**CleanLaw 59: Ari Peskoe and Brandon Smithwood on business models for small-scale renewable energy and storage systems – July 16, 2021**

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Robin Just: Welcome to Clean Law from the Environmental and Energy Law Program at Harvard Law School. In this episode, our Electricity Law initiative Director, Ari, speaks with Brandon Smithwood, Senior Director of Policy at Dimension Renewable Energy. They talk about business models for development of small scale renewable energy and storage systems. We hope you enjoy this podcast.

Ari Peskoe: This is Ari Peskoe and I'm joined today by Brandon Smithwood, Senior Director of Policy at Dimension Renewables. Brandon, thanks for being here today.

Brandon: Thanks for having me.

Ari: So we're going to talk about distributed energy resources, how they earn money, which is generally through compensation mechanisms approved by state utility regulators. We'll talk a little bit about the history of those compensation mechanisms, the current state of play for distributed energy resources, and maybe speculate a little bit about the future. So we just have to set ourselves with just a couple of key terms before we dive in. Brandon, what are distributed energy resources?

Brandon: Well, thanks, Ari. I think those of us who follow the energy space know the basic story of the grid historically has been about sending power one way from large central generators down transmission lines and distribution lines to pretty passive end users. And the story of the past couple decades has been about that relationship really evolving from customers being passive consumers to being prosumers or other terms that folks have come up with to describe customer generators. I think for the purposes of this conversation, what's really important to think about is, when I talk about distributed generation I'm talking about solar, and storage, and small hydro, and distributed wind, they're less prevalent, really anything that is going to be able to connect on a distribution feeder. So these are projects that are typically five megawatts and less, so it can be everything from a rooftop solar project on someone's house, to solar project in a field by a school, to a 30-acre community solar project.

Ari: So just one more point on terminology, you said distributed generation, I said distributed energy resources. And I think you clarified as to what the types of projects we're going to be talking about. And the reason I was hesitant to use

the word generation is because of the storage component here. And I don't know if folks consider that generation or storage that's your own unique resource. I guess we can use the term distributed generation, you've clearly defined what we're talking about here. So, you mentioned briefly the history here that this is traditionally a top down system, so why push back against that? Why distributed generation? Why not just stick with the status quo and let's try to capture the economies of scale by making resources as large as we can as has been the tradition in the industry?

Brandon: Well, I think the historic reasons have been around customer choice and allowing people to produce their own energy or shape their usage in ways that are beneficial to them. And low penetrations, I think that's been when there's a small number of solar generators, I think most neutral parties would say, well, it's a rounding error and it's fine for folks to have choice. I think, and we'll get into this in this conversation but I think the bigger question that some states have now, states like California where one in every 10 customers has a solar system and there's over 10 gigawatts of solar on an electric system that only has 50 gigawatts of peak load, people are starting to talk about distributed generation as part of the portfolio.

Brandon: Does this really make sense for us to do DG or DERs as part of our whole fleet of generation in our whole resource fleet? And a bunch of people have dug into this, there's been lots of value of solar studies. I think the thing that's been most exciting and most interesting to me was a study done by Chris Clack of Vibrant Clean Energy out of Colorado. And he did a study that was published late last year called, Why DERs Cost Less, and what he found was having over 200 gigawatts of distributed energy resources, again, meaning mostly solar and storage, was cheaper not only than getting to 100% renewables with utility scale projects alone, but also it was cheaper than just a business as usual scenario where we're not trying to reach carbon goals. So, I think DERs have a new reason to exist, it's not just about giving people choice, it's also about having an operational low carbon grid at the least cost.

