Dr. Timothy Schoechie in conversation with Anita Moore

Below is a conversation/interview between Anita Moore from MSMA and Timothy Schoechle, author of Getting Smarter about the Smart Grid www.gettingsmarteraboutthesmartgrid.org.

Herewith is the phone conversation 02/01/15:

Moore: The smart meter's frequent communication to Utility is not necessary to determine the monthly utility and is not needed by the Utility to balance load distribution; the only reason for a premises meter is to determine the monthly bill and this does not require a smart meter, an analog meter would suffice.

Schoechie: A premises meter is not needed to help utilities balance load distribution. A premises meter is needed for billing and it needs only have the ability to collect the total energy use for the month and report it monthly. An analog meter would suffice as the premises meter. Smart meters do not help the utility balance load distribution even though they report several times daily to the utility. The utility can not respond to this information barrage to balance load distribution because this capability has not been built into the grid. What is being built into the grid for balancing load distribution are SCADA (Supervisory Control and Data Acquisition) systems. There are 12 types of SCADA Systems with different protocols and different utilities use different systems, and they are in different states of deployment. The SCADA is just a protocol for looking at the distribution grid, sensors are put on the transformers and at the substation level to update the grid on load distribution. Even if the grid could somehow respond to the 4 to 6 times each smart meter sends data to it this data can't get to the grid fast enough for it to be useful due to to Network Latency***. Network Latency prevents smart meters from communicating to utility in real time. this data collected 4 to 6 times daily can't be used to manage demand response because it is not in real time. The grid does not have the capability to respond to it This feature has yet to be developed, and it may never be developed The Smart meter is already incompatible with the system the plan to use to modernize the grid.

***Network Latency: There is a random delay between when you send it and it is received. Its like the post office. You don't know when that letter is going to get to its destination it could 1 day or 3 days. It depends on weather, it depends on circumstances that is called Network Latency. The grid and smart meter networks are not true two way networks. They are what they call mesh networks and they are very slow. They operate at about the speed of the old telephone modems that we all had 10 to 15 years ago the 56 kilobytes that we all had for our computers . These mesh networks are not going to be able to do two way communication between the house and the utility and even if they could it wouldn't be a real time control.

Moore: The smart meter is not the two way communication device that the utilities have lead us to believe it is. That some how the grid is able to take the data supplied to it by smart meters and automatically balance the electrical load in real time.

Schoechie: That is the theory. That is the vision but it is wrong. The idea of this giant computer in the sky that is coming to directly control everyone's toaster or dishwasher is ludicrous. Do you think any computer system is going to be reliable enough to read ten hundred thousand toasters and air conditioners every second? It is totally impossible because networks are not true two way networks. They mesh networks and because of Network Latency they are very slow. It is a fantasy but it sounds good. It makes much more sense to do the control at everybody's house not in some giant computer in the sky. That is the centralized grid mentality. Every millisecond the Utility would have read all of the smart meters. This couldn't even be done by a supercomputer. The reliability wouldn't be there either.

Moore: So the utilities can't respond to consumer energy demands in real time. Is there a system that reacts to fluctuations in power in real time that doesn't rely on utility control?

Schoechie: Trying to control a particular premises remotely by a power company somewhere or a cloud application doesn't work very well and is the wrong approach. The premises needs to control its energy locally on site using a home energy management system. The home energy management system needs to know things from the grid like what the conditions are and whether it needs to shut down or to provide power to the home. Unlike the present set up where information flows from the premises to the utility, information from the utility flows to the home where the energy management system allots the energy provided in a prioritized manner to home appliances. It allows you to put power where you need it and can

be automated to respond to time of use pricing (TOU). The home energy management system balances the load at home so the utility does not have to; the home reacts to whatever the utility can provide. Real time control can be done instantaneously with a reliable connection can be achieved at the premises level

Moore: Could this system connect up to the utility without using wireless communications?

Schoechie: Yes. The first remote reading meters built during the early 90s did not connect to the power company except through a premises control system and gate way So they only provided the information back over, in those days it wasn't internet, it was using either cable systems or telephone lines. ISDN telephone lines, digital telephone lines; it was not wireless and it didn't need to have that.

Moore: Are there any of these type of premises control systems being used in real life situations?

