

STATE OF VERMONT
PUBLIC UTILITY COMMISSION

CASE NO. 19-0855-RULE

PROPOSED REVISIONS TO VERMONT PUBLIC
UTILITY COMMISSION RULE 5.100

September 16, 2021
9:30 a.m.

Via GoToMeeting

Workshop held before the Vermont Public
Utility Commission, via videoconference, on September 16,
2021, beginning at 9:30 a.m.

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1 MR. MARREN: Good morning everyone.
2 It's 9:30. So I think we will be ready to begin here
3 in a second. I see Mark LeBel is present. So we are
4 set on that front. All right. Are my commissioners
5 present? Yes. I see my three commissioners.

6 Okay. We will begin. Good morning
7 everyone. This is a workshop in Vermont Public
8 Utility Commission Case No. 19-0855-RULE. It
9 concerns the commission's investigation into Rule
10 5.100 which governs net metering in Vermont.

11 We are having a workshop today to
12 discuss net-metering compensation. And my name is
13 Jake Marren. I'm a staff attorney at the commission.
14 There are several members of the commission staff as
15 well as all three commissioners present today.

16 Due to the large number of participants
17 we have on today's workshop, we are not going to do
18 individual introductions. An agenda was issued
19 yesterday. We have several presentations on tap for
20 everyone.

21 We are going to begin with a
22 presentation from the Regulatory Assistance Project
23 and Mark LeBel. We are going to follow each
24 presentation with an opportunity for questions. And
25 we will try to give that about 15 minutes. We will

1 see how we do on time.

2 And then at the end of all of the
3 presentations, we can have a broader discussion if
4 folks want to make additional comments or give any
5 other information to the commission that they think
6 they should hear today related to the compensation of
7 net-metering systems.

8 A few pointers. Elizabeth Schilling
9 from the commission staff is our platform manager
10 today. If you have any technical issues with the
11 GoToMeeting platform, message Elizabeth using the
12 little chat icon up there at the top of your screen,
13 or you can also call the clerk of the commission if
14 you've lost connectivity, and we will try to get you
15 reconnected.

16 MS. SCHILLING: I just want to say good
17 morning really quick so people know who I am. And
18 also there are two folks who have called in. And I
19 can name you -- so we know who you are. If you can
20 identify yourselves, there is a caller 1 and a caller
21 2.

22 MS. McDERMOTT: I'm one of the callers.
23 My name is Maureen. I'm with Kim Hayden's office. I
24 will be helping to present slides during REV's
25 presentation today.

1 MS. SCHILLING: Okay. Next caller?

2 MR. LAZORCHAK: This is Michael
3 Lazorchak. Stowe Electric.

4 MS. SCHILLING: Thank you. And the
5 third caller? Third caller if anyone wants to
6 identify themselves? All right. Maybe not. Jake,
7 you can go ahead. Thanks.

8 MR. MARREN: Thank you, Elizabeth.
9 Just also wanted to remind folks today's proceeding
10 is being transcribed by a court reporter so it's
11 important for us to just identify yourselves when we
12 speak so your name -- and if you're speaking on
13 behalf of an organization state that as well. And
14 also try not to talk over each other.

15 If you want to ask a question, or
16 something like that, we ask you use the chat
17 function. You don't have to put the question in the
18 chat. You can just say I would like to ask a
19 question, and we will call on you in the order that
20 we receive requests.

21 And thank you to Ms. Smith who has also
22 noted that callers can mute themselves. So thank
23 you. It is helpful if you stay on mute when you're
24 not speaking so that we don't have background noises
25 or anything else like that on the presentation.

1 So with all of the preliminary stuff
2 out of the way, I think I'm going to turn it over to
3 Mark LeBel to begin his presentation.

4 Mark, I'm going to give you control of
5 the screen here in a second. And you should be able
6 to run your slides yourself.

7 MR. LeBEL: Great. Thank you, Jake.
8 And thank you very much to the commission for the
9 invitation to present today. Here we go. Sorry it
10 takes -- it takes a little too much brain power to
11 figure out which screen to share. I think that
12 should do it. All right. I will start over briefly.