Ari: Yes, the Clack study is an interesting data point. I mean, we know we're going to need massive investment in the power system as more states are committing to clean energy and utilities, at least they say on board with that vision. So I'm skeptical that we can build enough infrastructure at the bulk power level in part because siting can be so challenging in some parts of the country. And the Clack study is just one paper, but maybe it'll help get policymakers comfortable with the idea that smaller scale resources have a role to play here. So what I want to get to though is, what's the business model for deploying all of this distributed generation? But before we get there, let's talk a little bit about the history of distributed energy resource compensation, because the power industry's history often lives longer than we'd like it to. So

let's start with net metering or net energy metering, which is still how many small scale resources around the country get paid. So what is net metering?

Brandon: There's numerous flavors of net metering, but at its simplest, and I think when most people think about it, it's literally when you consume a kilowatt hour from the grid, your meter spins forward on the old electromechanical meters, and when you produce more than you use, your meter spins backwards. Well, so I'll stop there. I mean, that is at its basic what net metering is and it's been with us since the late 70s.

Ari: Right. Yes, the origin story here is fun. I think there's a couple different origin stories here. One is, there's an energy crisis happening in this country in the 70s and let's call them a cooperative in Manhattan decides they're going to connect a wind turbine in the top of the building on the lower east side, and they do it without telling the utility. And then so the utility needs to react to what's happening, and they just go with this simplest thing you can come up with about the meter goes one way or the meter goes the other way. And I think there's a similar story here in Massachusetts of a solar installation on the top of a public housing building where, again, they just connected it without telling the utility, you can't really get away with that these days.

Ari: And so there's a nice, idealistic story behind net metering, and then Congress passes PURPA in 1978, which leads a lot of states to codify net metering rules for very small scale installations. And the simplicity here is very attractive, I think it's easy for folks to understand how that works. Sometimes the simplest is the best solution. What's wrong with this simple version of net metering?

Brandon: There's nothing wrong with it when you don't have a lot of distributed solar, and, I mean, that's really the case for the vast majority of states. There's only a handful of states where behind the meter solar generation is more than a de minimis amount of the stage generation, a percentage point or two at most, California is one of those, Hawaii is one of those, Massachusetts is one of those. Actually, if you look at the New England ISO low profile resource mix, you'll notice there's not a lot of solar on the grid pretty much ever, and that's because we produce 20% of our electricity in the state from behind the meter distributed solar projects. So, those states are having a real serious question about how to evolve things, but at lower penetrations, the simplicity is, I think, a strength of net metering and it's something we really should continue until those states are reaching a point where it makes sense to change.

Ari: Nevertheless, I think over the past 10 years or so we've seen a lot of utility pushback in a lot of these states that really don't have a lot of behind the meter solar try to seek changes whether through the legislature or just through Public Utility Commission proceedings to change net metering in some way. I suppose we can look at these changes generally as constructive or

destructive from the perspective of customers interested in having solar. What's your view on what you're seeing just broadly in these other states?

Brandon: Yes, I would say a majority of states where net metering changes are under place, it's premature at best. I think utilities after the 2008 financial crisis, energy efficiency really took hold with better applying standards, building codes, utility programs and load flattened, and DG or DERs were pretty minor part of that, but I think it made the utilities realize they had the same capital costs to recover over whatever revenues they were receiving. And EEI put out its utility death spiral report which basically was, once some people go and do distributed solar, more people are going to want to go and do distributed solar and the utilities rates are going to go up and more people are going to want to do distributed solar.

Brandon: And so, I think there was this perceived threat that really started heating up about a decade ago, and I think a lot of that remains. And so you see states with very, very low penetrations, like Indiana pretty much made their net metering program nonviable earlier this year. I think there's several 100 net metered projects in the state, it's one of the largest IOU load states in the country, loads served by investor in utilities, so it's a rounding error.

Brandon: You still see a lot of debates over fixed charges, demand charges, rate design thing, so maybe they're not directly changing or ending net metering, but they're making the customer's rates such that the net metered solar is unattractive. I don't have a rough number for you, but of the 35 states that are looking at net metering reforms, I would venture to say that maybe five are really at the point that they have to be doing that.

