An Interview with Infrastructure Guru, Farmer, and Kansas State Representative Tom Sloan

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**EP:** What drew you to attend and speak at this rather tech-oriented conference?

**TS:** I’m here because I’m a member of GWAC and because I want to stay abreast of technology that will help us to maintain a healthy electricity infrastructure in the future. New forces are putting pressure on the utility industry and transforming the way we use, produce, and distribute electricity. This transformation is putting pressure to change the way we will buy and sell electricity as well.

The decreasing costs of rooftop solar energy, ground-source heat pumps, and the increasing prevalence of smart apps that people can use to monitor their appliances or businesses—these are new tools. There is pressure on us to do better, and we can be greener and more reliant on efficiency and renewable energy.
I believe we will be moving to a more distributed model where consumers both produce as well as consume electricity, and I believe a smart and transactive grid can help us manage that change.

**EP:** But transactive energy—isn’t that a pretty wonky subject for the ordinary person who just wants to throw a switch or plug in an appliance and have it work?

**TS:** It is, yes. But that’s why I think we need to be introducing this now. Transactive energy has the potential to help Kansas and the entire country achieve the most efficient grid possible. It can help us maintain healthy utilities and give customers greater choices and ability to manage their energy use in the future.

**EP:** What are ordinary Kansans concerned about with respect to energy? Are they aware that there are problems looming?

**TS:** Consumers are pretty much the same everywhere. They’re not really engaged until the lights don’t come on when the switch is thrown. But in Kansas we are concerned about maintaining a healthy wind industry and infrastructure and we are concerned about transmission and water issues as well. This is true for business and for individuals, whether on the farm or in the city. Technology empowers us. It’s not something just for city-dwellers.

In the last legislative session a number of political interests, led by the state Chamber of Commerce, tried to repeal the state renewable portfolio standard. We defeated that four times, so we retain the RPS. It’s ironic that we have to fight for it, because states like Kansas have a significant investment in wind energy. We have Siemens making nacelles for the turbines. We have other small businesses that sell widgets to Siemens. It’s an economic and jobs issue, not only in rural areas but in the urban ones as well.

**EP:** What are you doing legislatively?

**TS:** I introduced a bill in 2013, HB 2101, that would authorize Kansas to join the interstate transmission line siting compact. This bill is the result of a two-year effort by the Council of State Governments to bring federal agencies,
utilities, regional transmission organizations, and other groups into agreement about how to streamline and make uniform a process for siting new transmission lines.

**EP:** Aside from promoting good legislation or stopping a bad bill, what can you do to help advance the cause of forward-looking energy policies?

**TS:** I believe it starts with maintaining a healthy transmission system, so I have brought together people from the Southwest Power Pool, our Regional Transmission Operator, as well as our state utility people, FERC commissioners and other players together to talk about how to make our transmission system more robust, secure, and reliable.

I'm also concerned with the fact that renewable energy is mostly energy and not capacity. Unlike coal or natural gas you cannot store reserves and then use them as needed, so I am having conversations with utility, and energy storage, and renewable energy executives about doing an integrated wind-solar-storage project. When I first started talking about this about three years ago it would have been the first of its kind in the world. China has since developed a similar project.

This is not a climate change issue. Whether folks believe that climate change is caused by man or not, we have to make renewable energy more reliable and more dispatchable. The way to do that is to link renewable energy with storage so that we have capacity and not just energy.

**EP:** How do you find like-minded people who are also aware of the evolving energy infrastructure, i.e., your allies?

**TS:** Bringing stakeholders together—coalition building—is essential. As a legislator, I have brought together Federal Energy Regulatory Commission members, Assistant Secretaries of Energy, and Federal Communications commissioners to Kansas to meet with regional and state stakeholders. I have also served on the DOE electricity advisory committee (for 6 years), on the DOE Gridwise Architecture Council for a second term, and on the FCC Intergovernmental Affairs Committee for a second term.

**EP:** What’s the central challenge for Kansas in facing an energy future?

**TS:** Kansas’s future involves social and political acceptance of the move away from fossil fuel generation and towards community-based generation, and an increased use of renewables. Customers have opportunities now that they did not have before that are cost-effective and politically and socially more desirable. Kansas’s governor, for example, has installed solar panels on his private residence.

