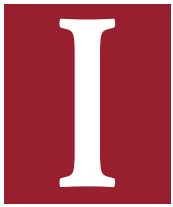


AESP Roundtable on Integrated DSM

From the Association of Energy Services Professionals' Annual Meeting,
Jamie Barber of the Georgia Public Service Commission,
Tom Hines of Arizona Public Service (consultant),
Lon Huber of Duke Energy, William Ellis of Pepco,
and Sharon Mullen of Guidehouse.



It was session 3A at the thirtieth anniversary national conference of the Association of Energy Services Professionals, AESP for short. The conference was a huge gathering in Anaheim, when you could still hold huge gatherings before the virus went viral. Sigh. Anyway, there in grand ballroom salon E was the panel discussion entitled “industry perspectives in iDSM,” jam-packed, probably because of the prestigious panelists on stage.

Are you up-to-speed on this topic, iDSM, as in integrated demand side management? More important than ever before, the concept brings together energy efficiency and demand response. Which explains why the Peak Load Management Alliance teamed with AESP to put together the session.

But what the session showed, and what the following roundtable discussion Public Utilities Fortnightly moderated with the panel subsequently showed, is that iDSM is far broader than energy efficiency and demand response. It cuts across the silos of electric and natural gas, across grid-scale and distributed generation, and across energy and transportation. It’s a big deal and to hear how big it really is, listen in to these experts from APS, Con Ed, Duke Energy, Exelon, and the Georgia PSC, their dialogue faithfully transcribed below.

PUF’s Steve Mitnick: You were on this extraordinary panel at the AESP thirtieth Annual Conference. What were some of the main points you wanted to make?

Lon Huber: One of my central points is approaching demand side management or DSM in a more integrated, holistic fashion isn’t a luxury anymore. It’s going to be a necessity.

Grid dynamics will be changing dramatically over the next ten years, due to changing customer preferences, technology, and most important, the rapid adoption of clean energy. Since most incremental clean energy has zero marginal energy cost and intermittency, we have to be aware of the implications.

You’ll have times of the year when you have an abundance, an overproduction of zero marginal cost energy. Then you’ll have times where you will have a scarcity of it, due to weather and load. This will fundamentally change grid dynamics. You’ve already started to see that in the West, particularly in California and Arizona.

Given this reality, the old notion that every kilowatt hour of conservation is the same, needs to fundamentally change. The value of energy savings will dramatically differ by hour, day, and season of the year. This complexity is magnified by the fact that the differentiation in value will likely occur in times where we can’t predict it.

How does all that relate back to DSM and the concept of the integrated or iDSM? You must have all the options on the table to help the demand side respond to the supply side. In the past and still in many service territories, you have dispatchable supply that needs variable demand.

But now we’re going from that variable demand and matching it with variable supply. We have to help firm those up a bit more to help the situation. In doing so, we have the potential to lower system costs, provide more customer choice, and enable higher penetration of clean energy.

But it’s going to take an all of the above approach and leveraging the latest DSM measures and rate designs to mitigate some



You must have all the options on the table to help the demand side respond to the supply side.

– Lon Huber

of the potential negative impacts of these future conditions while also taking advantage of the opportunities that new technology and growingly available clean energy resources can bring to all of our customers.

Tom Hines: If you look at the case of APS situated in the Southwestern U.S. where there is an abundance of solar energy resources, the goal for APS is to use DSM in an integrated manner combined with intermittent renewable resources to make energy more affordable, more reliable, and cleaner.

APS has a goal of one hundred percent clean energy by 2050. But if you look at how DSM, in the past, had been focused on energy efficiency in Arizona for the most part, as Lon said, it

was that any kilowatt hour saved at any time was considered to be of equal value.

You take that with the construct developed ten years ago and bring it to today, let alone the future, and look at the avoided cost and the value perspective for customers of an energy efficiency only portfolio.

You look at it in the context of the resource needs and how they've changed drastically in the last few years. As an example, APS, a couple of years ago joined the Energy Imbalance Market, which is a wholesale trading of energy among several western states.