Ari: Yes. So I think it's interesting that a lot of these, what I'll classify as destructive compensation schemes, come up in utility rate cases, where the focus of the utility rate case is, how is the utility going to recover its cost of operation and it's investment costs? So the focus on those proceedings is paying the utility. And so it's really a frame that allows the utility to initiate the conversation on this issue because net rate cases are typically started with a utility filing, so the utility gets to frame the issue and contrast that with what you were saying at the beginning, which is, do we want DG to be part of the portfolio of a decarbonized grid? Which is one way to look at the conversation. And putting it in a rate case is a completely different way to think about this issue and I think that's why a lot of these states have done things that are rather harmful to distributed generation just because of how the issue is being brought up in the first place.

Brandon: Agreed.

Ari: Let's move to the more constructive conversations that are happening a handful of states. Give us an overview of what are some of the alternatives to net metering classic.

Brandon: In preparation for this I was trying to categorize them. And there are a lot of different little sub-flavors that are out there. There was a deal that was just struck between the solar industry, and Duke Energy, and the Carolinas, and it's a mix of rate design elements, time of use rates, an incentive for demand reduction, and changes to net metering itself. So there are a lot of flavors but I think you could boil them down to net billing approach. And really, net billing it's like net metering, but rather than being a one for one, I put in a kilowatt hour at 20 cents, I take out a kilowatt hour at 20 cents, the rate that the electricity you export is different from the rate that you pay for what you use from the grid. And that spans a huge spectrum from everything from export rates that are very close to retail rates, to nonviable avoided cost rates. So that's one option is net billing and I think really that's where most of the constructive conversation is. And again, it all comes down to what exactly you're talking about for that export rate.

Brandon: Another is a buy all, sell all, and that I think is waning in popularity. Connecticut just made it an option for customers and we'll see if customers take them up on that. But that's where you sell everything that comes off your system at a defined rate, and what you consume behind the meter, you're not consuming any of what you produce behind the meter. And the third is some flavor of solicitation. So I think Massachusetts SMART is the leading example of that where there's a solicitation to set a base price and then there are some administratively determined elements of the tariff and that's available to these projects. Broadly, I think those are three categories, maybe there are better ways to organize them because, again, there's a lot of variants and shades of gray, but those are generally the approaches places are taking.

Ari: That's really helpful. I want to make sure though I understand the difference between net billing and buy all, sell all. So under net billing, are you getting the one to one conversion rate between consumption and production until you produce more than you consume?

Brandon: Yes.

Ari: Okay. So you're getting the benefit of being able to, from an accounting perspective, consume the energy that you produce, and then the issue is just, how do we value the excess energy, let's say, that you're not consuming and are selling back to the system?

Brandon: Exactly.

Ari: Maybe let's just dig into that for a second. So what are some of the ways that states are thinking about how to value that exported energy?

Brandon: Yes, right, that's really where the rub is. You have New York's VDER tariff which is near and dear to my heart, and I spend a lot of time in the weeds on that. I think that's the example for something that's very scalable and it's also financeable. I mean, there's several gigawatts of projects underway in New York. But a counter example of that is Illinois has had some debates around value based exports and the utilities there have argued, well, if you can avoid a specific substation upgrade, you really have no value beyond your generation. So I think there's a huge spectrum around what those export rates are worth. And in some places, like Utah and Nevada, it's just there's a political compromise made where it's like, well, we could sit here and debate it or we can just take the retail rate and start subtracting from it.

Ari: Interesting. So let's dig into VDER since it is close to your heart. Walk us through that a little bit. What does it stand for? And then how do they figure it out in New York, what the value is?

Brandon: Yes. So, VDER stands for the value of distributed energy resources. And it is a net billing tariff. So if you have a project that's over 750 kilowatts, so a large commercial project or bigger, you're on the VDER tariff. And if you use energy behind the meter, you avoid that energy just like if it was energy efficiency, it's just a reduction in your bill. If you export, you get a dollar credit based on a value stack. And so that value stack is a bunch of different values to the grid of your generation that are dependent on time and location.