13 My name is Mark LeBel. I'm with the
14 Regulatory Assistance Project. I have been with RAP
15 for a little over 2 and-a-half years now. Thank you
16 to the commission for the invitation to present
17 today, and thanks everyone for being here. Looking
18 forward to listening to the presentations that come
19 after mine.

20 So a very high level outline or agenda
21 from my presentation, starting off with some of the
22 basics of utility ratemaking for the broader context
23 here. Some thoughts on the history and potential
24 futures for the electric system, before we get into
25 the meat of rate design reform and net metering

1 reform itself.

2 I spent some time talking about rate
3 design reform more generally because if you're doing
4 rate design reforms for the residential customer
5 class, in general, that will necessarily impact net-
6 metering customers, both existing customers, as well
7 as new ones. And then there is just sort of
8 background rate design issues that fold into net-
9 metering reform, particularly how you design time
10 varying rates.

11 So this sort of gets at some of the
12 issues and the request to present from the
13 commission. In most states, it is still true that
14 rates and DER compensation do not reflect time or
15 location-varying costs. This comes from a long
16 history of rate design across the country and older
17 metering systems, billing systems, couldn't handle
18 time-varying rates, and doing location-varying rates
19 was sort of ruled out by the convention of postage
20 stamp pricing, which has good reasons. There is good
21 reasons for that rule both administratively and
22 substantively.

23 You know, as we will see, many more
24 states are introducing time-varying rates in DER
25 compensation, but location-varying prices are still

1 rather rare. New York is perhaps the best example we
2 have so far in their meter tariff that I'll get to
3 later.

4 Then in terms of adoption and access
5 the concern in many jurisdictions which needs to be
6 evaluated properly to understand it in each
7 jurisdiction, is that adoption may be concentrated in
8 certain economic and demographic sectors.

9 You know, single-family residential
10 homes, under typical net-metering structures, those
11 customers often get the best deal from the statutory
12 net-metering frameworks. And so everyone else has
13 lower chances economically and practically to adopt
14 solar or other DG. And often talking about equitable
15 access refers to low-income customers and renters,
16 who is very important, but rate structures may also
17 inadvertently exclude business customers from
18 adopting solar as well. Demand charges, in
19 particular, are significant economic impediment to
20 the adoption of DG.

21 And then this is not something that we
22 could do much about at the state level, but federal
23 tax credit policy is extremely important here. The
24 way that it has been set up historically you need to
25 have tax liability in order to take the credit which

1 leads to a bunch of different financing and leasing
2 options. You know, if the federal government takes
3 these tax credits and makes them direct pay, it would
4 be a major change that would increase access on its
5 own and may help out the goals of states like
6 Vermont.

7 So just really quickly, to do some
8 background on how and why we regulate utilities. The
9 basic message here is this is complicated and there
10 is lots of things to balance. Utility commissions
11 have a hard job. You need to think about efficient
12 competition within and across sectors. Reliable
13 provision of service. Societal equity. Historically
14 that's meant universal access and affordability, but
15 equitable distribution of program benefits also falls
16 under that heading. Economic development.
17 Environmental and public health requirements.

18 Then we are talking about rate making
19 which can include net-metering structures. You need
20 to think about effective recovery of the revenue
21 requirement, customer understanding and acceptance,
22 equitable allocation of costs, and efficient forward-
23 looking price signals. So there is a lot to balance
24 here and a lot to think through.

25 Everyone on this call may know this,

1 but the typical rate making process starts with the
2 revenue requirement. You allocate costs to different
3 customer class, and then you design the retail rates.
4 Data collection and the definition of the customer
5 classes is important background work that is often
6 taken for granted in different proceedings but
7 actually can be changed if you collect different
8 types of data. It can change what you can do. And
9 then you can think about different ways to split up
10 customer classes, you know, talking about solar-
11 specific customer classes have been litigated across
12 the country; tend to prefer technology neutral
13 customer classes, and you can talk about whether
14 there is a way to split up the residential customer
15 class into two sub classes.

16 So there are typical ways that customer
17 classes are set up. Some jurisdictions divide them
18 between different voltage levels of connection, or
19 also just the residential, commercial, industrial,
20 some states with irrigation customer classes. Street
21 lighting is very common, of course.