Schoechie: Germany is using such a system. Their home energy management systems manages the energy sent the home. It reports energy usage data to a security privacy gateway which encrypts it and sends it once monthly to the utility meter for the power company to read remotely. The gateway keeps the records but the utility only gets the data once monthly, which is all it is entitled to.

Moore: So privacy is protected using this home energy management system equipped with a gateway?

Schoechie: In Germany the public doesn't let the utility directly hook up to the meter. They make the utility go through a gateway. They don't trust anybody with that data In Germany they are very sensitive about people spying on people.and keeping (storing) data. They had a bad experience about that in the 1940's and 1930's So they don't let that happen but they that the meters have to go through a gateway, a security and privacy gateway which is the premises equipment. The homeowner gets to control how many times a month the meter can be polled so that tracking of activities in the house is impossible. The encryption feature prevents the data from being useful to data miners and other interested third parties and makes it much more difficult to hack.

Moore: Could this premises controlled home energy management system with a gateway work without using a smart meter. Could it work just as well using an analog meter or would that analog meter have to be equipped with a transmitter (ideally one that only radiates RF when polled and not the bubble up type).? Then I could honestly state that smart meters are not needed and were never needed to modernize the grid and make it sustainable?

Moore: If the above is true then is it also true that the real reason for smart meters is to support the utilities failing business model that relies on a centralized grid using coal?.

Schoechie: Smart meters are a goldmine for them as utilities receive matching grants to install them, can charge the ratepayer the money they used to get matching grant (making smart meters free) not to mention a guaranteed 10.5% return on capital assets. Utilities claim they are all for Green Energy, nothing could be further from the truth as they are actually trying to thwart solar, wind and water, renewable energies, because in truth they cut into their bottom line. The utilities are scared to death people will get off the grid and are doing everything possible to kill renewables. The utilities are facing a big problem and the Koch brothers are really backing the utilities with their organization called "ALEC" American Legislative Exchange Counsel it goes around to the PUCs and state legislatures and getting them to kill the net metering and also to kill the renewable portfolios, the standard the solar energy requirements and back them off. Because they want to sell more coal Koch brothers are invested in oil and coal. Duke power in Tennessee has gotten restrictions on solar power. They are trying to adopt regulations that require people to be connected to the grid, they can't have off grid equipment.

Moore: Could the Utilities claim the grid can be modified to fit the smart meter (instead of the other way around) to justify their use of smart meters?

Schoechie: That is the problem that the California meters have. They had PGE put in millions of these meters and several people from the PUC asking me this question "We put in all these meters and okayed this investment so now we have got to figure how to do something useful with it". Because the state legislature is asking the PUC what did all this money spent, what was it good for and they don't have an answer. In theory it was supposed to send all this data back from all the appliances and they could control a and send demand response.good in theory but in reality it doesn't work that way

Moore: So the utilities put in a meter that they knew would not be compatible with the advanced Grid?

Schoechie: That is right. And they can't upgrade the meter to fit it. These meters are massed produced piece of equipment. They have a couple of hundred bucks in them at most, the smart meter just doesn't have the power - the communication power or the computer power for what Utilities are claiming they want to do with it.

Moore: The smart meters that they are now building do NOT have the capability to communicate with the RFID chips in appliances, smart meters can't talk to smart appliances yet?

Schoechie: The answer is no. It can't effectively. I don't know how all this is being done except that there are no standards for the Smart appliances, they are pretty much still experimental. No big appliance manufacturer is deploying this on any scale. Now they (the appliance manufacturers) may be putting chips into the appliances but they don't work. Its a sales promoter, its a bunch of hype. They (the sales people) may say they have the latest chip put into the Smart Appliance. Well it doesn't do anything. It doesn't connect into anything. They used to sell stereo equipment that way-- they make it future proof by adding an extra chip in it.

Moore: Can smart meters capture data from anything in the house hold that has a chip in it? Could it capture the information in say someone's glucometer and sent that back to the utility? So the smart meter is not yet capable of stealing information from other chipped appliances in the home?

Schoechie: That is a real threat but is one not now, but they could do it and they would love to do it. You have heard the buzzword the "Internet of Things"? That is what that is about .About.making money.