Brandon: So to go through them quickly, you have a couple wholesale values which you're not actually directly participating in the wholesale market but those prices flow through to you. So there's locational marginal price from the wholesale market that you're paid for your hourly generation, there's a capacity price based on the capacity market in New York that you're paid. So those are your wholesale market referent values.

Brandon: And then on top of that, one of the things that DERS have that utility scale doesn't is they avoid all that infrastructure from the power plant down. So the transmission lines and the distribution lines, and that is the value of D, as they call it in New York, and it varies by utility service territory, and it's only available to the project. So it's a credit, if you're producing between two and seven PM on a summer afternoon, you're credited for that value and the rest of the time you're not. And that just reflects that the system is built to when electricity is at its peak and it's those summer afternoons that really strain the electricity system.

Brandon: And then the final piece is E, and that's the environmental value which has been debated for a long time but it's basically the carbon value. There's been talk about adding other pollutants into that value but you're compensated for the value of the carbon emissions that you're going to reduce from your generation. And that's actually the big point of contention right now in New York is, what is that fair value for E, for environmental value?

Ari: So just to recap, this value stack and we got a couple of things coming from the wholesale market, which is regulated by the Federal Energy Regulatory Commission, and that's basically the bulk power system, these prices are generated by what's happening among large scale traditional power plants that are coming up with those values. Then you have these avoided infrastructure costs. So this is interesting maybe because we've had these markets for power in some form or another for a while, but we haven't really had markets for delivery infrastructure, for transmission lines, for local distribution infrastructure. Maybe you could walk us through a little bit about how you come up with what the value of avoided infrastructure is.

Brandon: That is done through marginal cost studies. Actually, marginal cost studies are used broadly in rate cases, they help designing rates. And it's really the utilities saying, okay, what's my cost of building an extra kilowatt of capacity on the system? So they take all of, here's a cost of a substation, here's the cost of line, and they average it out to be this dollar per kilowatt cost. So it's got its roots in utility rate making, and has been used for a long time, decades. But what's novel is turning that around and saying, well, if it costs the utility this much to build it, shouldn't we pay the DER the same amount to avoid it?

Ari: It's interesting though that we rely on the utilities for those studies and for that information. Do you know if utilities are using the same marginal cost studies in their rate cases as they are in the feeder proceedings?

Brandon: There's an entire proceeding in New York actually on this very topic, and California too has grappled with this, because no, they're not uniform and the distribution system generally is the remaining black box of utility investment. We have a lot of transparency in deregulated markets around generation, the generation system, around the transmission system, the distribution system doesn't have that transparency. So New York's been trying to crack into those marginal costs of service studies and not only make them uniform, but really have a clear line of sight for the regulators and the stakeholders, the solar industry and everyone else on what goes into these things so that it's fair.

Ari: Just to be clear for everyone, the utilities make their money from building this traditional infrastructure, that's where their profits come from, especially in a state like New York where utilities no longer own generation as they do in many states across the country. And so, the utility has an incentive to produce

studies that might result in a lower value for distributed energy resources because all else being equal they might want to build it themselves rather than have third party developers build this infrastructure. So that's what I was concerned about there, just to be clear. And then the environmental value, you said it seems to be that it's limited to carbon and doesn't account for other environmental benefits. Is that how they're doing it right now?

Brandon: That is. So there's two tracks of debate on this issue. One is, we know, particularly, and importantly, and belatedly, policy discussions are really moving towards, how do we make sure that frontline communities, environmental justice communities, who have typically borne the burden of clean energy are really that historical injustice is rectified by putting their interests at the front of decision making and making sure that, at worst, they're left in a fair situation, but ideally, they're benefiting directly from these resources?