If you look at the last year, there were about ninety days, roughly a quarter of the days of the year, where APS was able to purchase clean, renewable energy for negative prices on the EIM, not free, but negatively priced.

This is largely due to California utilities that have mandates to produce solar energy. At times when there is such an abundance of excess solar generation on the grid in the West, those suppliers don't want to curtail their solar because they have mandates to meet. They are putting it on the open market and selling it at a negative price.

To be a true resource, we have to re-look at DSM opportunities in Arizona and say we still believe in DSM, but we have to look at every measure in the portfolio and analyze its load impacts each hour of the year (8760 hourly load shape analysis).

We have to look at the impact of the savings or potentially the benefits of additional load at strategic time periods that we can create with DSM. The right portfolio that's going to provide the most benefits for customers and the grid moving forward is going to include things like demand response, energy efficiency, and load shifting programs, as well as ways that you align the rates you charge customers with education about why saving peak energy has more value and typically more carbon savings in it.

It will be important to think about shifting your load to times when there is more renewable energy on the grid so we can all work together to integrate more solar on the grid.

It's this integration of rates, the right customer education, and the right smart devices that make it easy to do these things that either dispatch around rate signals or dispatch around utility needs that helps to optimize the grid.

As Lon would put it, it's how we match up our demand and our load. It's how we match up our renewable energy and the demand for energy on the grid. That, to me, is how integrated DSM is the future and where we need to look at all the different tools that DSM can provide for helping meet our future energy goals.

William Ellis: My presentation was more centered around the customer and ensuring that everything we do has a customer benefit first and foremost. If we're not putting the customer at the front of our thoughts, whether or not the solution benefits the grid, customers are not going to be able to use our grid for those benefits.



We have to look at the impact of the savings or potentially the benefits of additional load at strategic time periods that we can create with DSM.

– Tom Hines

When we look at the customer, I tend to think of three things. They all start with Cs: control, choice, and convenience. All of those are the common expectations that our customers are telling us what they want and how we will go about bringing those benefits to our customers.

When I think about control, the example that comes to mind is the smart thermostat. All of our customers want it. Customers want a smart home, and smart thermostat at the center of that home. How do we help them by bringing in that smart thermostat technology?

We can give them greater control on how they use energy within homes, but also with time of use rates. How do we help them to use that thermostat in a way to gain additional benefits by reducing peak energy usage?

Choice is at the center of their needs. Customers are demanding more choices, from electric vehicle, renewables or solar, and what energy efficiency measures can help them meet their energy goals. Gone are the days of one size fits all solutions for our customers.

It's about understanding energy efficiency is a necessary step in one, reducing the cost from solar and the upfront cost of getting it to our customers. It's also rightsizing their solar system so that we can leverage over to add the maximum amount of penetration to all of our customers so that we aren't closing off in a few years. Every customer can benefit from going solar. Energy efficiency is that right avenue to make sure the customers who are looking to go solar or who are looking to go with you, take that first step to right size their homes, to make them energy efficient.



Gone are the days of one size fits all solutions for our customers.

– *William Ellis*

Last, it is convenience. We know customers want things right away, they want it on their own terms, and they want it in a way that integrates appropriately with their lifestyle. It's using our energy marketplace to give customers the ultimate convenience.

Energy marketplaces can combine both energy efficiency and demand response offerings. They're combined in a way that makes it easy for the customers to participate, creating a value stacking opportunity, creating benefits on top of benefits that may not have been realized with just an EE solution.

They can go to our marketplace, where they can apply their rebate at the time of purchase. They can enroll in our peak rewards program. They can also buy their smart thermostats or the light bulbs there. Marketplace provides them with that convenience of in-home shopping and in maximizing benefits of the customer.

Sharon Mullen: My perspective, my role with this panel is a little different. I'm a member of AESP, and a couple of years ago we started partnering with the Peak Load Management Alliance, or PLMA, to bring more information on integrated demand side management to our membership.