22 And then you can think about whether
23 you need to split up the residential customer class.
24 In the northeast we often have heating customer
25 classes, single-family, multi-family is a cost-based

1 distinction. And you can talk about whether there
2 are other ones.

3 And then we get to the cost allocation
4 itself, we have the three-step process of
5 functionalization, classification and allocation.
6 Really we think this is largely outdated and should
7 think about ways to reform it. But you can also work
8 within this framework.

9 And when you get to the efficiency of
10 rate design itself, providing customers with
11 efficient incentives means that the choices a
12 customer makes to minimize their own bill should be
13 consistent with what we would like them to do to
14 minimize system costs. That's about alignment of the
15 private incentives with the overall incentives for
16 the system. That's one of the major rationales for
17 time-varying rates.

18 And then if you want to get even more
19 detailed, in terms of what we are really looking for
20 here, you can start with short-run marginal costs,
21 where possible. Often that's a tricky proposition.
22 Layer in long-run marginal costs. If you really want
23 to be pure about some of this stuff, you can add in
24 any unpriced externalities. And then probably the
25 hardest step here that's, you know, debated hotly

1 across the country is you have to end by allocating
2 in pricing any extra residual costs that still need
3 to be recovered through rates.

4 And then just the history of rate
5 making practices and where we have been is important
6 background here as well. Many embedded cost
7 techniques were created in the first half of the 20th
8 century under a much different electric system. Many
9 parts of the country had some hydro, but it was
10 predominantly combustion steam units that all looks
11 pretty similar. Between 1960 and 1980 we had an
12 emergence of different types of power technologies, a
13 lot of coal steam investment, nuclear power.
14 Combustion turbines were really invented in the
15 1960s. The oil crises really kicked off a whole set
16 of changes in the electric sector and fuel markets
17 generally.

18 We had the beginnings of environmental
19 regulation, and then things started to pick up after
20 1980. PURPA, energy efficiency programs, combined
21 cycle generation. And then more recently, we had the
22 sort of the shale fracking revolution. And then wind
23 and solar, distributed generation, advanced meters
24 and smart grid are all relatively new in the scheme
25 of the electric grid. And what might still be

1 coming? We still have massive increases in computing
2 power. Data storage. Higher penetrations of levels
3 of variable renewable resources can change how you
4 want to operate the electric system and plan it.

5 Customer energy management technology
6 is probably going to become cheap and widespread at
7 some point. Electrification of transportation and
8 heating presents challenges and opportunities. And
9 then it looks like we are going to still have
10 hopefully continued cost declines for clean
11 distributed generation and energy storage.

12 So the grid of the future might look a
13 lot different than the grid of the past. We have a
14 lot more customer resources and those customer
15 resources and customer behavior can be used as a
16 resource to optimize the grid and lower overall
17 system costs.

18 So there is a lot of major questions
19 about what that might look like, though in Hawaii and
20 some of the other west coast states there is a lot of
21 talk about the duck curve. And it's really changed
22 the typical daily load profile that the utility has
23 to serve. You used to have a typical early afternoon
24 peak driven by air conditioning in the summer. But
25 now there is enough solar in the system in Hawaii,

1 and this was a few years ago even in 2017, that the
2 peak has shifted to the early evening hours.

3 And that leads to the concept of
4 looking at net load instead of gross load, that the
5 gross consumption of customers may not have actually
6 changed during this time period, but the pattern of
7 net load that the utilities have to dispatch to has
8 changed. But the duck curve and that particular
9 pattern of net load is not destiny for every
10 jurisdiction. Your overall resource mix is really
11 what matters here. This is just an example we like
12 from Texas where you put together a certain type --
13 certain types of wind resources with solar resource,
14 the overall load pattern -- sorry -- overall
15 generation pattern of these resources really comes
16 close to matching the overall load profile.

17 So if you do this kind of optimization
18 of overall resources, the changes that need to happen
19 for the overall planning and operation of the grid
20 are less dramatic, at least in the short term.

21 All right. So now we will get to the
22 meat of the presentation on rate design and then net
23 metering. So what are some key principles that we
24 want to think about here. Doing cost allocation
25 pricing tied more closely to marginal costs and time-

1 varying costs is a key element of marginal costs
2 should reduce the misallocation of revenue burdens
3 and improve the efficiency of customer behavior. You
4 can still do this in an embedded cost framework, of
5 course.