Brandon: So if you look at New York State, as you get downstate there's a lot of more traditional criteria pollutants that have major health effects and there are a lot of dirty peakers on Long Island and in the New York City area that they fire up for those really hot or really cold days, and they're particularly dirty. So the state is doing a lot of things to get rid of them but the Institute for Policy Integrity, and I know you've had them on your show before, that team has done some really good analysis around what the non-carbon values are.

Brandon: The carbon values, the debate really there is I think one of, are we willing to actually pay this amount? When you look at the damages caused by carbon emissions, it seems like each time the economists that do that work revisit it, the numbers go up, and the State Department of Environmental Conservation just sent out guidance to all the agencies. And if their guidance was adopted directly by the Department of Public Service, the utility regulator, compensation for these projects would pretty much double in much of the state. So, I think, understandably, the Department of Public Service is worried about the impacts to rate payers from a doubling of compensation, so that's an ongoing debate about what is that science based but manageable value that the state can compensate these resources for.

Ari: It's interesting. And so, getting back to the environmental justice piece of this, you mentioned the work by the policy integrity folks, is that something that's actively before the Public Service Commission at this point or is this just something that maybe advocates should be looking at down the line?

Brandon: It really hasn't gotten the attention it's needed for some time now. And the debate really is on the remaining fraction of the pie on just the carbon piece. So it's in fairness to the Department of Public Service and NYSERDA and like, they're doing a lot to take those peakers off the grid. And I think if you ask

them, that's what they'd say is we've got a plan there, but right now it's not getting compensated through VDER.

Ari: Another aspect of this that you mentioned before was that projects can be financed with VDER. So can you tell us a little bit about how this works from a developer's perspective?

Brandon: Sure. I mean, I think the financeability, it's taken people time to get comfortable. Some of the financing question is a market risk standpoint. So, there's a fair amount of well respected private research done by firms like Wood McKenzie that forecast locational marginal prices and capacity prices, and people have views on those things. Some of the values in VDER, the infrastructure values, the D value, the E value are administratively set and they're contractual, so they're contracted. So they're based on grid values but they are fixed for the term of the tariff for the project. So for 25 years E value is set, DRV is set for 10 years, which frankly, is parity with what the utility gets for its investments. If it upgrades a substation, no one comes back in three years and says, well, actually, we don't need your substation upgrade anymore, gets amortized in the rate base.

Brandon: But I think that balance between market values and contracted values, there's a value basis that can be drawn right back to this is what the grid needs, this is part of a cost effective portfolio, but it's also financeable because at least some of the value stack is contracted and the rest are things that there's enough experience and commercially available forecasting out there that investors can get their heads wrapped around it and feel comfortable.

Ari: And is VDER being used both for projects that are associated with a particular utility customer, right, so projects that have on site consumption, and also projects that are greenfield projects not associated with any load, or what type of projects are being developed under VDER?

Brandon: The vast majority of them are larger two to five megawatt community solar projects. I could get into some of the challenges for the rooftop commercial customers who might want to use VDER but by and large, yes, it's these larger ground mount projects.

Ari: Well, listen, Brandon, we're here, let's get into it. What are some of the challenges for those larger commercial projects that are associated with a particular customer?

Brandon: One of the great ironies is people often say, hey, retail rates, that's just too rich for compensating distributed resources. And I always bristle a little bit when people make that broad comment because it's like, well, it really depends on your rates. What state are you in? What utility are you in? What customer

class are you in? And commercial customers, they pay a lot of their delivery charge through a demand charge. So whatever their peak 15 minutes of usage for the month sets that demand charge and that's what they pay, and as a result, the cents per kilowatt hour consumption rates are much lower. And I think there's been some of them micro grid developers and the like that I follow on Twitter, I know that this has been a sore spot for them.

Brandon: But in some cases, if you have a nice, big commercial roof, you might be better off leasing that roof to a company like mine and letting that project serve customers offsite than you are serving your own usage, just because the value of your generation may be worth more going out than it is serving you under the demand rates that you have.