It's fair to say that AESP members are more focused on energy efficiency, and PLMA members are more focused on demand response. The integration of EE and DR has been talked about for years, but for too many it still seems to be off in the distant future.

What we are looking at now for iDSM vastly exceeds the basic integration of the EE and DR. Requirements on utilities, from improved resiliency to carbon reduction goals to the absorption of customer-installed renewables dictates a new approach.

A few months ago, I wrote an article with Greg Wikler to promote the concept of iDSM 2.0, or the integration of two or



Requirements on utilities, from improved resiliency to carbon reduction goals to the absorption of customer-installed renewables dictates a new approach.

– *Sharon Mullen*

more behind-the-meter DSM resources, including renewables such as PV, storage, electric vehicles, and dynamic pricing, as well as traditional energy efficiency and demand response.

We consider initiatives in front of the meter to be distributed energy resources, or DERs. Utility scale renewables and voltage optimization, for example, would be considered DERs.

My goal was to offer a platform for leaders in AESP and PLMA who are working with utilities that have rolled out iDSM programs. I want us to help everybody sitting there thinking, this is a no-brainer, but show me an example of it working in the field.

Often regulation is seen as a barrier to this integration, so it was important to me to bring in the regulatory perspective, to learn how best to work with regulators to improve the system.

Within one hour we barely scratched the surface, but the goal was to show that not only is it possible, but it is happening, and the time has come. Customers are demanding a more concierge-type service, and that doesn't mean simply promoting and delivering a portfolio of energy efficiency programs.

Customers don't care what utilities call these programs. They just want the options to work smoothly, and to get back to their lives. Utilities have a vested interest in improving resiliency, deferring infrastructure expenses, addressing various carbon mandates



Jamie Barber with President Carter at solar array.

Based on these recent actions, it shows that energy efficiency and distributed resources issues are important to the Commission.

– *Jamie Barber*

and serving their customers as cost effectively as possible. So why not leverage, promote, and utilize these multiple programs more effectively and efficiently.

Jamie Barber: For the Georgia Power Integrated Resource Plan last July, due to a Commissioner motion, the energy efficiency savings for both Georgia Power’s residential and commercial programs were increased by fifteen percent.

In the recent rate case, the Commission approved monthly netting for behind the meter solar for Georgia Power’s customers, which is kind of backward to other utilities across the country. However, the penetration of rooftop solar remains low and the Commission approved a limit of five thousand customers and thirty-two new megawatts. This policy will be reevaluated in the next rate case.

But based on these recent actions, it shows that energy efficiency and distributed resources issues are important to the Commission.

Part of what I covered during this panel was how do Commissioners and Commission Staff become educated on these topics, and one of the things I explained was, in Georgia, we have a demand side management working group (DSMWG) where we meet quarterly the two years between integrated resource plan filings.

Since Georgia Power filed its IRP in early 2019, we did not meet last year. The DSMWG had its kickoff meeting two weeks ago, which included the utility, Commission Staff, and interested parties that work in Georgia, such as Southern Alliance for Clean Energy, Sierra Club, Southface, Georgia Watch and others.

During this meeting, we discussed Georgia Power’s current energy efficiency portfolio and what they plan to go forward with in the next IRP, which will be in 2022, not that far away.

Our Commissioners are interested in these topics. It’s evident based on recent Commission actions. If someone would like to meet with them, call their assistants, or call me and I’ll try to set up a meeting.

That is how you get Commissioners and Commission Staff educated on these topics. Meet with them and give them ideas and let them know what issues are most important to you.

PUF: In 2025, what would we be talking about at that thirty-fifth session on iDSM? How much will we have progressed on this subject and what will you all be saying?

Lon Huber: We’re going to be talking about how well our pricing is interfacing with different bundles of technology that customers can select. Rate design is going to be central to unlocking a lot of the value for the utility and the customer and helping tie together all these different technologies.

