

## Smart Grid Quadrilogue - PART 2

**Transcript of Smart Grid Quadrilogue - Part 2 - with Timothy Schoechle, PhD., Author of “Getting Smarter About the Smart Grid”, Camilla Rees, MBA, Duncan Campbell, Esq. and James S. Turner, Esq.** (Audio at [www.GettingSmarterAbouttheSmartGrid.org](http://www.GettingSmarterAbouttheSmartGrid.org) )

DUNCAN: Welcome to Part 2 of the Quadrilogue *Getting Smarter About the Smart Grid* with host Camilla Rees in dialogue with Duncan Campbell, Dr. Tim Schoechle, and Jim Turner.

CAMILLA: I’d like to begin this segment with a question to Dr. Schoechle, asking is there a way to actually domicile the power management functionality with the homeowner without sacrificing privacy?

TIM: There certainly is a way to do that. In fact, that’s exactly what has been done in Germany and is being done in The Netherlands, basically, requiring that electric meters that are collecting information can only communicate through a home gateway—a device that is basically a firewall that is under the control of the consumer—and provides the security and privacy protections that limit the amount of data that is flowing out of the house. The real problem is that what is needed is data flowing *into* the house, not data flowing *out* of the house, in order to manage energy, with the new technologies that are being developed.

CAMILLA: What do you mean by that?

TIM: Well, the so-called “smart” meter paradigm assumes that the meter is going to provide data to a central utility, which will then have some kind of super-computer that can control the entire system by reading tens of thousands of meters and crunching all that data. That’s like the old economic model of the Soviet Union. The real way to do it—that people are discovering and the latest technologies are being developed around—is to have it distributed, have the intelligence distributed to the edge of the network and located in each home and building. And so the exchange of information is minimal. The home would receive pricing signals or some sort of time-of-use pricing or some sort of information *from* outside—from other users or from utilities—and then it would make its own decisions about whether it’s buying or selling energy to the grid, using energy *from* the grid or supplying energy *to* the grid. And that requires a whole new genre of home appliances and consumer electronic devices that would enable that to happen and coordinate the onsite generator through whether it’s solar panels, smart inverters, battery systems, electric cars, “smart” refrigerators, “smart” thermostats. All of that equipment has to be standardized and then developed by industries that *already* exist and that have proven their ability to supply that kind of equipment—like consumer electronics manufacturers, and appliance manufacturers, home solar installers, that sort of thing.

CAMILLA: Two further questions for you. Is there any reason why the utilities need to have data about how people are living their lives and how they’re using appliances? And secondly, is there any reason why all these “smart” appliances need to be done wirelessly?

TIM: The answer to both of those is “no.” Regarding the massive, granular data collected by

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the “smart” meters, my personal opinion is that this data is pretty much being collected by these meter networks because it’s there and it just comes along. The main goal of the centralized investor-owned utilities installing these so-called “smart” meters is to read the meter remotely just so that they can get rid of the overhead, employees, and the costs of their driving around reading meters. And they want automated back-office billing systems; and that’s reasonable. So they want to read meters remotely. But when you install a meter that is read remotely, you also bring along a lot of extra data that they don’t really know what to do with. And what’s happening is it’s spawning a third-party—just as it’s happening in the internet—third-party advertisers and people looking to somehow take that data and use it for purposes that were not originally intended either by the consumer *or* by the utility.

In terms of the *wireless* networks, well, it certainly doesn’t have to be done with these wireless networks. There are already plenty of technologies available already deployed: DSL is very widely used; cable is used for internet access; there are even wireless internet technologies that already exist; cellular phone systems; there’s fiber optics networks that are being employed all around the country and around the world. Those technologies are already in place, and they’re there for purposes of delivering communications, and entertainment, and computer information to people. Why not just connect the meter to that if you need to collect the information, and let that data be filtered through a residential or home gateway that will protect the consumer’s interest.

CAMILLA: So there’s no need to build a new network and charge it off to the customer at great expense.

TIM: Yes, the only reason to do it is the same issue that Jim and Duncan talked about: the guaranteed rate of return on capital investment in creating their own new and unnecessary wireless network. If the local utility company were to use DSL and cable—as they are in some places—they would just be passing that cost of use through to the customers without taking any profit. Whereas, if the outside-investor owned centralized utilities go out and build a whole new network, they get a guaranteed double digit profit rate of return on top of that huge investment, all paid for by the consumer.