Ari: I would have thought that some of the onsite generation might be able to reduce that demand charge, but I guess that's not the case.

Brandon: If it's paired with storage, there are companies like Stem made a name for itself and pioneered their space, they will use artificial intelligence to learn how your operations work and they'll discharge a battery when they predict you're going to hit a demand charge, and so they can reduce demand charges. So there having a battery with a solar system, you could take the ITC on the battery and you could avoid the demand charge. So it's not like it's impossible, but if it's just a simple solar system, you definitely can't bank on avoiding your demand charge.

Ari: Mm-hmm (affirmative). And just there folks, ITC is the federal investment tax credit that at one point, I don't know what it is now, at one point it was 30% of project costs you'd get a credit back on your taxes, I think it's gone down since then though, right?

Brandon: Yes. And then it got extended late last year, so it's 26% this year, 26% next year, then it's 20%, and then it goes to zero for residential customers and 10% for commercial customers after that.

Ari: So before we move on from VDER, just one more quick definitional issue, you just used the term community solar, just briefly, what is that?

Brandon: So that is a distributed solar plus storage project and customers subscribe for the generation from that project. So it's not like retail choice, you remain a customer of whoever your electricity supplier is, but you get bill credits on your bill much like if that project was on your roof. So it's really an option for customers to be able to get the same option that their neighbors with good roofs can have without them having to own a home or if they own a home, not have the trees shading their roof or not have to fix a structurally challenging roof. So there are typically two to five megawatt projects, often cited on

farmland, but from the customer standpoint, it's like Netflix for solar, you're able to subscribe to the project, receive bill credits on your bill, and then typically, you'll pay a subscription fee to be part of that project. So you end up saving five to 15% on your bill is typical customer value proposition.

Ari: Yes, I don't know, think about that Netflix analogy a little more. I don't usually save money from my Netflix subscription. But I hear what you're saying with the simplicity and the subscription model. But I want to return to what you said something at the outset that, for states that are interested in decarbonization, DERs should be part of that picture. Is VDER a mechanism for getting to those higher penetrations?

Brandon: Yes. So VDER is definitely scalable. And maybe we can talk about California at some point today or in the future, but I think they're at the same inflection point. Net metering is good, rough justice that when distributed solar is 5% or less of your generation is you get to higher amounts of solar when you're California where it's one in 10 customers, I think parts of Hawaii were one in four at one point, it really breaks down. I mean, not only is it likely that you're paying more for the solar through that retail rate credit than ratepayers are getting the value, but it also just doesn't send the right signals to make the solar projects do what you want to do.

Brandon: Generally speaking, net metering is not a great tariff for incentivizing solar plus storage. We could do a whole podcast on why that is. But as you get to higher penetrations, you definitely need something that is based in the utility costs, both to know that ratepayers are getting a fair deal, but also to tell that project, I'm going to pay you most of your compensation during the times that you are most valuable to the grid, because that's what's going to get you the response that actually helps that utility system operate in the way that keeps the lights on is lower zero carbon and is cost effective.

Brandon: And the Chris Clack modeling really goes looks at this in a super refined model to show it operationally. And what you find is at high penetrations, the distributed solar and storage really needs to do this balancing act with the utility scale projects where it is using more energy at the distribution system when the utility scale resources are ample and it's back filling when those resources are less prevalent and that allows you to smooth out the usage on the grid which cuts all those infrastructure costs, and it also provides you with the reliability that you need to make the grid operational.

Ari: Yes. So, I guess, the more refined prices of VDER as compared to classic net metering should send the signal to the developers to develop projects both where they're needed and that are able to produce energy or other services when they're needed. Let's turn quickly to California because there is a major proceeding happening now, which I think still be ongoing by the time we

release this podcast, and they're thinking about the next generation compensation mechanism. They started with classic net metering in the 90s, that stuck around until I think around 2016, they implemented what they call net energy metering 2.0, which as I understand one of the major reforms was to put everybody who was on this new NEM rate on time of use rates. And that, again, is designed to ensure that projects are generating energy when it's more valuable to the system.