By then we will solve the technical and software integration issues with bundling different forms of technologies together. Then it’s the pricing that we have to tackle and the customization to the various customer segments. That will be the key. We’re going to be talking about product bundles tailored to specific customers, and the pricing options around those bundles that can bring the greatest benefit to the customer and the system.

Tom Hines: There will be more interplay between programs and rates, and it’s something that we need to pay more attention to. When you think about how a demand response event interacts with someone who’s on a demand or time of use rate, you need to make sure that the time you release that, say thermostat, from a program isn’t during the on-peak period when you might create

negative rate impacts for participants. You start to need to play 3D level chess to consider all of your programs and rates, and how they interact. That's what we need to bone up on as an industry.

What comes out of that is more granular DSM load shaping. Then we're thinking more about the hourly load impact of each and every tool that we have in our DSM kit.

We'll be working more closely, as we start to scale more, with resource acquisition and resource planning and other groups within our organizations to talk about the diversity of DSM programs and load shapes we can create and feather in and out of peak events, where we bring higher value and have more interesting conversations. But it gets way more complicated.

Finally, it leads us toward a couple of things, and this bleeds over into the regulatory front with new metrics. What are the right goals? Are they expressed as kilowatt-hours? Are they expressed as kilowatts? They may be expressed as reductions in carbon or emissions intensity.

What are the metrics we're going to use to define our programs and our values? This is my hope for the future – increasing flexibility between what we consider an EE program bucket, and a demand response program bucket, a rates program bucket, and an energy storage program bucket. Increasingly there needs to be fluidity between programs that should be considered as parts of an integrated solution to meet overall comprehensive clean energy goals.

With that, it's a good way to leave an integrated DSM discussion, as where are we going in the future, and how are we going to get the regulatory flexibility to get there.

William Ellis: The biggest challenges that America is facing today, revolves around climate change. My job is to ensure that every customer can benefit from the policies, programs, and what we are doing to effectively address climate change.

We know that for our most vulnerable customers, their energy burden is three to four times higher than other moderate income customers. We know that those customers are paying anywhere between ten to twenty percent of their total gross income on their utility bills, compared to the two to four percent that our more moderate-income families are paying. How do we design programs that will meet those customers who need our help the most?

Energy efficiency programs help customers reduce their carbon footprint and help them save money on energy bills. Now we create programs where we are partnering with folks like Uber to design a particular low-income EV rate for these customers.

We have customers going through this transition to a hundred percent cleaner energy to electrify the world. How do we partner with them to help ensure that their total energy cost is decreasing because we're having them charged with EVOP, or with the guiding rebates or programs that can integrate with demand response, energy efficiency, solar, and all the other renewables in a way that's going to have a meaningful impact to them? That's our task, going on five years.

Sharon Mullen: We're all taking this call from our home offices, wondering how long the new normal may last.

If customers are working from home will they care more about our energy use 24/7, than when we were gone from the home for eight, ten, or twelve hours a day? Resiliency is huge. Can you imagine weather-induced rolling brown- or black-outs while sheltering in place?

At the same time, all customers – residential and C&I – are likely to require greater efficiency in DSM, from initial awareness through delivery. New products are entering the market, and vast cloud services are available to control use. This is all happening now. The only questions are who will drive the transition, who will benefit from it.

You start to need to play 3D level chess to consider all of your programs and rates, and how they interact.

– Tom Hines

iDSM could resolve many of the challenges we now face. Education will be key, particularly regarding dynamic pricing. Pricing will be front and center, influencing our actions if it is robust enough to shift demand without causing hardship to those least able to adapt.

Currently there are more examples of iDSM in the residential sector. I expect there to be more examples of iDSM among commercial and industrial customers in the near future.

Jamie Barber: We're talking five years from now so it's possible that it will become more of an integrated resource plan. Sharon hit the nail on the head. I agree that all of this is going to be more of the utility's portfolio going forward.

Education is key. Anytime you're doing new rate designs, you've got to educate customers. That's where some utilities are lacking, in that consumers don't understand how some of the new rate designs work, especially any rate that is demand based.

