

From: Erickson, John "David"  
Sent: 8/22/2013 8:43:07 AM  
To: Redacted Redacted  
Redacted  
Cc: Dietz, Sidney (/O=PG&E/OU=Corporate/cn=Recipients/cn=SBD4); Bayless, David (/O=PG&E/OU=Corporate/cn=Recipients/cn=DPB5); Redacted  
Redacted  
Redacted  
Bcc:  
Subject: RE: HAN follow up

Redacted

I thought I might try to save some time by briefly describing what I found in conversations with Silver Spring. If there are further questions, maybe we can discuss by phone. You may already be aware of all this, so any further follow up may be unnecessary.

I'll preface this by saying that in my previous career before getting into the energy field, I spent over 20 years as a software development engineer specializing in embedded real time measurement and control systems. So I was interested in this issue from a technical hardware/software integration standpoint. Testing is a big part of the development of systems of this type, so I was coming at it from the angle of understanding how the testing was done on the meters, specifically in this case where your meter is made by one manufacturer and the network interface is made by another manufacturer.

I was asking how SSN was testing the HAN instantaneous demand reporting when the meter is set up in a net metering application, and what they found in their testing.

They told me that the GE metrology interface reports instantaneous demand as two parameters: a value indicating the measured power in watts, which is always positive, and a flag indicating direction, either delivered or received. The value reported via the ZigBee interface is currently just the current measured power, and (evidently) the flag is ignored.

When I asked why the flag wasn't used to create a signed number as required by the spec, they told me that the direction flag has a two minute delay before it will indicate a change in direction. Apparently, they were (are) concerned that this delay will result in an incorrect value

being reported over the ZigBee interface during the two minute “settling” period.

Also, apparently, after the two minute period is elapsed, the direction flag could correctly be combined with the current measured power to report a correct value.

So the issue really comes down to the fact that for two minutes after a change in direction of current flow through the meter, a signed number calculated using the direction flag would be incorrect. After the two minute “settling” period, the correct value would be reported.

SSN stated to me that it would be possible to fix this in firmware, either by

- a) delaying instantaneous readings sent to the ZigBee interface by two minutes, and “correcting” them if a change in direction occurred
- b) simply reporting the “incorrect” value for two minutes while the meter is integrating a change in direction

They also stated that PG&E would have to sign off on this.

I’m hoping that this will help, and that it is taken in that spirit, rather than as intrusive meddling! I should also make it clear that I undertook this investigation on my own initiative, and was not directed to by management, although they are aware of it.

All the best, in the spirit of cooperation,

Dave

J. David Erickson

Public Utilities Regulatory Analyst

Grid Planning and Reliability

Energy Division

California Public Utilities Commission

Phone: 415-703-1226

Email: JE5@cpuc.ca.gov

**From:** [Redacted]  
**Sent:** Wednesday, August 21, 2013 2:11 PM  
**To:** Erickson, John "David"; [Redacted]  
**Cc:** Dietz, Sidney; [Redacted]  
**Subject:** RE: HAN follow up

Hi [Redacted]

I'm in Fremont tomorrow, but Friday is pretty wide open. My outlook calendar is up to date.

[Red]

**From:** Erickson, John "David" [mailto:john.erickson@cpuc.ca.gov]  
**Sent:** Wednesday, August 21, 2013 2:07 PM  
**To:** [Redacted]  
**Cc:** Erickson, John "David"; Dietz, Sidney; [Redacted]  
[Redacted]  
**Subject:** Re: HAN follow up

[Red] Any time. Cell [Redacted] I'm at work at 7 & leave at 4. It's technical so if [Red] and/or [Red] can join the call I think that would be best.

J. David Erickson | CPUC Energy Division | 415-703-1226

Redacted

wrote:

[Moving Aloke, Chris, Arthur to bcc]

Sounds good. Can you let me know some times you're available and I'll coordinate a call with folks on our end?

Thanks,

Redacted

Redacted

Senior Product Manager

Home and Business Area Networks

Customer Energy Solutions

Pacific Gas and Electric Company

Redacted

**From:** Erickson, John "David" [<mailto:john.erickson@cpuc.ca.gov>]

**Sent:** Wednesday, August 21, 2013 7:43 AM

**To:** [Redacted] Villarreal, Christopher; Gupta, Alope; O'Donnell, Arthur J.  
**Cc:** Dietz, Sidney; [Redacted]  
**Subject:** RE: HAN follow up

Hi [Redacted]

Thanks for this update. I would also like to pass along some info that I picked up in exchanges with Silver Spring Networks regarding their testing procedures that might be relevant to solving the HAN/NEM problem with the GE meters. It might be of interest to your team as it is related to how the instantaneous demand is reported. I don't want to go into any detail in this email, but I would be happy to share it if you put me in touch directly with the correct person.

Best,

Dave

J. David Erickson

Public Utilities Regulatory Analyst

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**From:** [Redacted]  
**Sent:** Tuesday, August 20, 2013 3:56 PM  
**To:** Villarreal, Christopher; Gupta, Alope; Erickson, John "David"; O'Donnell, Arthur J.  
**Cc:** Dietz, Sidney; [Redacted]  
**Subject:** HAN follow up

Hello Alope, Arthur, Chris, and David,

It was great meeting you and the ED team on Thursday, and we appreciate the open engagement and conversation around HAN. We'll plan to provide an update on progress in October, including next steps with GE, Silver Springs and device manufacturer/customer communications. Meanwhile, I wanted to mention another topic not specifically related to NEMS, but a meter issue similar in nature and impacting HAN.

During testing in June we identified a bug with GE KV2C meters, which are not reporting usage to HAN devices, but show 'busy' when a HAN device is provisioned. Because this issue is consistent across this meter type, we made it ineligible for HAN. We have reproduced the issue in our lab and are working to identify the scope of the problem so we can accurately enter an SSN ticket. This meter is typically used by commercial, industrial and agriculture customers, which are not target customers for HAN; small business customers with a residential GE i210 or Focus meter are still eligible to participate. We will continue to actively work with SSN and GE to develop a plan to resolve this issue.

We look forward to more HAN conversation on Friday, and to providing an update on Phase 3, which adds demand response and pricing signals to the currently offered usage functionality. Meanwhile, please don't hesitate to send any questions my way.

Thanks!

Redacted + the HAN team

Redacted

Senior Product Manager

Home and Business Area Networks

Customer Energy Solutions

Pacific Gas and Electric Company

Redacted

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