Ari: And so, now there's a proceeding about what comes next. You mentioned a stat, one in every 10 consumers in California in rooftop solar, I've heard even larger numbers for San Diego Gas and Electric and that part of the state, I saw a stat that said in one in six down there. So clearly, penetration is taking off in California. And I think there's about 20 or so proposals on the table before the CPUC that have been filed by various parties. So what's at play in California? What's your take on what's before the commission and what you think the state ought to be doing here?

Brandon: I think you could categorize the proposals in three buckets, the utilities, the state funded ratepayer advocates group TURN, which is a nonprofit repair advocate group, the labor unions have a proposal which pretty quickly transitions solar projects to being compensated at that value stack value which is a pretty dramatic departure from retail rate net metering in that state, roughly half the compensation, depends on the utility service territory you're looking at. And they, as I said, what value solar means is a huge spectrum, I think generally they want that compensation to be very short run and constantly changing, and it's not financeable and I think non-fair.

Brandon: The utilities, and ratepayer advocates, and the labor unions also want to charge a grid access charge. So basically saying, look, not only are we going to reduce the compensation for what you export onto the grid, we also want you to pay for the electricity you would be using if you weren't consuming some of your own production behind the meter. I don't think this is going to succeed, but I think this is a big departure for California and I think is a big departure from that net billing concept. I mean, we don't go to customers who sell their hot tubs and say, hey, I've noticed you're using a lot less electricity and I still need you to pay for the fixed costs of my grid, they just pay less in their electric bill. And I think that's a major policy decision, I am skeptical the commission will adopt that, but that is a big stake in the ground that's been placed.

Ari: So just to be clear on this one, what they're suggesting is a buy all, sell all approach plus a fixed fee on top of that?

Brandon: No, they proposed buy all, sell all in the past, they've moved off that for this net metering revisit, it is a net billing tariff, they're just charging a big fixed charge.

Ari: Okay.

Brandon: So that's one end of the spectrum and then the utility or the solar companies are arguing an enhancement of net metering 2.0, so saying, let's put customers on more aggressive time of use rates to incentivize electrification and let's slowly step down compensation from retail rate to the avoided cost rate. And when I say avoid costs, I mean, the full value stack not just energy and capacity.

Brandon: So those are two ends of the spectrum. I'm the policy witness for the coalition for community solar access in that case, and so I've sponsored testimony basically proposing VDER for California, not for the small residential rooftop projects, but for community solar projects in the state. The state's building code requires all buildings to have solar, that doesn't really work for a lot of buildings for all the reasons that rooftop solar doesn't work for buildings, shading, ownership, the like. So there's a community solar option in the building code, but there isn't a community solar program to build projects under.

Brandon: There's a big focus on, how do we get disadvantaged communities, the California term for environmental justice communities, how do we make sure that they get equitable participation in net metering? Which is tough since about 70% of homes in disadvantaged communities are occupied by renters, so they don't control whether the property can put solar on it or not, even if they are able to access the financial resources to do so. So, I think, I'm hopeful that the CCSA proposal can move the DG space generally towards value based compensation and use some of the things we've learned from New York, and we can fix a couple problems in the state.

Brandon: And I imagine the commission is going to have to start us on that path while also recognizing that rooftop solar, the economics are not yet there, but there's still a lot of resiliency benefits, jobs benefits, land use benefits that they want to retain. So, I don't envy the commission and its staff, they've got a big, complicated docket before them but at some point this fall we should get a sense of where their thinking is at.

Ari: And so on your proposal, are there any major distinctions between VDER as you've described in New York and VDER as you've put forth in this proceeding?

