



Transcript of CleanLaw: Ari Peskoe Interviews Jason Burwen about Energy Storage and Electricity Markets, January 17, 2020

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Robin Just: Welcome to Clean Law from the Environmental and Energy Law program at Harvard Law School. In this episode, the director of our Electricity Law Initiative, Ari Peskoe talks with Jason Burwen, vice president of policy at the US Energy Storage Association. They discuss new electricity market rules that aim to pay storage resources for the value they provide to our energy system. We hope you enjoy this podcast.

Ari: This is Ari Peskoe director of the Electricity Law initiative. Our topic today is energy storage in interstate wholesale electric markets and our guest is Jason Burwen, vice president of policy at the US Energy Storage Association. Jason, thank you so much for joining the podcast.

Jason: Absolutely, Ari, thanks for having me.

Ari: Sure. In previous episodes here, we've talked with Jesse Jenkins about RTO energy markets, ancillary service markets with Bill Hogan capacity markets with Jacob Mays. So today we're going to talk about how storage participates in those markets or will participate in those markets in the future. What the challenges and opportunities are, and also what role small scale storage plays at the local and wholesale levels. But before we get into that, let's talk a little bit about storage itself and what makes it unique. Storage has been called the Holy grail of the electricity industry. So Jason, can you explain why storage is the unicorn of the power sector?

Jason: Oh, it's the unicorn, Holy Grail, full of silver bullets. Storage is I think a boundary breaking technology and that's why folks sometimes have challenges describing it in whatever magical terms they want because when you have energy storage, and I think a lot of folks are thinking in particular about battery energy storage, you have a resource that can not only inject electricity onto the grid but can also withdraw electricity from the grid, store it and keep it for when it is most valuable and needed. And there is no other resource that goes both directions. More to the point, not only can storage go both directions, particularly battery storage is capable of very fast and highly controlled response so you can ramp that battery to exactly the level of input or output at exactly the moment you want it provided you have of course sufficient state of charge.



- Jason: So that provides an enormous amount of capabilities because what you have is something that allows you from the millisecond through to the hour of the day, the month and potentially in the future of the season to decouple time of supply and time of demand, which is as you know, been long the constraint for how the electric system operates.
- Ari: It's worth noting that storage is not entirely new. There's been pumped hydro storage for many decades, but those are very different types of facilities because you can only build them in certain locations. They tend to be very large facilities. It seems like with some battery technologies, one other difference that you can basically put them anywhere. Right?
- Jason: Yeah, that's the thing is 22 gigawatts of pumped hydro storage capability exists on the US grid. As of right now we have over one gigawatts of battery storage. I think it's 1.3 is the latest number I've seen. And the biggest difference is not just the flexibility of operation because pump hydro usually has a transition time as you reverse from pumping into discharging, but also the flexibility of location as you've noted. That batteries can be installed co-located with generation. They can be directly connected to the transmission system or to the distribution system or they can be located behind the customer meter at a facility or premise or they can be a part of a micro grid.
- Jason: Particularly batteries are modular, you can scale them without necessarily having a change to the core technology. So the core technology of your whatever it is, seven kilowatt home battery is the same core technology in a 100 megawatts central station battery.
- Ari: And so the other religious metaphor I've heard around storage is that it breaks the Holy Trinity of generation transmission and distribution because of all the flexible properties that you've just mentioned. It can basically do anything. And so not only have people have had a trouble describing what storage is because it can do so many things, but regulators have had trouble figuring out what to do with storage because it doesn't fit easily into the traditional regulatory boxes. So I want to talk a little bit about some of the challenges that you've seen for storage in the wholesale markets. A year and a half ago, FERC issued a landmark order called order 841 that requires the market operators, the regional transmission organizations to effectively create new rules that ensure storage can provide all the values to the market that it's technically capable of providing.
- Ari: Before we get to that, I want to back up and say what precipitated that? What were some of the challenges that storage was seeing in the market?



Jason: Prior to that order storage had been making, I would say uneven progress across the US in particular. What we had identified, which went into the input that obviously informed FERC was that most places had created what I would say, a patch for storage. "Oh, we'll let you in, but only in these very limited capabilities." And so for example, a number of markets didn't allow storage to provide anything other than ancillary services, at least not as storage. They might've been able to do so, but you'd have to register for example, as a conventional generator. Well storage is not a conventional generator and so that was an untenable means by which you would put a storage facility into the market to participate outside of say ancillary services.