Education is going to play a key role, not just educating consumers but also educating regulators. All of this is important, but I do agree with the other panelists that as time progresses, energy efficiency, demand response, renewables, and electric vehicles are going to be a much bigger part of the utility's portfolio.

PUF: What will be the impact of iDSM on costs, on efficiency and sustainability of the utilities? Use a scale of one to ten. Ten is a huge impact, five is a good impact, and one is not much of an impact.

Lon Huber: Unfortunately, I can't give you the number because it depends on something that Tom Hines said about metrics. If
(Cont. on page 37)

the PSC does and the laws that mandate everything we do. Rate increases are always a bone of contention, and no one is happy.

After a case is concluded – if the Commission has done a good job of balancing the interest and both the company and the consumer advocate are a little mad – you did a good job. The Commissioners must recognize this dynamic.

After that I would hope they concentrate on getting the most knowledge available to do their job correctly. First, I would highly recommend they attend the NARUC new Commissioner's orientation. Second, plan on attending one of the two rate schools, as a hands-on mock rate case is an invaluable experience.

I would strongly suggest getting involved with NARUC, after all it is our organization. Attend the meetings, join a committee and be active. Likewise get involved with your regional organizations.

Know and use NARUC programs and research arms such as NRRI and the Center for Partnerships & Innovation programs. NARUC has several MOUs with our Academy Partners, so attend their programs where possible: New Mexico State University, University of Missouri, University of Florida, and University of Wisconsin.

Trade associations can provide a wealth of information and knowledge. Some that I utilize are EPRI, NAWC, AGA, WRA, EEL, and CCIF. There is a lot of information available – take advantage of them.

PUF: There's a rumor that you may retire from being a Commissioner on the South Carolina Commission.

Commissioner Howard: That is true, as my current term ends



Commissioner Butch Howard with wife Pat and Boykin Spaniel named Cocoa, also the state dog of South Carolina.

on June 30, and I hope to stay in the regulatory world in some fashion. I have a passion for it. I cherish the friendships and we still have a lot of work to accomplish together. **PUF**

AESP Roundtable on Integrated DSM

(Cont. from p. 59)

we base our program on the old metric of general kWh saved or RECs produced, then it won't have much of an impact.

But if we base it on new metrics such as carbon and flexible capacity, then it can have a high impact in the eights. Right now, it may seem like kWh is linked to carbon but that will break down soon. A carbon optimized policy like the one Duke has with 2030 and 2050 targets is the most cost-effective way to do things. For example, a blanket, save every kWh, no matter the time period will put enormous stress on nuclear plants for no reason because there is no carbon to be saved.

Tom Hines: If we are basing it on our future clean energy goals, with currently about sixty-five utilities across the United States having already made commitments to achieve carbon free energy – it needs to be big. If we're going to meet those goals, I call it a nine on the impact scale, I hope.

William Ellis: I would probably say an eight as well, but there's going to be a greater impact on iDSM. As the grid becomes

cleaner, as we move to renewable energy and cleaner energy, we're going to have to come up with more innovative and new solutions that address a changing world. We're shifting load. As Lon said, having load on hourly times becomes more important than just reducing the cost of energy of the home.

Sharon Mullen: If iDSM is rolled out responsibly and aggressively, the impact on utilities and their customers should be beneficial and profound. Utility partners will be impacted as well. For example, the trade allies who are implementing DSM programs often have a business model built around a specific focus. They face a significant transition to deliver these utility programs.

Customers and utilities will benefit from iDSM. It's far more responsible to today's demand and a better alignment of resources. The impact should be a nine.

Jamie Barber: I'm not going to be able to give you a number. Georgia does not have required clean energy goals. The Commissioners have decided to increase renewables as the market allows. Georgia Power doesn't, of course, but their parent, Southern Company, does have clean energy goals. What I can say is that all of this is going to have to be an important part of the energy mix in order to reduce carbon going forward. **PUF**