Paragraph 2.8: reference to transmission constraint should be updated to "transmission constraints".