Jason: And I think that's really the crux of this order was a recognition that we should not be trying to squeeze storage inside the box of generation anymore, precisely because of the value that it can provide with its flexibility and versatility across domains. And that a new participation model, as FERC called it a way in which you register those assets, the way in which the market looks at them, the way they're modeled, the way they bid. All of these things need to actually take account of the unique physical and operating characteristics of storage, which as we mentioned at the top of the hour is this flexible, fast bi-directional capability.

Ari: So each of these market operators, these RTOs does have their own processes for proposing changes to their rules. They have to file changes with FERC and their stakeholder processes in each of these organizations to develop those proposals. I guess what you're suggesting was some markets were better than others at recognizing the possibilities of storage. Why did FERC have to take this action? Is this something that the markets could have fixed on their own over time?

Jason: Well, I think that there is a really key and pressing difference here between say markets moving on their own versus FERC, which is that the technology itself is moving fast, very fast. And the precipitous declines in cost and the concomitant increasing performance capabilities of storage, particularly battery storage meant that technology was very quickly outpacing policy. Even as RTOs and ISOs might have started to work through stakeholder processes, FERC I think in active *prospective* policymaking to catch policy up to technology said, "No, no, no, no, no. This has to get updated. If we're going to actually have adjusted reasonable rates, we need the widest range of resources participating in the markets." These resources clearly provide some value and the constraints on them are ... They're no longer tenable to have from that standpoint.

Jason: So one of the things that I think that is always a tug of war in these cases, right, is how quickly can you move things through a process at each individual market versus move it through the commission and some of the ironing out of



individual markets differences. That's always going to be a trade-off. But in this case I think FERC made the right call and said, "No, this is moving too fast. We can't wait for all these processes to figure it out."

Ari: Let's talk about order 841 a little bit. You said it requires each RTO to develop what for calls a participation model for storage. What are the key features of participation model?

Jason: Sure. So one is this concept that storage should be able to participate in all market services it's technically capable of providing. So as long as you can show that technical capability there's should not be a limitation to participating. Another is the way in which storage bids or otherwise reflects its unique operating and physical characteristics. So the ability to, for example, have a recognition that you have a state of charge. That is to say you have a limited amount of energy in the tank so to speak, and that you should be able to reflect that in your participation in the market. There was another ... and I'm listing the high level directives here. Another part of that participation model is a bit of housekeeping over making sure that the buying and selling of energy from storage devices factors into the actual LMP formation.

Jason: This is a key one that the minimum size for participation in the markets be reduced down to 100 kilowatts. That is to say that markets must allow units of at least 100 kilowatt in size to participate in the markets and then finally to make sure that the accounting for that energy, particularly for storage that might be distribution connected. Bearing in mind that a hundred kilowatt sizes may oftentimes bring you into the distribution system, that there needs to be some way in which there is a capability of accounting for and having telemetry or some means by which you differentiate wholesale transactions from retail transactions. At a very high level, those are the things, but of course for each of those main items, there's a number of different directives. I think someone at one point counted 72 specific directives and I'll happy to jump into any specific ones of those you want to talk about.

Ari: I'll just preview. Just right now, we're not going to get into all 72 but I appreciate the offer.

Jason: Aww, that's what I do man (laughing).

Ari: So from your perspective, did the order checks or the major issues that you were looking for or were there, are there any big holes in 841 that you're going to eventually come back to FERC and ask them to look at again?

Jason: I think the key thing to understand here is that order 841 is foundation setting. There's a whole bunch of things that can still serve as barriers to storage



participation in markets outside of order 841. One such example would be interconnection processes where they're folks who still have some concerns there and other might be product design. But order 841 really concerned itself with just setting the foundation to enable storage to participate in the markets as given today. And that's really important partly because of course it allows these assets into the market so that you can have a wider range of competitive resources and ultimately help contribute to more competitive price formation. But also because as you start to reflect storage capability in these markets, you're creating a foundation for more flexible operation of the markets themselves.

Jason: I think this is something that folks have started to get at when they think about, for example, hybridizing storage resources with generation, whether that's wind and solar or something else. You have greater opportunities here for how the market models dispatches these assets to fundamentally enable more flexibility. In terms of your question about what FERC might need to take on next there's a lot of different terrain there. I think that market design for market products in terms of flexibility for interconnection processes specifically how storage is studied for interconnection, this hybrid resource issue I mentioned where there are barriers for hybrid resources. There's plenty of risks to keep working on.