**EP:** Why do you want to be involved in the development of transactive energy?

**TS:** I feel I need to understand TE technology because of how the electric supply system is evolving to a more distributed system. As more renewables and smart grid applications come
available, transactive energy—which includes technology to monitor the movement of power between a variety of generation and user sources—will be central to developing future infrastructure and improved reliability in the system.

**EP:** How are you helping Kansas prepare for the “evolving electric supply system”?

**TS:** A year ago I convened a meeting in Kansas with electric utility executives and energy managers from some of the largest electricity customers. I wanted them to explore how they may act as resources to the utility and community. Attendees included executive from large grocery store chains, large retailers, the National Guard, and the US Army. I brought these groups together with the idea that we need to develop better working relationships if we are going to coordinate how these entities can interact with the utility and serve its community.

A grocery store that installs rooftop solar can meet part or all of its electricity needs and can also serve as a resource for the utility and the neighborhood surrounding it. Also, grocery stores have backup diesel generators to keep refrigerators and freezers in operation if the power goes off. So a grocery store, in conjunction with other large retailers with backup generation capabilities can become an anchor of a microgrid. Building on this relationship, the utility can work with those kinds of anchor tenants to insure that the lights stay on in case a transmission line goes down or a distribution line fails.

**EP:** What about another resource—water. Considering drought conditions in much of the West, have droughts prompted people to be concerned about water? Are people aware that most renewable energy doesn’t consume water?

**TS:** 85% of the water consumed in Kansas is for irrigated crops. So, yes, it’s a tremendous issue. And as your readers know, coal and gas power plants use water to cool, whereas, wind and solar PV generators do not. So in rural communities, the decreased use of water is a selling point. Renewables alleviate pressure on important water resources.

There is, however, a disconnect between urban and rural communities on this point. Urban folks are not as attuned to the water-energy nexus. They tend to be more interested in things like carbon policies and air quality issues. In reality, though, rural and urban folks have a common objective—that more renewable energy be integrated into the conversation.

**EP:** You mentioned a company that designs nacelles for wind turbines. That feeds into the tax base and creates jobs. I am wondering, considering that a lot of the opposition to renewables comes from in-state money, headed by the Koch brothers, how they can justify it—killing off jobs. Who is hurt?
**TS:** One reason the opposition can afford to argue against the wind industry is that the sector related to wind and solar in Kansas is relatively small. Opponents argue that government should not pick winners and that the growth of an industry should be based on economics. Counter to this argument is the fact that every technology is supported in its development in infancy and then allowed to compete as it can. The reality is that we subsidize nuclear power today, we have tax breaks for coal and gas, we have tax incentives for wind and solar and such.

Another argument the opposition makes is that renewable energy is more expensive than traditional fossil fuels. That’s patently untrue if you are looking at new gas-fired generation compared to new solar and wind. The prices are relatively comparable. If you start to compare new generation of any kind against the old power plants, that’s when solar and wind look more expensive. The old plants have been producing for 20 and 30 years, originally had lower construction costs, and have been fully amortized and therefore have lower costs.

In part it is because new wind and solar generation is today competitive with new gas and coal that the Kansas Legislature four times has defeated efforts to end the RPS in Kansas.

**EP:** Wasn’t it a narrow win?

**TS:** It was about a 55-to-45% vote in legislature. At first we did not have firm assurance that we would have the votes to defeat it. We wound up picking up votes from folks who would normally be anti-government, seeing it as an intrusion in the economy, because the wind farms and businesses associated with wind were located in those rural legislative districts.

**EP:** How is wind received in rural communities? I would think rural folks, having an independent streak, would find having wind revenue to supplement what they can earn farming would support wind. It puts money into the community, even for those who don’t have wind turbines on their land.

**TS:** Farmers in Nebraska and Kansas—high plains states—historically have used windmills to draw water up for livestock and crops. But with regard to large wind turbines, it’s important to engage and include the farmer and landowners through the entire process. An example of how it can be done right is a project my daughter was involved with.

One of my daughters was involved in wind development and actually co-managed the development of a wind farm. She started working with the individual landowners to ensure the siting of wind turbines would not adversely impact their operations. She also worked to ensure that there would be agreements with the county and township that roads would be repaired, maintained, and improved.