DUNCAN: I want to just say two things here, following up on what Tim has said. One has to do with economical and efficient use of energy within the home. There are many technologies that are already out there, and there will be many more to come, if we can keep the utilities from hijacking the home. The so-called “smart” meter is just a way of reading your energy usage remotely, and actually has already cost tens of thousands of meter-reader jobs, it’s a job-killing technology without anything that it’s contributing to energy efficiency within the home. So if we could keep that “smart” meter *outside* the home and that’s the property of the utility companies, what we’ve got *inside* the home are many technologies owned by the homeowner or building owner that can communicate through the ethernet and that *don’t* need these new utility owned-wireless networks, and thus don’t have the potential adverse *health* effects of electromagnetic radiation, which is one of the big reasons why people are demonstrating not only in California but around the country *against* the enforced adoption by the passive

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consumer of these so-called “smart” meters. And I’d like, actually, to invite *you* to just address that yourself, Camilla, briefly, because you have a background in this electromagnetic health field that maybe we just ought to introduce now, through you, into the conversation and why it’s important *not* to have these *unnecessary* wireless networks that the utilities are propagating.

CAMILLA: Yes. Well, we’ve known for decades that there are biological and health effects from what’s called “non-ionizing radiation.” And this radiation is biologically active. And we have to also look at it in terms of “smart” meters that they’re deploying right now in the context of all the other types of radiation that we’re being exposed to in our lives and realize that this is biologically active, it’s disruptive, it’s damaging DNA, it’s impairing fertility, it’s impairing cognitive function and learning. And there are many, many health reasons not to be using wireless technologies. And now I’d like to go back to a point in the new report called *Getting Smarter About the Smart Grid*. Tim, you talked about the need to define who owns the meter and that this is a pivotal issue. And I’m wondering, Jim, if you could address the ownership of the meter within the context of the de-regulation of the telecommunications industry—what happened two decades ago—and then, Tim, pick up, if you will, about what the promise of this is for the consumer and the growth in the consumer electronics industry.

JIM: Well, Tim is, I think, better able to describe how the legal impact worked on the technology. The key point is that the meter should be *inside* of the control of the people in the household. And that control manages to provide the protections for privacy, health, use, and so forth. That is *all* something that was built into the decisions that were made on the telecommunications system when it was set up. Now, before we get to that, I had a couple of points I wanted to follow up on that both of these gentlemen were making. One point is that on the distributive issue, it’s hard to remember but in the early 1980s and late 1970s, the computer distribution model was a centralized model. The idea was that companies were going to build centers around cities that had various modules in them that you would go to and utilize to communicate out around the country. That was all changed when the personal computer came along as an idea. And that was applying a distributed model to something that had been emerging as a centralized model. And IBM and some of the other companies were behind the centralized model.

And it’s important to understand that we *have* the internet today largely because of going to the distributive model in that field. That was made possible in part by the telecommunications decision that broke up the AT&T monopoly and, actually, at the same time the Justice Department was threatening the IBM monopoly, simultaneously. That whole mixture of anti-trust attacks on two of the most dominant forces that we had in the economy at that time actually laid the groundwork for the internet to emerge as a distributed technology.

And there’s a second point I want to make that’s tangential to that but I think is important. And it goes back to the previous Part 1 of our dialogue when you asked about the bailout of the people who are currently the owners of what is actually a dinosaur system that’s going out of business. Now, there are some concepts that you could utilize to think through that issue. And

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one of the most interesting, to *me*, is what has been going on in the Bernie Madoff situation about the money that he actually stole, essentially—he and many, many people around him. What's interesting there is, first of all, the Madoff problem is totally tangential to the economic collapse. It didn't have anything to do with it; it was a separate thing; it was a pure Ponzi scheme. Now what's happening is there's an effort to retrieve the money that Madoff allowed to be taken away from people. And the trustee that's involved in that is using something called "clawback laws." The principle involved is that the way the scheme worked is somebody would put money and then they would get money out. The first person in got more money out than the last person in. *Many* of the people that got in early got much more money out than they put in. And the clawback argument being made is that people should *not* get more than they put in. They put in X amount, they should get X amount out. Applying this principle generally across the board, the trustee has gotten back about 65 to 70 per cent of the money. That is, they're getting reimbursed. So that it's going to end up that *most* people are going to break even off of the Madoff situation. They won't have *made* money but they won't have *lost* money either.

Now, that kind of a principle could be applied to dealing with the people who have put money into the utilities. They have taken *humongous* amounts of money out—way beyond anything they put at risk. We might want to think up a formula that says, "Let's give you back," in order to get this thing, "a much smaller amount than a guaranteed 13 per cent return over the next rest of your life and everybody else's life." And I'm just saying that there are ways of thinking about these problems that don't entail bailout; they don't entail screwing people; they entail fairness. And, frankly, they are the kind of issues that--because the answers that come out of the matrix analysis that I gave you earlier--these are not issues that are right-wing or left-wing. They're issues that are pragmatic and that help people solve real problems in ways that are actually manageable and socially supportable.

