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Mr Peter Waymont  
Chairman DCUSA DCP127

c/o Beth Brown - Electralink

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date: 26th November 2012  
re: Battery Powered Hub

Dear Mr Waymont

Landis + Gyr have been asked to comment to DCP127 on the feasibility of using battery power for a gas first communications hub.

As a leading provider of smart metering solutions, L+G has evaluated battery powered HAN and WAN devices for a number of market applications. At a high level, there are two possible scenarios for battery powered hubs:

1. Battery power UNTIL a suitable electricity meter is installed, or;
2. Battery power is used throughout the hub's life

Our investigation into both scenarios showed them to have significant limitations and concluded that battery powered hubs would severely limit the functionality of Smart metering going forward and create a significant environmental impact.

#### **Option 1: Battery power UNTIL a suitable electricity meter is installed**

Our analysis provided a best case scenario of a 10 year operational life for a simple GPRS WAN connection operating **once a day** with **no HAN** support and utilising current battery technology – i.e. a one-device modem with one communications event per day and no additional interaction with HAN devices and using the same types of lithium-ion battery employed in commercially-available products today.

For a HAN connected device operating with limited functionality (a sleepy end device in ZigBee parlance) and with no WAN interaction, a 15 year life can be achieved with the same battery technology/commercial limitation.

At the most basic level, therefore, a battery powered hub connected to a gas meter **ONLY** and with a very simple communications profile would need 2 x the battery capacity of a current standalone GPRS modem or HAN connected gas meter to achieve the same operational life, doubling the cost and carbon

impact of the solution.

Conversely, if the same capacity battery were used in a battery powered hub as is used in HAN-only smart gas meters, the operational life of the hub would be less than half that of an equivalent battery powered gas meter i.e. less than 7 years.

Extending that battery powered hub to support security encryption, command signatures, public key management and the ESI functionality required by the UK's smart metering implementation as well as supporting communications with an IHD in gas-first installations would have a dramatic effect on battery consumption. Even with very careful power management and a steady-state device environment, our analysis suggests it would be extremely difficult to achieve more than a 2.5 year life for the same per-battery/battery circuit cost as would be required for, say, a smart gas meter.

Finally, firmware upgrades are likely to be more common in the early part of the UK's smart rollout as industry works to stabilise deployed meters and hubs against the various DCC components. In this environment, gas-first hubs – in common with all SMS devices – are likely to be exposed to much more demanding operational use than would be expected under steady state conditions. In turn, for battery powered hubs, this is likely to lead to an operational life that falls significantly below the 2.5 year theoretical maximum.

Thus, for a gas-first installation with a battery powered hub there will be a significant additional cost. The initial cost increment is likely to be £3-5 per hub for battery, battery management circuit and cut-off circuit to isolate the battery when a suitable electricity meter is present. But the very short operational life at that cost would likely drive an in-life battery replacement (circa £30) or the use of a much higher capacity battery to allow a reasonable battery life (unlikely that any Supplier would accept a life of less than 7 years, driving 3x battery capacity).

As a suitable battery and battery circuit plus the provision for the later connection of mains power to a battery-powered gas first hub exceeds the cost of a stand-alone AC power solution for gas first installations, we believe that a battery powered hub is not a viable prospect to support Option 1 above.

## **Option 2: Battery power is used throughout the hub's life**

It can be seen from the analysis of Option 1 above that extending the battery powered hub to also support the much more rapid communications required by an electricity meter-hub-IHD combination is a completely untenable solution. Under the UK smart metering architecture, electricity meter to hub and IHD communication is much more frequent than for a gas meter. The electricity meter will communicate with the hub and/or IHD around 2,000 times in every 30 minute period – a period during which the gas meter will communicate once. This frequency of communication is compounded by the duration of the electricity meter to hub communication sessions.

The challenges for Option 2 are further compounded by the following factors

- Last gasp functionality for electricity outages  
Running security code – especially if hardware based Introduction of Pay as you go/prepayment

Taking all the above into consideration Landis+Gyr does not consider that a

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battery powered hub is viable for either Option 1 or 2. We believe that the best option available to the industry and the ongoing development of the UK Smart experience is the use of mains powered Hubs for both gas first and electricity first installations.

Yours sincerely,

Carl Powell  
Account Manager