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SECMP0007 ‘Firmware updates to IHDs and PPMIDs’

Request for Information responses

About this document

This document contains the full non-confidential collated responses received to the SECMP0007 Request for Information.

Question 1: How many times would you expect to update the PPMIDs in your estate each year?

Question 1		
Respondent	Category	Response and rationale
OVO Energy	Large Supplier	The update of our PPMIDs in our estate is driven directly by the roadmaps of the Device Manufacturers. Their view has already been provided in that they do not plan to make more than 2 per annum. The issue we DO need to call out is that we have found the deployment of the new firmware has had to be managed in several batches, of significant sizes, over a relatively short period of time. This has had a success rate of about 60% first time upgrade and the remaining 40% have required continual attempts over time.
Chameleon Technology	Other SEC Party	As a manufacturer, it would be up to our customers how often to update the PPMIDs. However, we would expect to make updates for our products available twice a year for the first year after a product has been released, and then once per year for the following three years. This reflects the need for newer products to receive more support earlier in their lifetime – later updates would typically be to coincide with new features introduced with new versions of SMETS.
E (Gas and Electricity) Limited	Small Supplier	It is our expectation that the PPMIDs would need to be updated twice per year. This an estimate at present due to the small number of SMETS2 meter sets with PPMIDs. It is expected that the update would be completed in one batch.
SMS PLC	Other SEC Party	As we aren't the Energy supplier, we wouldn't control the schedules to update PPMID firmware. However, we would expect the firmware updates around twice a year and would typically expect suppliers to update them in a single batch following successful testing and small pilot.
E.ON	Large Supplier	Our forecast can only be based on what we know right now, combined with an estimation for the future. However, we expect that a security, interoperability, compliance or bug fix may be required once per year.

Question 1		
Respondent	Category	Response and rationale
		The expectation is that updates would be spread throughout the year, unless there is a specific security incident or compliance issue called out by the SSC.
Bulb Energy	Large Supplier	Bulb might expect to upgrade a PPMID firmware a minimum of twice in the first year after the PPMID's installation and then on an annual basis after the first to fourth year. Bulb would anticipate PPMID firmware upgrades would not be required after four years.
EDF	Large Supplier	Our expectation, based on the agreements with our device providers, is that we would have two maintenance releases for the PPMIDs in our estate per year. These releases would be intended to improve performance; support additional features introduced by the SEC change process (like CoT event detection) and resolve outstanding defects. Our assumption is that the PPMID specifications will remain broadly stable over time and that there will be no more than one new version each year comprising of relatively minor changes. Making multiple significant changes to PPMID functionality would require an additional number of updates to be sent.

Question 2: From your experience, how long do the PPMIDs you roll-out remain successfully connected to the Home Area Network (HAN)?

Question 2		
Respondent	Category	Response and rationale
OVO Energy	Large Supplier	Unfortunately, we have no visibility of a device 'falling off' the HAN until we actively attempt to communicate with it. The DCC, and SMiP, solution has not provided us the tool, including alerts, to do this any other way. It would require a constant 'ping' to establish what is connected and not a reason why it has been removed due to many reasons.
Chameleon Technology	Other SEC Party	Our understanding is that the vast majority of PPMID devices remain connected to the HAN once successfully installed. This is particularly true where the device is used as a tool for customer engagement alongside novel offerings, rather than as a box to tick as part of the smart metering mandate.
E (Gas and Electricity) Limited	Small Supplier	Our expectation is that the PPMIDs remain successfully connected to the HAN for at least 3 months. Again, period of time is estimated due to the small number of live meter sets however, it has impacted on a very small number of customers.
SMS PLC	Other SEC Party	We don't have access to data to answer this question although we generally see PPMID issues turn into full set replacements due to lack of fault-finding capabilities by engineers on-site
E.ON	Large Supplier	A request to the DCC TOC would provide statistics for industry-wide last comms to end-devices.
Bulb Energy	Large Supplier	Bulb's experience since 2018 indicates that PPMID connectivity on the HAN is reliable, save for consumer behaviour that might impact HAN connectivity eg. moving the PPMID too far from the ESME and CH.
EDF	Large Supplier	We do not currently proactively monitor PPMID connectivity and do not know how many PPMIDs are still switched on at the customer's premises. In theory it would be possible to obtain this information as a one-off exercise by sending a command to each PPMID we are aware of. That would take some time to set up as a one off bulk run and may incur some costs, but it could be done if required.