CAMILLA: Tim?

TIM: Yes. I think it's very interesting to look at the comparison to the telecommunications experience. We're in a way living through today with the electric utility industry what we went through with the telecommunications or the telephone industry 20 years ago. We had essentially a monopoly system that was totally run by a monopoly corporation. And the way that was addressed was to basically re-think what was the natural monopoly aspect. The wires going to your house were some sort of a natural monopoly. But the services out in the network—the long distance communication, that part of the telephone network—could be open to competition. And likewise, on the other end, at the home or building inside your building or your home, that could be an open competitive industry as well. The only part that remained necessary were the actual wires coming to the house, which could be a regulated monopoly.

The same thing needs to be done in the electric power industry. The generation needs to be completely competitive. And that means you could build a power plant yourself and be able to sell into that market or, better yet, build your power plant on your own roof and be able to sell into that market. That makes the generation and storage of the electricity competitive and the

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only part that continues to have any rationale for a monopoly would be the wires and poles that go between the houses and connect to the local grid.

The way to solve that problem is the same way they did in the telecom industry. In the divestiture of the Bell system, they had invented the concept of the “demarcation” or the “demarc”—which actually created a demarcation between what’s *inside* your house and what’s in the network. And they built a little plastic box on everybody’s house that’s called the “network interface.” And you can literally unplug the wiring in your house from the network for test purposes. And that created a clean demarcation. In the case of electricity, the meter may be supplied by a utility company but it really belongs *inside* as part of the home network.

CAMILLA: Are there examples of this?

TIM: Yes, that’s exactly what’s being done in Germany with their gateway requirements and standards to make that demarcation. And I think that would be an important distinction to draw here.

DUNCAN: And in The Netherlands, as well.

TIM: And The Netherlands, yes.

CAMILLA: And how could it potentially influence the consumer electronics industry? Could this be a new growth sector for consumer electronics?

TIM: Oh, exactly. It would be exactly what happened in the telephone industry. As soon as they de-regulated what they called “customer premises equipment,” you had an explosion of products and services that were able to tie together everything from telephones, to answering machines, and this, that, and the other thing. The same thing could happen in the home in the electricity situation: the appliance industry and the consumer electronics industry are ready to go, and have proven their ability to supply those kinds of markets.

JIM: The key point in this analysis, to *me*, is that we are *not* in an economic downturn. We’re in an economic transformation. We have a downturn in the *centralized* economy, but we have tremendous economic activity going on in the distributed economy. That’s what the iPhone and Apple world is about. It’s a major boom in the distributed economy. That’s true, for example, if you look at a Visa card, for example. It’s a distributed card. It’s quite different than the other “centralized” cards. Visa is a trillion-dollar business—the first trillion-dollar business, doing very, very well. There are all kinds of ways in which the economy is thriving at the *non-centralized* part, but the *centralized* part is collapsing. Now, what’s interesting is, the centralized part as it’s collapsing is struggling to drag everything down with it. It does not want to have success outside of itself; it almost would rather have everything collapse than allow itself to go away and have a thriving economy. And it’s the one that’s taking away the jobs. You cannot export a job that depends on the household in a community—such as putting new power-saving devices in and on houses—you can’t do that in China. You *have* to do it here. The people that put that in or up there have to be *here*.

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CAMILLA: So this takes us to the question of: why is it, do you think, that our federal government is choosing to spend billions of our tax dollars on a technology that is 20-years-old, that doesn't lead us toward sustainability? Could it be just about defending that centralized model of control? What do you think?

DUNCAN: Just use the comment from Dick Durbin, the senior US Senator from Illinois, with respect to the finance sector—which is highly centralized with our banks that are so-called “too big to fail.” He famously said in the spring of 2010, “I hate to have to say this, but this place, the U.S. Congress, is owned by the banks.” And it's owned by not only the banks, it's owned by the fossil fuel industry, it's owned by all of the centralized model industries that we've been talking about and that were referred to here by Jim. The healthcare industry; big agri-business; big utilities; big entertainment; big media, big data; across the board. And I think what Jim was saying can be seen not only in terms of the distributed economy that comes from entrepreneurship and startup companies but also in the model of municipalities taking over control of their own power and light, their own electricity. A great example of that is Boulder, Colorado, which was the *only* municipality that was invited by the people who are in charge of the Council of the Parties—the so-called “COP” group, the “COP 15” in Copenhagen in December 2009, the big international conclave about the environment—to make a formal presentation. And when the two Boulder staff representatives came back, we as citizens here started to educate them --our own staff in the city of Boulder—on the need to move toward this distributed economy, which is potentially thriving, and where you could get job creation locally, retention of *money* locally, which has a velocity of return to the local economy.