Ari: That's a helpful framing that this is really just a foundation and one thing that you just made me think of was there's a separate ... what have been considered separate proceedings at FERC about price formation in these markets and how prices can incentivize fast performing resources, flexible resources, and it seems like those proceedings are key to unlocking storage's value as well.

Jason: The first such instance of this was order 755 which created this concept of pay for performance in the ancillary services market or recognition that the speed and precision of a response, particularly for frequency regulation is a really valuable thing. This is what undergirded eventual creation of the first economic market for storage worldwide, which was PJM's fast regulation market. That concept of pay for obviously, in order 755 was focused more narrowly, but I think this idea has generally broader appeal and you're starting to see it come up maybe not as much in an ancillary services discussion as perhaps potentially in a capacity style discussion.

Jason: You're starting to see discussions about, so for example, Cal ISO has a flexible RA product, where they're trying to say there's an aspect of resource adequacy here that as in California we go to higher and higher levels of variable renewable generation, we're going to have ramps that require a different resource for the purposes of maintaining reliability on the system. So that's just an example, but this idea that the performance of these assets you might need to take into



account different attributes in a capacity construct than just firm delivery some that amount of time out.

Ari: Oh, okay. Right I see. So basically one criticism of capacity markets has been that they procure this generic capacity product and don't necessarily meet both the policy needs of states and also now the technical needs.

Jason: Yeah, that's conversations that are starting up in certain places like for example in New York right now where the PSC has opened a docket to explore some of these questions about the role of the ISO in procuring resource adequacy given New York State's prescribed policies and where they're going in energy.

Ari: And I think New York is 70% renewable by 2030 and 100% carbon free by 2040. California as you mentioned is on a similar path as well. So when FERC issued order 841 back a year and a half ago, what this did was it required each of these market operators to effectively propose to FERC how they were going to change their rules. And as I mentioned, that kicks off a stakeholder process at each of these markets which I imagine you and your members were engaged in. So I'm wondering what were the aspects of these real changes that were particularly important for you and maybe some that were also a more controversial than others.

Jason: And you're speaking specifically about the stakeholder process, not the actual compliance plans?

Ari: I guess I'm curious, these stakeholder processes involve all the various market participants, the utilities, the traditional generators, renewable companies, et cetera. And I'm curious, I imagine there were some aspects of this, there's broad agreement on and there's other aspects that were more controversial. I'm curious what various views are in the industry about how the markets are going to evolve.

Jason: I mean, you had different conversations in different markets during those processes. Everyone is figuring this out. And I give the technical staff at the RTOs a lot of credit for in most cases trying and very good faith to put together some cohesive model for how to bring storage in. But they vary in their emphasis and they vary on where I think some of the challenges lay. So for example, one of the aspects that is an interesting question that surfaced from these stakeholder conversations was the use of commitment parameters for energy storage. Because hey, you have this flexible thing, it has this state of charge parameters. So you're optimizing it around a limited bucket of energy over time. And some markets were very nervous about having commitment parameters for storage because that seems to complicate the optimization engines that each of these markets run in such a way that they're worried like, "Oh, we don't want to have



to try and put this into our day head optimizations because this is just going to bog everything down." But in other places. So for example, I think in New York ISO, there's a desire, "Okay we got to put this into the day ahead optimization for resources that are going to show up as capacity resources."

Jason: Conventional generators basically have to say what for example ... If they're a day ahead, they have to put in some bids, some indication of their intention for each of those hours in the next day. And that can obviously change as you get closer to real time and prices fluctuate around where the bids are. But at the end of the day, they're basically making a commitment like, "I am going to be online and capable of providing energy if you so call on me to do so." And the reason that's been important for conventional generators is because the big constraint of conventional generation are ramp limitations. You can't start a power plant instantaneously. It usually takes some amount of time to come online from minutes, in the case of fast start gas, to hours for other kinds of generation.

Jason: They can't necessarily move instantaneously up and down in terms of the amount of energy that they can put out on the system. And so as a result of that, a lot of the market logic is based around this idea of making commitments in advance so that when the time comes, particularly if there are certain deviations from where the expected system conditions are, not contingencies but just, like slight differences in how much energy exactly is needed, these units are there. They're not going to be incapable of responding cause those ramp rate limitations have been taken ... startup and offline constraints have been taken into account.