Question 2		
Respondent	Category	Response and rationale
		We have anecdotal evidence from the feedback we get from customer enquiries which suggests that for PAYG customers; engagement in PPMID use is quite strong for obvious reasons. For credit customers (where the PPMID is operating in the role of an IHD) we would tend to agree that it seems that, after the initial curiosity of having a PPMID, customer interest does wane over time. There is then a normal range of engagement from those that look at it regularly and tell us whenever there is a problem, to those that leave it on but don't really look at it, to those that have turned it off and never turned it on again and have put it in drawer. At a guess we would think only up to 50% of credit customers (probably less) use their PPMID. Historically suppliers (including EDF) have not necessarily offered PAYG products for SMETS1 meters, and the rollout of smart PAYG has been behind that of credit functionality. Previous experience around the connectivity of these devices may not be that instructive as we would expect the value of the PPMID to consumers to increase as a result of the increased penetration of smart PAYG products. Regarding our experience of OTAs to SMETS1 devices, the PPMID/IHD was always the last device in the SMETS1 OTA sequence and we never put out comms to customers in advance to ask them to turn them on to receive the update (which was noted at the Working Group meeting on 28/7/20). So, although we sent down the firmware upgrades to the PPMID/IHD we never really knew how many were turned on at the time, and even for those that were we only had confirmation that the firmware was successfully sent to the device but not that it actually was successfully applied to the device.

Question 3: Will your organisation incur any costs and/or realise any cost savings in implementing SECMP0007?

Question 3			
Respondent	Category	Response	Rationale
OVO Energy	Large Supplier	Yes	Any solution that requires a new version of DUIS, and changes to the technical specifications, impacts us directly and there will be costs. We'd expect these changes to be implemented in at DCC Release so would be applicable to all the changes being made and not just these in isolation. The savings will be made in us not needing to physically replace devices due to them being out of date or correcting issues such as those faced in the North with the Alert storms. At this stage we have had little cause to re-issue devices out for firmware related issues and, as such, have an ever-growing portfolio of different combinations – over 35 – holding different devices on different Firmware versions. We have the details of all versions if required. This is unsustainable and cannot continue. The approx. cost of a PPMID is about £20 per device. Based on our portfolio and an issue / improvement / SEC Change comes in requiring the firmware to be upgraded, based on this being applicable to even 10% of our estate, equates to £1.1 million. Another example is, of our predominant device provider, we have 6 different firmware versions on the same model. To get them all up to the latest version, we would need to replace just under 50% of the devices, based on our portfolio would equate to £4.5 million... If, in the worst possible situation, we needed to upgrade just those on that model, would equate to £10 million. On just that model. In the period of 01/08/19 to 31/07/20, we sent out over 16,000 replacement devices. This equates to £320K in a year.