Brandon: I think from a developer standpoint, the big difference is this is going to be a really strong incentive for putting storage on your project. Basically, most of the year you get LMPs plus about four cents under our proposal, CCSAs proposal, and in the on peak periods you're going to get LMPs plus close to 80 cents a kilowatt hour. So these are the hours when California was having blackouts, these are the hours that when all of the remaining ones through cool gas generators fire up, I mean, these are really the most problematic hours for the electric system, so it's not surprising that, that's most of the value. But I think New York, it has so much hydro that LMPs are pretty flat, so even though the tariff is dynamic, you still see a lot of solar projects make sense, especially since the peak grid is still in the daylight hours, it's 2:00 PM to 7:00 PM.

Brandon: California has enough solar that the grid peaks at night now after 5:00 PM as the sun setting. So I think from a developer standpoint, this could be the best solar plus storage tariff in the country.

Ari: I guess I want to close by just raising one more issue which is, you've brought up LMPs a few time which is locational marginal prices. As I said, these are regulated by FERC but really generated by the interactions happening on the transmission system between, for the most part, large scale power plants, and I guess about a year ago FERC released what it calls Order 2222, which requires the organizations that run these markets to create new rules for aggregators of distributed energy resources. So this might be a company that signs up, let's say, with a number of different rooftop solar installations, aggregates into a single resource for purpose of market participation, and then can participate directly in the wholesale market and be paid those LMPs directly rather than what you're describing, which is the state regulator sets a price that incorporates those LMPs and includes other elements.

Ari: So I'm just curious what your reaction is to this new FERC rule which hasn't been implemented yet but will be over the next couple of years. Is this a promising avenue for distributed generation down the line?

Brandon: Well, I'll start with a caveat that I'm no FERC Order 2222 expert, it's not something I've spent a lot of time on. And I think, we've been talking about distributed solar plus storage, there's demand response companies like OhmConnect where aggregating a lot of lower resources makes a lot of sense. In my mind, I mean, one of the things I like about VDER is it has that market referent, the prices flow through, which I think is attractive from a regulator standpoint, but you're not actually in the market and there are transaction costs related to being in the market. So I think that's one benefit.

Brandon: Also we've seen a lot of monkey business, as my five year old would say, with capacity prices, buyer side mitigation, PJM’s capacity market roles, I think

state regulators have broad rights as rate setters and the NERA petition when it was struck down reaffirmed that last summer. I think there's political reasons for wanting to keep the state legislatures and PUCs in the driver's seat, make these decisions at the state level rather than the federal level. So there's just some broad policy considerations.

Brandon: I think it will be interesting to see whether people really want to disaggregate the tariffed values for the infrastructure value, and the market values and do that aggregation. California has long had their initiative which is like a 2222 precursor, and my understanding still is that is basically no participation. So, I think we'll see whether those two worlds can work each other out on the distributed solar side or whether it really makes sense to do it all at the PUC level and on the utility tariffs, even if that means that tariff makes reference to ISO level prices and has those flow through the tariff.

Ari: Right. I think the jurisdictional point is really interesting as to who should be in charge of these distributed energy resource compensation mechanisms. But there are a lot of states, as we talked about at the outset, that really aren't doing anything productive on this issue. So maybe wholesale market access will be more fruitful in some other parts of the country than it would be in New York or California. So you're trying to spread your VDER love to California, it started in New York, are there any other states that you're looking to spread VDER to next?

Brandon: No, none actively, but I think states like Massachusetts, New Jersey, the handful of states where there is a lot of solar, I mean, there's an interest in having more solar plus storage, I think they're all ripe candidates and they have the experience to really do the heavy lifting that's needed to define those values and the right way to compensate them.

Ari: All right, I think we will leave it there. Thank you so much, Brandon, for coming on today and for spreading your VDER love.

Brandon: Thank you. Appreciate the opportunity.

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