She also confirmed that there would be a revenue stream that would allow the landowner to continue operating the farm,
even as the price of commodities, which was falling at the time, continued to fall. She later held open houses where folks could come in and see an artist’s rendition of what the farm would look like with the turbines installed. They even recorded the sounds associated with both construction and operation. They could hear the whoosh of the blade cutting through the air and realize that it was not a terribly intrusive sound.

**EP:** I imagine it diversifies the economy, especially in a place with unsteady commodity prices. A wind farm would provide a steady revenue stream under a power purchase agreement.

**TS:** With wind you can have an income source that is not tied to the wildly fluctuating commodity prices for corn or cattle and such. And it provides a means for income to bring the next generation home from college so they can stay on the farm instead of having to go to town and find jobs.

Preparing for and being part of the future in Kansas is about bringing a host of modern technologies to rural communities. It’s important to have strong telecommunications and Internet infrastructure as well. We are all attuned to the web for information or buying and selling things from the web.

**EP:** What are the prospects for the proposed new Sunflower Co-op coal-fired plant in western Kansas?

**TS:** I believe they still hope to build the plant and continue to work through the regulatory process. This is largely because the plant would have justified high voltage transmissions line linking western Kansas and eastern Colorado. That’s important because it would be another bridge between the eastern and western grid.

If that transmission line is constructed, it would be anchored by the coal plant. Then increased wind energy could get on the lines and move to population centers in Denver and San Francisco or anywhere in the western grid. It would have been an economic benefit to western Kansans, both directly and indirectly, and would have also boosted the amount of wind energy coming out of Oklahoma, Kansas and Nebraska and going into the western market.

**EP:** There would need to be a DC converter to do that, wouldn’t there?

**TS:** The Sunflower plant was going to be two generation units. One was going to be on the western grid and the other on the eastern grid to serve customers in Kansas.

**EP:** Transactive energy is a new concept—so new that many in the industry don’t quite understand what it is. You are one of two state legislators to attend the meeting. Why was it important to attend the conference? What will you bring home?

**TS:** I go more to learn than anything else, though I also try to communicate
with the engineers. From my involvement in national advisory committees, I’ve found it essential that there be a dialogue among the engineers, regulators, and policy makers.

As a policy maker, I can also help the engineers explain why a new direction or technology is important and the significance of a technology to a lay person. If they tell me something and I don’t understand, I can let them know that they need to simplify their message.

I can also explain a technology and its benefit to society to other policy makers and their constituents. I have worked with the two largest professional associations of legislators, the National Conference of State Legislators (NCSL) and the Council of State Governments (CSG). I continue to bring technical information to legislators in those groups.

GWAC members Mark Knight, Ron Melton and I just did a webinar for CSG on transactive energy in terms of trying to build understanding among legislators across the country that there is something out there called TE and why they should start to pay attention. We will do something similar through NCSL.

In disseminating information on evolving energy policy, it’s important to use multiple sources of communication: radio, door to door, TV, newspaper, direct mail, group meetings, etc. Customers—that is, voters—and the folks who contact regulators and their staff need to understand an issue and why it’s important and beneficial.

It’s also important for me to explain to my constituents why the electric system is changing and why costs are likely going up—and to emphasize that it’s not just because EPA says we have to put scrubbers on coal plants. Transactive energy is more about how we are integrating smarter technologies that give customers the ability to interact with their utility in a bidirectional manner and to better manage their own electric use and save money, if they wish to. It’s also about how the utility can be empowered to interact with the customer and use the customer’s resources to benefit the community.

**EP:** Could you explain in more detail why you think TE is an important technology for the consumer and utility?

**TS:** My article in Fortnightly in explains why I think utilities and public policy people should look at TE. My expertise involves issues regarding, energy, telecom, and water policy.

In addressing these topics it’s necessary to look long term—that is, ten years down the line. I’m not as interested in short-term election-cycle thinking. I am concerned with how the electricity infrastructure will evolve as consumers adopt more renewables and smart grid technology. There is the potential for utilities to lose revenue and for some customers to be left paying higher electric bills. TE has the ability both to keep a utility healthy and empower the customer.
I am concerned that as more affluent customers—commercial and residential—are able to reduce their energy consumption by using solar PV or smart gadgets, those that lack the resources or knowledge on how to manage their energy use may be left behind. This could set up a situation where the less affluent are burdened with higher electric rates to keep the utilities operating.