Question 3			
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Chameleon Technology	Other SEC Party	Yes	As we have already implemented the proposed solution, our extra costs will be minimal. These mainly consist of the additional end-to-end testing that comes from having the rest of the system support the capability and Zigbee test house costs associated with the additional cluster; existing products/software already included this as part when verified at the test house. While we would not achieve any direct cost savings, we would experience a dramatic reduction in the risk of our product irrecoverably failing in the field (either through fault of our own or due to changes to the rest of the deployed equipment), which would be a material benefit. The cost of any action necessary by the industry to deal with in field units would be large as it would be a remedy cost per unit multiplied by the field population. The remedy cost per unit would include replacement unit costs, potential recovery costs and re-supply costs.
E (Gas and Electricity) Limited	Small Supplier	Yes	We will realise cost savings due to a reduction of engineer visits to customer homes in order to update PPMIDs. It is our expectation that the number of visits would reduce by around 10%. There is likely to be a cost to update our systems to allow for the service requests to be sent to the PPMIDs in addition to the current devices enabled. At this time, it is not possible for us to estimate the costs involved.
SMS PLC	Other SEC Party	Yes	SMS would incur additional costs due to following 3 points • We would need to add the facility for collating and distributing PPMID firmware to our partners • Would add complexity and additional testing into our SMETS2 Firmware Management service

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			Agreements with PPMID manufacturers would need to be changed from a 1-time purchase to include a support model
E.ON	Large Supplier	Yes	There would be IT costs for providing the implementation, but as this should be similar to the existing implementation of firmware updates to meters, then the costs are not expected to be excessive. Cost savings realisation would be significant if we needed to go out to site and replace assets because of a firmware issue, or a compatibility issue with legacy PPMID firmware and either new Meter or new Comms Hub firmware. The costs would consist of:
Bulb Energy	Large Supplier	Yes	The PPMID is the part of the smart meter system that most visible and important to the customer, so Bulb would hope to realise reduced costs from a) a reduction in replacement PPMIDs where we have no ability at present to deliver a firmware improvement that could rectify the issue observed and b) a reduction in customer queries and contact related to observed PPMID issues. PPMID firmware upgrades will allow us to maintain and resolve known issues on the device (similar to meter firmware), whereas at present there may be no alternative but to replace the customer's PPMID at our own cost. Bulb would anticipate some minimal increased operational costs to manage the firmware of its PPMID estate.
EDF	Large Supplier	Yes	In terms of costs, we would not expect to incur significant additional cost as a result of this change. Our PPMID devices are already capable of processing firmware upgrades - it is just that the DCC is not able to send them. We do not expect to have to amend our device specifications as a result of SECMP0007. The main cost we would incur would be upgrading out back end systems to the new version of DUIS required to support the new/amended SRs required. We incur a pretty much fixed cost for each DUIS release, and

Question 3			
Respondent	Category	Response	Rationale
			will they generally occur once a year. The incremental cost of each change within that new release of DUIS is minimal, especially in this case as this is broadly using the existing SRs that are used to send firmware updates to other devices. In order to try and get an accurate cost associated with delivering this specific change we would need to engage our service providers, we have not taken this step as we incur additional costs by doing so. Regarding operational costs resulting from SECMP0007, we have an established and quite fixed cost due to the need to resource for both the complexity of the SMETS2 firmware deployment processes, and the volume of new firmware releases by manufacturers requiring OTA activity. The operational cost impact for additional PPMID OTA activity would be marginal as in reality we would essentially be re-using existing processes and systems. The main benefit of SECMP0007 is going to come as a result of reducing the risk of PPMIDs becoming unusable, and being stranded as a result. In many cases, and especially where the PPMID is installed in premises where the meter is in prepayment mode, this will result in the PPMID needing to be replaced. ... so the costs associated with this replacement can escalate quite quickly where an issue affects a large number of these devices. This cost is much higher if the PPMID needs to be provided in person by an installer and connected as part of a site visit. In most cases we are able to send out a PPMID by post and connect it remotely. Based on the volumes of such devices that are installed it would actually require a relatively low percentage of them to need to be replaced to get to a benefit equivalent to the costs that DCC are quoting to make the changes to their systems. Given the functionality of the PPMID, the type of issue that is most likely to arise is a security issue or vulnerability that would require all devices of a specific model or version to need to be disconnected from the HAN in order to protect the wider smart metering system. While it is relatively easy to quantify the impact of such a widespread issue arising, it is hard to know how likely it is that