Jason: Whereas for storage, if you think about a battery, it can sit there on the grid. It can again respond nearly instantaneously in any direction. Just cause it's neither charging or discharging does not mean it is offline. It can be very online and ready to respond even when it's "idle." So that is a different concept. And when you translate some of these efforts to create commitment, remember storage doesn't have fuel. It's not a generator that can just run as long as there's fuel. It has a limited bucket of energy and so the idea that you commit these assets in advance, you have certain things that already start to break down if you're inside of the conventional generator model. Which is you can't commit a batteries to discharge every hour of the day because it can't, it won't. It has to have some time to sit and charge back up or to be idle. So that's just a very small illustration of how the conventional participation model of generation doesn't quite fit for say, a storage unit.

Jason: That's why I mentioned this concept of state of charge as a parameter that you enter into those bids. The way in which you say, "This is what I expect my future state to look like." By putting in state of charge, you're in some ways saying, "I



have a future state that will determine exactly what my capability is for the subsequent hours." That's again, not exactly something that the market software has had to integrate before and it provides a, another variable that's somewhat complicated for these big market software engines to optimize around. This is a very wonky and very arcane discussion we're getting into.

Ari: Well, I'm just curious then, did the RTOs end up coalescing around a single solution to this issue or now are markets going in different directions and so if you're a storage developer, you're going to have a very different set of rules in one market for another and just in terms of just how to submit your offers on a daily basis.

Jason: So in this case markets did go somewhat different directions. As I mentioned, New York ISO wanted to have a day ahead bid of what storage was planning to do if that storage was in its capacity market, if you're just there for a reliability function. Whereas on the other hand, for example, PJM and ISO New England had no interest in having a day ahead commitments of storage. They said, "You will self-schedule and we will just assume that." And I think one of the challenges there is understanding what obligations do you have if you're a storage unit showing up to provide capacity in a market like ISO New England's or PJM, because that's really the connection there. The reason you have these kinds of discussions over commitment is because of this long running concept of must offer obligations. The idea that someone who's worried about bad actors in a market, they don't want fuel-based generators holding back their generation to manipulate markets.

Jason: So a way around that is to have an obligation that you have to continuously be offering. And that ensures that there's not some artificial creation of scarcity that's market manipulation. Well, again, with storage you can't offer it every hour of the day because it will run out of energy in the tank. So at the same time, it's not market manipulation for a storage unit to hold onto its energy saying, "Listen, I have a limited state of charge. I want to be able to provide value. I see a peak coming later in the day, don't make me discharge earlier in the day. So that I can't hit that peak later in the day and provide that more valuable service."

Ari: So it seems like the generators in these various markets would have had opinions on how to account for all of this because it seems like the result now is that generators may be offering into the market in a very different manner than storage's and they may have wanted. I guess what I'm getting at is maybe it's just a question is, does models for storage, do they affect how their traditional generators now offer into the market?



- Jason: At present they don't because most places created a specific resource type that you register the storage as an energy storage resource. So you're registering it as that, which means a different set of rules applies than if you register as a type of generator. That shouldn't make it complicated for the generators. What is, I think on the horizon though, is this concept of the hybrid resource. The idea that folks are sticking storage onto solar plants, onto wind plants, even under gas plants and other things. So what happens when you have a hybrid resource? How does it register? Does it register as storage? Does it register as generation? What kinds of constraints and accommodations do you inherit from either of those two that is a present and challenging issue for the RTOs and ISOs to address and one that I think will become a pressing issue as some of these 50 plus gigawatts of hybrid resources make their way through generation interconnection queues.
- Ari: Yeah. So last month FERC issued its first orders on these RTO compliance filings. They issued orders about PJMs filing and SPPs filing. And so my understanding is they ... that FERC explicitly deferred on this hybrid issue. Is that right?
- Jason: It did not undertake it, one way or the other and said that it was out of scope.
- Ari: But overall looking at those two orders, did they largely go along with what the RTOs had proposed or were there significant changes that FERC ordered?
- Jason: So I did continue the conversation you said about what are some of the issues that are coming up across the different markets that order 841 is raising. I already talked about commitment and optimization, which is probably the wonkiest and in many respects least interesting because for many folks who are just like, "Whatever, we'll self schedule, let us alone." Some of the other things that are coming up and which are at least touched upon in the FERC's decision on some of these compliance plans, a key one is the capacity value or capacity qualification of energy storage. This was in fact one of the central issues we had identified going in to what eventually became order 841. And through this process has become, I think probably the most central concern to a lot of folks in the storage industry, certainly with PJM.
- Jason: But let me just back up and say here that just for folks who aren't aware in FERC's decisions, the first two decisions they released were on PJM and the Southwest Power pools compliance plans, which were largely accepted. The main thing that FERC picked up on though was that capacity qualification of energy storage, which has generally been defined in manuals. That is to say the non-FERC reviewed language that each of the markets keeps on hand to help market participants understand how the markets are going to be operated. When you look at capacity qualification, what you're basically saying in effect is what contribution do these resources make to resource adequacy? What