So that happened in Boulder after the two staff members came back from Copenhagen. We have started that process collectively now via two citywide elections on municipalization. And the other thing we need to talk about here is that it's a movement away from investor-owned utilities. All the centralized utilities are outside-investor owned, and that's why they're profit-driven, and that's why they have CEOs who make a *million* dollars a month. The *monthly* salary of such a CEO--which is very normal for a Fortune 500 company in the energy utility industry--would actually pay for an entire staff at the local level who are responsible to local citizens. So you get tremendous cost savings and job production out of de-centralizing the control of the utility industry away from the outside-investor owned centralized model and move it to a citizen-owned, municipal-owned model. That's another way to get there.

CAMILLA: So, do you think that the environmentalists have been misled? For example, Environmental Defense Fund talks about the virtues of the “smart” grid as presently designed. Has there been some *greenwashing* going on here

DUNCAN: Using the name “smart” grid was as brilliant PR coup. But the great irony is the so-called, quote, “smart” grid—as James Woolsey has pointed out—is actually *dumb*. James Woolsey's concerns—as our former head of the C.I.A.—have been with security. And it's not only security from *attacks*. The so-called “smart” grid being *dumb* in its present centralized form doesn't provide for security from attacks, but also doesn't provide for security in terms of

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brownouts and blackouts either. And very importantly it doesn't provide in that centralized way for the maximum ability to integrate renewables. So what has been known as the "smart" grid is actually a *dumb* configuration, *and* people who don't really understand the problems of the centralized baseload-dependent grid think that it's *smart* just because automated meter technology is being added.

CAMILLA: Jim, you've used the term "wise" power. And we had earlier conversation where, Duncan, you were saying that actually if we did this right—if we developed a grid that made sense—it actually would be as you say Wealth-creating, Interconnecting us all, Secure, and Empowering to people.

DUNCAN: Wealth-creating, Interconnected, Secure, Empowering. That's right: "W-I-S-E, wise." I used to call it the "SEED" grid: "Secure, Empowering, Efficient, and Distributed." As opposed to the "COFF" grid: "CO" for CO<sub>2</sub>, and "FF" for fossil fuels. But I like this idea of the "WISE" grid because it's wise rather than just technological—which is "smart" but its application is *dumb* in its current centralized version.

JIM: Maybe you should change the name of the report to *A Wise Look at the Smart Grid*.

DUNCAN: I like that. That's great, Jim.

CAMILLA: To conclude, Tim, could you tell us specifically... we want some clarity on the investments needed both at the federal level as well as in the private sector. What specifically needs to be developed, enabled, or installed in people's homes? And how do you see that translating into growth for the economy?

TIM: Okay. Well, I think that the reason all that money was poured into the so-called "smart" meter deployment was that it... that was the only thing available: a 20-year-old product off the shelf was the only thing they could find off the shelf, quote-unquote, "shovel-ready" to go out and put in as part of the 2009 stimulus package. But the real heavy lifting—the hard work that has to be done, and the investment that has to be done—is on the distributed side, to get in place the technologies and standardization of those technologies that enable the true distribution of generation, storage, and use of energy on a localized basis. Such as "smart" appliances in the home; they have to be created, designed, the standards, the gateway standards, communication standards, the local networks in the homes and buildings, the "smart" inverters – all of these technologies have to be brought forward and standardized so that the producers of those products can then mass produce them.

CAMILLA: When you looked at the federal government's report—the National Science and Technology report on the energy economy—was there any mention of any of these technologies?

TIM: The only mention was just a perfunctory paragraph here or there that said that in a very general sense those were things that could be done. But the primary emphasis of *that* report

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was more on the centralized *big* grid perspective--to use the research and development to improve the transmission on the large scale and distribution of the existing centralized infrastructure.

CAMILLA: Yes. So we have no real leadership on this issue. How do you envision leadership emerging? Is it going to happen on the federal level or is it going to be a community bottom-up leadership that's going to take us where we need to go?

JIM: Well, I think that the force or anything that's going to happen in the area of power and all of the other concentrated corporate center areas is it has to be coming from the ground up. And it's *there*; it's already happening. I mean, people are in fact expressing their dissatisfaction. I think that the intermediate and national leadership, really rather than doing something *proactive* in terms of finances and so forth—if they want to do that, that's great, if we could get them to do that, *that's* great—but I think *more* importantly we need to get them to pull away the barriers to the energy that's already there.

