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To: Emma Kelso
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Re: New Metering Technology in Public Lighting

General Comments

Telensa welcomes the opportunity to respond to the consultative letter of 1st April 2008, opening the way to use of metered supplies for street lighting in the UK. Our view is that the inclusion of accurate measurement of electricity supply to street lighting is a natural and desirable development. New technology now makes this possible at an economical cost to the operator and using highly automated and easily operated apparatus. An example is Telensa's system for control, monitoring and metering for public lighting, [1]. Amongst many features and benefits, a key capability of the new technology is the ability to measure directly the power consumed by each and every lamp served by the system. This is an essential first step in managing more effectively the use of power in street lighting, enabling overall power consumption to be reduced with a consequential reduction in carbon emissions and more appropriate tariffs to be negotiated.

Benefits in overall efficiency from power measurement can be derived in several ways. These include identification of lamps that are out of specification such as lamp/ballasts with poor power factor, or lamps that are failing and close to end-of life, or lamps that are day-burning. Remedial action to replace or repair faulty devices can significantly reduce power consumption. Additional important benefits from CMS, including setting variable lighting levels and managing on and off times more appropriately, can be combined in a single system to automate and optimise the management of large sets of street lights.

Ellexon's recent revision to BSCP520 (v14.0 28 February 2008 - inclusion of CMS in un-metered supplies) is really just a partial solution towards improving management of power usage. While the new BSCP520 includes provision for using individual lamp switching times and proportional power loads (particularly for use in the context of variable lighting levels), the use of an estimated power load for a given lamp/ballast combination is still retained. An approach with fully measured power load will yield significant further benefits through improved information on lamp/ballast performance. This provides incentive for higher quality maintenance and lower energy usage overall.

The use of metered supplies in street lighting will require development of a suitable regulatory framework that will probably comprise several parts, such as specifications, codes of practice and tariff structures (see answers to Q1 in Appendix). It will be important to ensure that a balance is retained throughout such a framework in respect of its simplicity/sophistication, so that final solutions remain cost-effective and relevant to the needs of the street lighting industry.

In the absence of standards and accepted test arrangements for a fully metered system, Telensa has been developing a solution that meets the requirements of the new BSCP520 and can operate in the un-metered supply regime. Whilst this has by necessity become our first priority, we remain committed to a fully metered solution and all our outstation devices can have this capability enabled, once specifications are agreed and approval can be obtained.

We have included responses to the specific questions raised in OFGEM's consultation letter in the appendix below and will be pleased to provide any further details or clarification that you may require.

Appendix: Responses to Specific Questions Raised

Q1. “Are there any consequences of proceeding with developing a new standard for CMS technology that we have not considered above?”

1a. Power Factor Measurement

The impact of poor power factor in street lighting and its consequences in terms of increased carbon emissions is widely recognised [2]. Poor power factor persists because currently there are no commercial or technical means of addressing the issue: commercially, in un-metered supplies, unlike in metered supplies, there are no tariff structures that reflect good or bad power factor; technically, there are no systematic or cost effective ways of measuring power factor across large numbers of units.

As part of the introduction of fully functional CMS incorporating metering, therefore, we believe that consideration should be given to use of reactive power measurement in addition to active power measurement. When combined with tariff structures that reflect power factor, lighting operators would then have clear incentive to maintain their stock to an appropriate power factor. CMS measurement of active and reactive power can identify poorly performing devices as needing early replacement.

1b. Elexon Codes of Practice

Elexon has revised its Code of Practice BSCP520 for un-metered supplies to allow for the inclusion of CMS but without the use of metering. This offers many benefits but not all of those associated with a complete solution. For a fully metered supply, in addition to standards and testing overseen by OFGEM/ NWML, modifications would be needed to one or more of the Elexon BSCPs, other than BSCP520, or a new BSCP altogether, since none of them seems to deal with the situation of a single metered aggregated value (used in settlement) combined with multiple points of connection to the supply and multiple measurement transducers. Whereas this work may not be difficult, it is subject to Elexon’s change procedures, which include opportunity for market participants to be consulted and a fairly lengthy approval and sign-off timetable.

1c. Requirements and Testing Specifications

There are many possible types of CMS, with and without a measurement/ metering capability. A general requirements specification and associated test specification for all conceivable types of system would be a formidable task. Fortunately, we do not believe this to be necessary. While, from your letter you indicate that you consider that the MID need not apply, it may still have relevance. Arguably the only design factor, at least for active power measurement, that is not covered in the MID, is the location of the display used as the basis for the price to pay. If this display is allowed to be at some central location, then all the other MID requirements (both quantitative and qualitative) can still apply.

1d. Tariffs

Tariffs for un-metered supplies are higher than for metered supplies, presumably reflecting the risk of inaccuracies in inventory and possibility that some lamps operate outside their nominal estimates (as recorded in the Elexon tables). For fully metered CMS solutions, these inaccuracies would be removed. It would therefore be reasonable to expect new tariffs to become available to reflect this lower risk environment. Alongside development of a suitable BSCP, it may be necessary to introduce new tariff structures, to accommodate the situation of a single metered aggregated value (used in settlement) combined with multiple points of connection to the supply and multiple measurement transducers. For example, the use of MPAN as an element of a metered tariff would almost certainly need alteration.

Q2."Are there any potential impacts of facilitating CMS technology for public lighting which might adversely affect the market? This might include new barriers to entry or any negative impact on market participants or customers."

In responding to this question, we assume that metering for street lighting would not be mandated, so that natural market forces would dictate whether or not such a capability were to be implemented.

2a. Barriers to entry

We set aside the normal cost of developing appropriate technology, as this is an aspect of any new system or device. Factors such as intellectual property are harder to evaluate, although our experience to date is that there are no significant known inhibitions to adding measurement capability to any foreseeable system. In fact, allowing and specifying requirements for measurement in public lighting will *remove* a current barrier to entry for those who wish to deploy or supply systems and devices with formal measurement capability. It should also lead to further providers of CMS solutions and therefore increased competition to the benefit of street lighting operators.

2b. Impact on Market Participants (other than Customers)

The replacement of part of the current un-metered supply market with a metered regime will clearly have some effect on market participants, though we do not consider this to be a negative effect. In any event, most of the effects are related to any form of CMS and have been considered already in the consultation on Elexon's revised BSCP520. There may be some small additional effects. Examples are the roles of the "Meter Administrator" and "UMSO", created to manage part of the original un-metered supplies regime. In a metered system, the computation of half – hourly data from assumed values in tables and used in settlement will be replaced by accurate measured data. The participants need not necessarily change but their way of working will alter. A new and simpler market structure might be possible but is not essential.

2c. Impact on Customers

We can see only benefits for customers who implement accurate metering. Although under existing arrangements there *may on average* be some under-estimation of power consumed, this is far from certain. Our own system trials suggest a mix of over and under estimates, dependent on the type of lamp used and its age. Under a metered supply regime, aged and poorly performing lamps could be replaced more promptly, leading to improvements in power used. Further, an accurate consumption value should be reflected in tariffs, which need not carry risk premium associated with uncertainties in consumption. The issue of fair tariffs in a metered supply regime will be of vital importance: it is effectively the quid pro quo for operators in return for reducing the risk borne by the energy suppliers.

References

[1] Telensa "PLANET TM" system; "Public Lighting Active Network TM for control, monitoring and metering of public lighting".

[2] Power Factor Correction in Unmetered Supplies, YALE Group, April 2007

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