From: Katague, Ditas

Sent: 2/8/2012 6:41:07 AM

To: Cherry, Brian K (/O=PG&E/OU=CORPORATE/CN=RECIPIENTS/CN=BKC7); Sandoval, Catherine J.K. (catherine.sandoval@cpuc.ca.gov); Kersten, Colette (colette.kersten@cpuc.ca.gov)

Cc:

Bcc:

Subject: RE: Smartmeter Questions

Very interesting. We are swamped for the next few weeks but we would like to set something up.

----- Original Message -----
From: Cherry, Brian K [mailto:BKC7@pge.com]
Sent: Wednesday, February 08, 2012 06:35 AM
To: Sandoval, Catherine J.K.; Katague, Ditas
Subject: Fw: Smartmeter Questions

Catherine - FYI. I'd like to schedule a meeting with you and have our technical people walk through it if you'd like.

----- Original Message -----
From: Meadows, James L
Sent: Tuesday, February 07, 2012 09:57 PM
To: Cherry, Brian K; Torres, Albert; Burt, Helen
Cc: Doll, Laura; Bottorff, Thomas E; Gleicher, Cliff (SmartMeter)
Subject: RE: Smartmeter Questions

Brian, Al, and Helen, here are the additional details on the timing messages:.

Each meter SENDS (I was wrong when I said receives below) 360 time synch messages every day on average for one of two purposes:

1) a broadcast to all listening meters such that time slots can be established for the ability to send the systematic messages I mentioned below (last gasp, on demand commands, etc). or

2) because it has not heard from a meter registered as its 'neighbor'; meaning a nearby meter it expects to be exchanging messages with, has not responded in some time.

Both of these message types are to establish meter to meter time synch slots, and happen on average every 4 minutes. These meter to meter timing messages are likely to be different from what Commissioner Sandoval was comparing to the Apple I-phone in that these messages are to set up communication channels up in the mesh, not a time synchronization from a network clock standard. That only happens once every 6 days for a given meter. The reason they can get away with that rate of frequency is that they do not expect the timing crystal in the NIC to drift off of standard time far enough to cause communication problems if it is trued up every 6 days.

SSN does not believe that this rate of messaging is a 'problem' or overkill. Their contention is that this rate of synch and network detection of meter to meter confirmation of mesh path is why the network is highly resilient.

We don't have any way of knowing what a meter receives on average in a given day, since the counter is only on the transmitter, not the receiving channel for a meter. I will find out if there are other proxy ways that we might determine how many times an average meter receives messages.

Jim

-----Original Message-----
From: Cherry, Brian K
Sent: Tuesday, February 07, 2012 8:14 PM
To: Meadows, James L; Torres, Albert; Burt, Helen
Cc: Doll, Laura; Bottorff, Thomas E; Gleicher, Cliff (SmartMeter)
Subject: Re: Smartmeter Questions

Do we have an answer yet ?

----- Original Message -----
From: Meadows, James L
Sent: Monday, February 06, 2012 04:10 PM
To: Cherry, Brian K; Torres, Albert; Burt, Helen
Cc: Doll, Laura; Bottorff, Thomas E; Gleicher, Cliff (SmartMeter)
Subject: RE: Smartmeter Questions

We are in pursuit with SSN the answers on the 2-way nature of this transmission. To Al's point, I have only focused on the one-way, transmitted out.

Jim

-----Original Message-----
From: Cherry, Brian K
Sent: Monday, February 06, 2012 3:35 PM
To: Torres, Albert; Meadows, James L; Burt, Helen
Cc: Doll, Laura; Bottorff, Thomas E; Gleicher, Cliff (SmartMeter)
Subject: Re: Smartmeter Questions

Actually, I'd like the breakdown for both.

----- Original Message -----
From: Cherry, Brian K
Sent: Monday, February 06, 2012 03:30 PM
To: Torres, Albert; Meadows, James L; Burt, Helen
Cc: Doll, Laura; Bottorff, Thomas E; Gleicher, Cliff (SmartMeter)
Subject: Re: Smartmeter Questions

She is concerned about one-way - the signal being transmitted out.