I mean, there are people out there—*many* people out there—who would be more than happy to put power generating grids on the top of their houses, *if* you could pull away the barriers from doing that. And it might not take a lot of money to make that happen. We might be able to start a movement. And I think it's going to be like a *market*. I think it's going to start with early adopters, that are going to spread, people are going to look at it and say, “My gosh, that's really interesting.” I have a friend in Washington D.C. who has a house now that is a net-energy generator. And it's fascinating. You go there and, in fact, you can watch the meter go backwards and see them actually putting energy into the grid. *This* kind of thing is going to spread virally through community, *if* you can get the barriers away from it.

TIM: Yes, that's a point that Amory Lovins makes. Basically, he says that there's going to be an end-run around the federal policy just by local municipalities and consumers making these choices and putting in these products. Certain good things could be done on a State level—and *are* being done at a State level in some cases—but really it's not up to the regulators whether State *or* federal. It's going to be—according to Amory, and I agree with him on this— it's going to be a grassroots initiative.

DUNCAN: Yes, I love it. I say it's going to be movement “from Enron to *end-run*”.

(laughter)

JIM: Also, Camilla, it's important to understand that the administrative part of the government—the part that *runs* things—is centralized. The legislative part is distributed. So if we can actually begin to get things moving through the legislative aspects of the governments.... And, you know, really to me it doesn't really matter so much whether the laws pass or don't pass as much as there's energy being expressed that will find its way through the system once it has a focus. So you want to just keep telling people in the legislative branch, “Here are things, here are things, here are things.” I watched Senator Warner and Al Gore try to

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sell the energy bill that was going through the House and then the Senate. And it was fascinating, because it was one of these Order-Left/Order-Right “sells” that didn’t have any of the distributed stuff in it at all. They were there selling, “green the centralized power system.” And that’s not going to happen.

TIM: Right

DUNCAN: And that’s, I think, the key thing here is to remember when Dick Durbin said, “This place, the U.S. Congress”—the legislative distributed branch—“is *owned* by the banks,” what he was saying is the problem we have is we have an anemic and paralyzed distributed branch of government—the legislative government—because it’s all controlled by the centralized power of concentrated money. And when we move to a distributed grid, for instance, we move the concept of *prosumers*. Where a man’s house is his castle, a woman’s house is her castle. Where we protect ourselves and our family from privacy intrusions from, I like to call them, “internal drones” coming in here from these so-called “smart” meters intruding into your space, collecting data on your habits—which is completely unnecessary for their function—and then the data gathered can be used to exploit you and cause you to buy useless things. And also it is necessary to protect your family from *health* concerns from these useless, unnecessary wireless networks that have been proven to have such high Hertz that they could be real public health threats—Europeans know this, and they’re already legislating against it.

Our country, actually—the country of democracy—ironically is *the* country that has *more* concentrated centralized power. That’s why we have the “99 per cent and the 1 per cent” as described by former World Bank Chief Economist Joseph Stiglitz. Once we start distributing the power and the energy, and opening it up and taking away the barriers to the energy and entrepreneurship of the 99 per cent, we’ll be on our way to solving these problems in a very practical way.

CAMILLA: Great. Well, thank you very much. Duncan, I love the concept of the “smart” meter as a “drone” in people’s houses. That’s terrific. Thank you, Dr. Schoechle. Thank you, Duncan Campbell and Jim Turner. Thank you all for being with us for our second segment in our series on the “smart” grid and how to make it a wiser grid. Thank you.

DUNCAN: It was a great pleasure to be here with everyone.

TIM: Yes, thank you.

JIM: Thank you.

CAMILLA: We’ll look forward to our next session focused on the “smart” grid where we will be looking closely at the analysis in this new report and its recommendations, including eliminating the current strategy deploying wireless “smart” meters. We’ll be hearing from Dr. Schoechle about the many issues of concern with the wireless “smart” meters underwritten by

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the Department of Energy as well as paid for in part, we understand in at least one State, with funds from the U.S. Armed Forces. The issues that we'll be talking about include the health issues, privacy issues, security concerns, Homeland Security concerns, and even potential nuclear issues were the grid to experience sabotage and only have a limited amount of backup power generation. We'll look forward to that conversation very soon. And please join us then.

DUNCAN: For those wanting to receive a copy of the new report *Getting Smarter About the Smart Grid* by Dr. Tim Schoechle, published by the National Institute of Science, Law, and Public Policy, please email [info@gettingsmarteraboutthesmartgrid.com](mailto:info@gettingsmarteraboutthesmartgrid.com).

Thanks for listening.

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