revenue capability may they have in a capacity market? If you're in a RTO or ISO that has a capacity market or at the very least, how does this factor into the RTO's responsibility to account for resource adequacy being met across the system?

Jason: FERC sided with ESA on the concept of what is the legal rationale called the rule of reason. It's the idea that if there's some aspect of market rules that specifies the ... I'm going to forget my legal language here, I am not a lawyer, although I play one in FERC dockets. The terms conditions and rates of market participation and if those are susceptible to specification, that is they can be changed fairly on a whim as it were. That should be something that is in fact in a FERC reviewable tariff because at the end of the day, what you are doing is changing the nature of the market service without having FERC review. And so in taking on that rationale, FERC turned around to PJM and SPP and said, "Putting aside the rest of your compliance filings, we're going to open up new proceedings. First of all, you need to file in a revised tariff, the capacity qualification rules for energy storage resources and for that matter for all resources," which we can get back to that. But that was an interesting quirk. "And secondarily, we're going to open separate paper proceedings to determine the appropriateness of those capacity qualification methods."

Ari: Right. And so just to make this a little more concrete, my understanding was that PJM had a 10 hour requirement, which would mean that for a storage device to clear the capacity market and get paid for its capacity, it would have to have the capability of discharging for 10 hours. Is that right?

Jason: Not quite. It's not that you had to be 10 hours or bust, it's that you would be rated to the capacity, you could sustain over 10 hours. So for folks who might for example, create a battery capable of sustained output at its rated capacity for four hours, you'd take a D rate down to effectively 40% of your capacity.

Ari: Oh okay. Great. This really affected how much capacity credit storage would get in PJM and therefore how much they would get paid in the market and how much they would be counted for towards reliability.

Jason: Correct. And this is important because it's not a purely economic concern. It's really a question of is the reliability contribution of a storage resource being adequately counted? Because if it's not, then load is paying more for capacity than it needs to. It's not just in reasonable rates. Right. And certainly the work that we did in doing, for example a ... commissioning an estimated load carrying capacity study of storage under different durations. PJM showed that multiple gigawatts of four hour storage, six hour storage provide equivalent reliability in PJM today as conventional generators that would otherwise get a hundred percent capacity value.



- Ari: So we'll just add this issue to the pile of issues that are pending about PJM capacity market.
- Jason: Oh yeah. No, I mean why not? Let's just pile it on man.
- Ari: So the last thing I want to talk about is small scale storage. You mentioned the a hundred kilowatt minimum that every RTO has to accept storage devices of a hundred kilowatts. So that's going to include distribution level storage. So why is this important for the markets and for the industry? Because if you're a hospital or some other commercial consumer that decides they want to have storage as part of their facility, let's say for reliability reasons, why is it important that these sorts of devices be able to access the wholesale market?
- Jason: From a FERC standpoint? This is about again ensuring competition and the full set of resources capable of providing value to the electric system so as to achieve those just and reasonable rates from the standpoint of a distributed storage owner or operator. There's value here in being able to provide service to whether it's an end user for example, for helping them manage their bill or to the distribution system, if you for example, are stabilizing the distribution grid or integrating higher shares of say rooftop solar or electric vehicles. But recognizing that those storage devices have the versatility to also provide bulk system services and that in doing so you're really fully utilizing these assets, not just to the interest of the storage operator, maximize their operating revenues, but also to maximize the value that you're able to provide to this system. Because load pays for it all at some point or another.
- Jason: So if you have all of these distributed storage resources sitting on your grid and capable of that participation in the system and having some spare capacity, whether that's you know, certain times of the year or day or whether that's just in between them doing their other activities, that's value to go get to lower cost of service.
- Ari: It seems like there's potentially some technical challenges here in distinguishing between a storage device providing wholesale service versus providing benefits to a local utility. I guess I'm wondering who's going to figure out all these challenges? Is that something that's going to be the RTO's responsibilities ultimately to work through these issues?
- Jason: Well the RTOs have been tasked with ensuring there's a pathway for DER storage to participate in this with their markets, This is where this accounting and telemetry question that I raised earlier is very significant. Because if you're taking wholesale service from these assets, you need to, as a wholesale market operator, make sure that you have what you think is sufficient accounting associated with that. But what I think is has been animating about this is that