----- Original Message -----

From: Torres, Albert
Sent: Monday, February 06, 2012 03:04 PM
To: Meadows, James L; Cherry, Brian K; Burt, Helen
Cc: Doll, Laura; Bottorff, Thomas E; Gleicher, Cliff (SmartMeter)
Subject: RE: Smartmeter Questions

Is this a one way or two way communication. Sandoval speaks to the question of the number of times a Smart Meter sends out a signal. Your response addresses the number of times a meter receives a signal...

Al Torres
Vice President, Customer Operations
415-973-8440

-----Original Message-----
From: Meadows, James L
Sent: Monday, February 06, 2012 2:03 PM
To: Cherry, Brian K; Torres, Albert; Burt, Helen
Cc: Doll, Laura; Bottorff, Thomas E; Gleicher, Cliff (SmartMeter)
Subject: RE: Smartmeter Questions

Brian, Al: the answer to Comm. Sandoval's question.

Each meter on our SSN electric network receives a time synch message every 4 minutes, or 360 times per day. This may seem like a high rate of messaging for this effort, but each of the meters has to be prepared to set up a timed message slot in the frequency hoping spread spectrum protocol with neighboring meters or network devices at any time.

In other words, meters are 'tuned' to not only send their read and event data every 4 hours, but they are also ready at any given moment to send or accept a Last Gasp message for example (the message that indicates power is out at the premise). Other messages that happen routinely, and are designed to happen at any given time as necessary are: remote service disconnect commands, meter status power check, firmware update transmissions, discovery for a new or recently restored meter, and more.

The network is built with resiliency against things such as power outages and new meters; so the design calls for fairly rapid time synching messages to keep the meters with precise time slots to listen and transmit to each other. Note that we have demonstrated that all of these time synch, meter read, and other network management-type messages add to a median transmit time of 45 seconds per day all added together.

Jim

-----Original Message-----
From: Cherry, Brian K
Sent: Monday, February 06, 2012 1:17 PM
To: Torres, Albert; Burt, Helen
Cc: Doll, Laura; Bottorff, Thomas E; Gleicher, Cliff (SmartMeter); Meadows, James L
Subject: Re: Smartmeter Questions

Thanks with a T.

----- Original Message -----
From: Cherry, Brian K
Sent: Monday, February 06, 2012 01:17 PM
To: Torres, Albert; Burt, Helen
Cc: Doll, Laura; Bottorff, Thomas E; Gleicher, Cliff (SmartMeter); Meadows, James L
Subject: Re: Smartmeter Questions

Hanks.

----- Original Message -----
From: Torres, Albert
Sent: Monday, February 06, 2012 01:09 PM
To: Cherry, Brian K; Burt, Helen
Cc: Doll, Laura; Bottorff, Thomas E; Gleicher, Cliff (SmartMeter); Meadows, James L
Subject: RE: Smartmeter Questions

We will get you answers. This has been filed already and is available on our web site. We will put it together in a format that directly answers the Commissioner's question.

Al Torres
Vice President, Customer Operations
415-973-8440

-----Original Message-----
From: Cherry, Brian K
Sent: Monday, February 06, 2012 12:00 PM
To: Torres, Albert; Burt, Helen
Cc: Doll, Laura; Bottorff, Thomas E
Subject: Smartmeter Questions

Al - at lunch today with Commissioner Sandoval, she asked a question about the number of times a Smartmeter sent signals out for network purposes. She suspects that most of the network signaling has to do with the meter checking or validating the time. She recounted a problem with the Apple Smart Phone, which sent a signal out every minute to update the time and draining the battery pack sooner than necessary. Sandoval is wondering if 1) our meters update for time and 2) if they do, how frequently and 3) can they be reset to update on a less frequent basis. Can you get me answers for this ? Thx.