The utility will be the ultimate backstop for any generator and should stay healthy and profitable. I want to make sure that integration of the customer action with respect to microgrids or plug in EVs, or whatever, are integrated effectively both from a cost and operational perspective and in a way that does not too adversely impact non-participants.

EP: Can utilities that serve Kansas can be brought into this dialogue? Can some inducement make these changes more appealing to them than they might be?

TS: The utility can gain a lot from increased reliability and resilience. For example, if you have microgrids that can feed the utility grid when there is a transmission line failure on the external grid, its customers and the utility should benefit. Utilities also need to determine how to incorporate these aspects into their business. The meeting I described earlier, where I convened electric utility executives and energy managers from some of the largest electricity customers to work through how they might act as a resource to the utility and community, was meant to help the two find mutual benefit.

Those things take time to learn for the customer and utility. For the residential customer it’s even more difficult. They’re busy raising their families and working jobs. They don’t have time to consider whether they should invest in solar panels and energy storage even if they had the money to do so.

EP: There is a familiar phrase: Set it and forget it. People don’t want to think about energy. They’re busy with their lives and managing their electricity may have little financial benefit. Right now any savings in their monthly bill, if they are paying attention, might be just 5 or 10 dollars a month. For most people, it’s not a lot of money. Will TE prompt the customers to curb their use or supply the utility with a resource that can be handled automatically, for example with smart chips in appliances? Does TE have the potential to help with engaging the customer?

TS: For me, that comes back to the ideal partnership between the utility and the customer. Some customers are tech savvy. They will program anything, their thermostat, refrigerator, hot tub—whatever—and everything will talk with everything else.

Having an automated system is key. Most customers would be willing to let the utility or a third party aggregator manage it for them. For example, a lot of utilities have had programs with interruptible rates, where, every 15 minutes, they turn off the customer’s air conditioner to reduce the energy consumption by
customers across the board during peak periods. Those programs were accepted because the impact on the customer was relatively small and there was a small financial reward. Most importantly, customers did not have to manage it themselves. I think TE will have the same type of approach.

Transactive energy has the potential to help Kansas have the most efficient grid possible, help the state maintain healthy utilities, and help give customers greater choices to manage their energy use. Ultimately, we will need a smart and transactive grid to manage this change.

**EP:** Is there anything else you would like to share that you have not mentioned.

**TS:** One of my areas of interest is telecommunications and how it empowers customers. There was a woman in southwest Kansas who sold tumbleweeds to New York City interior decorators. She could do this because she lived in town and had access to a high-speed Internet connection. She could take high-quality pictures and post or send them so customers could get a feel of how dense and how big the tumbleweeds were. If she’d lived on a ranch where she just had dialup service, she would not have a high-speed connection and couldn’t effectively access these markets.

Another example is two farmers selling their sheep, one with access to the high-speed Internet and one without. I once drove to western North Dakota to visit a breeder who had access to a high-speed connection—a breeder whose stock we had looked at before my trip. That sale and images of the animals were posted online so my wife knew which animals we were interested in. She didn’t know whether I bought them, but she could track the prices and animals from Kansas while I was competing the sale. This was an advantage for the North Dakota breeder because my wife could see and bid on an animal even as she sat at home in Lawrence, Kansas.

By contrast, a neighbor, one of the nation’s best heifer breeders, had a big sale but did not have Internet capability. They published a catalogue and photos, but people had to look at the catalogue and had to dial in to put bids on the animals. The breeder in North Dakota had an advantage because its bidders were able to see what they were bidding on in real time and could see images and videos of the animals rather than looking at a picture in a catalogue.

Technology drives the economy in rural communities as much as it does the urban. Technology, whether it’s energy or telecommunications, enriches our lives and our opportunities.

Today we have a fast-evolving electricity industry. It’s important that I remain aware of technology that will empower the communities I serve, while keeping the utility healthy, so that it can benefit from the new technology instead of being unprepared and hurt by it.