this is now bringing states and RTOs into a very direct dialogue to the extent that states see this as actually of interest, enabling that distributed storage to use its full versatility to provide both these end user or distribution services and bulk system services.

Jason: So for example, California and New York again have been taking some steps in trying to enable that dual participation, Massachusetts a little bit as well. But this is obviously the area of greatest concern to folks who are looking at what they consider a violation of the federal power act and FERC overreaching its authority vis-a-vis the States in terms of having rules that impact on distribution systems and distribution facilities that are the province under the FPA of state authority. And I can obviously keep going into that, but you're a lawyer.

Ari: Yeah, I know. There's pending litigation about this at the DC circuit. So I think we're actually going to do a separate podcast on all the legal issues around this, the federal state jurisdictional issues that you just mentioned. So maybe on the legal issues we might leave it there for now and hopefully it will pick it up in another episode. I guess we just want to close... so we're on the cusp of 841 being implemented, at least in part across all these regions. The two compliance filings you mentioned earlier, those are supposed to go into effect next month in December, tomorrow at FERC's meeting they're going to I believe, issue decisions on the other markets or at least submit many of the other markets. So those should probably go into effect presumably in the coming month or two. What do you see for the next couple of years for the storage industry once these orders are in effect. What are going to be the big opportunities? What is this going to open up?

Jason: I mean one thing to also bear in mind here is that many of the RTOs and ISOs have requested delays on implementation of order 841 so lot might not be happening just those soon. But once they are implemented, what does this unlock? I think that this question to the extent that the DC circuit resolves the current case and upholds order 841 as written, I think that you will see some interesting opportunities, particularly for the distributed side opening up where you have that good handshake between the state and the RTO. There will be an opportunity then for dual participation that I think has got certainly a lot of folks in the distributed storage segment, very animated. This could be a really interesting opportunity.

Jason: On the bulk system side in front of meter with all of these changes made, certainly these capacity qualification proceedings could be very determinative of how much storage does or does not participate in capacity markets. I think that if the PJM proceeding resolves with something resembling ESA's previous position that less than 10 hours storage provides equivalent RA presently that you will see storage start to bid into capacity markets. That's probably an



expectation and in New York ISO as well and we're already seeing that now in ISO New England.

Jason: In terms of the energy market. That's going to be an interesting question to see whether this will unlock storage into the energy markets and I think that has a lot to do with the extent to which energy market price formation really does create a signal for flexibility. There's a real trade-off I think between having, for example, if you're in a capacity market, having that and having scarcity price formation or just reflecting the volatility that might otherwise exist in the system. So that is a to be determined and something that I think a lot of folks are interested to see.

Ari: Well Jason, I think we're going to leave it there for now. I feel like we've just barely scratched the surface to some of these issues, but I've learned a lot from this conversation and I appreciate you coming on. Thank you.

Jason: Absolutely. Hey, one other thing I just want to note here is that we've talked a lot about like the specifics of the order 841 compliance and like what comes out of this. I think it's really important still to take a step back and recognize that what you have happening here is part of a movement towards more flexible operations of the electric system. As I was saying that at the outset here, well the opportunities that may come to the storage industry as a result of order 841 might take some time to materialize. Fundamentally if it is enabled to go forward in its current form order 841 is transformative because you are allowing this highly versatile asset to show up on the grid and to show up everywhere on the grid to ultimately provide service to the bulk system. That in and of itself is a quiet revolution and one that I am very interested to see how it plays out.

Ari: All right. Thank you, Jason.

Jason: Absolutely. Cheers.

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