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			such an issue, one that would require PPMIDs to be disconnected or suspended, would occur. It might be that the devices that were ‘stranded’ did not have to be replaced in all cases - where the PPMID is only operating as an IHD (i.e. for a credit customer) suppliers are only obliged to maintain the device for a year after providing it to the customer. However many suppliers would choose to provide a replacement device free of charge, and if they don’t the benefits to be gained by consumers from having an IHD (as set out in the BEIS Impact Assessment for smart metering) would no longer be gained. The other key benefit of being able to upgrade firmware on PPMIDs is to resolve interoperability issues. Smart metering is a complex landscape with a variety of device types and device manufacturers all needing to work together. As much testing as you might do before you start to rollout devices, it is hard to identify all issues, and impossible to test devices with every possible combination of equipment that might be found in a customer’s home. SMDA has found at least one issue where a PPMID and a meter have issues communicating with each other, but when either is paired with another manufacturer’s device they both work fine. In this case both manufacturers could be construed as aligning to the technical specifications, but with a slightly different interpretation. These devices are already out in production. If the device that is ‘at fault’ is the PPMID it would be best to resolve that device, rather than having to apply a fix to the meter to make it work with the PPMID. The other benefit that exists for SECMP0007 but is hard to quantify is enabling customers that already have these devices to benefit from new or additional functionality that might be delivered through firmware. By not enabling devices to be updated through firmware you are saying that customers with installed devices can’t benefit from any new functions or

Question 3			
Respondent	Category	Response	Rationale
			capabilities unless they receive a new device – which would result in additional costs to either the customer or their supplier.

Question 4: Please provide any further comments you may have

Question 4		
Respondent	Category	Comments
OVO Energy	Large Supplier	Details of all our devices and versions is available if required but would be subject to commercial sensitivities so is not for sharing.
Chameleon Technology	Other SEC Party	The ability to keep all parts of a system updated is becoming a steadily increasing priority, as recognised in the DCMS Code of Conduct for IoT devices. Adopting SECMP0007 will ensure that the most customer-visible part of the smart meter roll out is able to receive updates, allowing it to stay secure and relevant throughout the lifetime of the system. Without this there is a risk to the industry that the device that is key to customer engagement could undergo enforced obsolescence due to some unforeseen issue in the future – whether that be a system security issue, or a change in user behaviour requiring new features. Trying to work around system or PPMID issues when the PPMID cannot be updated can lead to greater costs being incurred in the industry (utilities and DCC) than otherwise would be the case for resolving an issue and may not in some cases be possible.
E (Gas and Electricity) Limited	Small Supplier	E (Gas and Electricity) Ltd are in favour of this change.
SMS PLC	Other SEC Party	The industry will require some level of assurance that updating PPMID firmware will not cause issues with multiple different HAN combinations, including older Meter and Comms Hub firmware
E.ON	Large Supplier	In all the Working Groups attended by E.ON, there is a general consensus that this SEC Mod is definitely something the industry needs and should implement. In terms of the customer journey, OTA firmware updating is a much better prospect than a Meter Technician visit as it improves customer perception of the SMART program. In the future, HAN stability fixes could be provided with the functionality provided by SEC Mod 0007.

Question 4		
Respondent	Category	Comments
		The reduced environmental impact should also be noted in this SEC Mod (Savings on Landfill, CO2 from vehicles for customer visits etc).
Bulb Energy	Large Supplier	To support this modification, Bulb would like to see a simple process for obtaining firmware images between various PPMID manufacturers, which reduces commercial and operational complexity, so as to prevent a recurrence of the challenges faced by suppliers to obtain images necessary to deploy upgrades to SMETS2 devices in their estate.
EDF	Large Supplier	We have one comment on the legal text. The alert code for PPMID firmware activation is/should be 0x8F8B; however it is quoted as 0x88B in the draft DUIS changes