6 For other costs the principles of costs
7 follows benefits is an equitable one for cost
8 allocation. It's particularly true if marginal cost
9 based prices do not recover enough revenue. And then
10 you still have to talk about customer understanding
11 for rates. You can use education, programs,
12 gradualism, companion programs all help here.

13 And my coming slides on rate design are
14 really going to focus on the first question of the
15 efficiency of the prices, but you really want to
16 think about all of this together.

17 So cost causation for the electric
18 system is a complicated topic on its own. This is
19 very high level. But shared electric system costs,
20 high level generation and transmission, shared
21 distribution, substations, other elements of the bulk
22 distribution system are driven by collective patterns
23 of customer usage. That's what really makes them
24 perfect for time-varying rates. Once you get to the
25 lower end, the customer end of the distribution

1 system, service drops, secondary lines and line
2 transformers, there is a lot lower load diversity so
3 you can start to think about that a little
4 differently particularly for C&I customers that have
5 not only dedicated service drops. They have
6 dedicated line transformers. Think about that
7 differently.

8 Billing and customer service costs may
9 vary by type of customer. Administrative and general
10 costs crucially don't really have a cost causation
11 basis driven by individual customer behavior, but
12 they are driven by the size of the business, and
13 public policy programs reflect the mix of
14 motivations, both electric system benefits and the
15 efficiency obviously. Broader societal goals often
16 come into play with things like low-income discounts
17 or a wide variety of other policies.

18 So one way you can start to think about
19 reforming cost allocation that feeds into rate design
20 is moving away from the traditional customer demand
21 energy split and doing time assignment for both
22 classification and allocation. One simple version of
23 that is peak, intermediate and all hours. And you
24 could assign costs on that basis. Crucially site
25 infrastructure, billing and collection,

1 administration and general costs, those don't have a
2 time-varying basis, so you can talk about how to
3 allocate and price those separately from this time-
4 assignment scheme.

5 And then within the elements of the
6 system that do vary by time, you can use the
7 information you've created in cost allocation, the
8 cost allocation step, to design a time-varying rate.
9 You have an off-peak period where costs are spread to
10 all hours costs are spread. Mid peak that builds on
11 that, and then the on-peak rate and critical peak
12 rate can all fall directly out of your cost
13 allocation analysis.

14 So what might that look like when you
15 build in all sorts of other costs? This is a sort of
16 a high level idealized example. So both for
17 residential and medium C&I here. Sort of moderately
18 aggressive in its complexity, we have an off-peak,
19 mid-peak and on-peak time-varying rate scheme with a
20 critical peak overlay. For residential customers you
21 can do that as a peak-time rebate, and for C&I
22 customers you can do it as a more normal critical
23 peak price.

24 In terms of customer charges, here we
25 are showing a tiered customer charge that represents

1 a cost distinction between multi-family customers
2 that share service drops and automatically share line
3 transformers. Small single-family homes that don't
4 share service drops. And large single-family homes
5 that may use a bigger share of any local
6 transformers.

7 For the commercial customer here there
8 is a higher customer charge, and then we have a site
9 infrastructure demand charge to collect the costs of
10 mainly the line transformer for these customers.

11 So what have states around the country
12 actually been doing on this? And I'll just use a few
13 examples here after this slide. Many states around
14 the country, many jurisdictions, are moving the
15 entire residential customer class to time-varying
16 rates. That includes the municipal utility in Fort
17 Collins, Colorado. California is doing it for all
18 their investor-owned utilities across the state.
19 Michigan is introducing a very gentle time-of-use
20 rate in the summer for its -- one of its major
21 utilities. Maryland has a peak-time rebate for all
22 of its customers. Of course, beyond the mandatory or
23 default time-varying rates, opt-in residential time-
24 varying rates are now fairly common across the
25 country including in Vermont, I believe.

1 And then best practices for C&I rates,
2 one of our go-to example has been the Sacramento
3 Municipal Utility. They have an interesting scheme
4 of time-varying energy rates, a modest site
5 infrastructure demand charge, in the summer months a
6 demand charge that has some theoretical appeal. They
7 have been doing some reforms that make it a little
8 less perfect, in my eyes at least, but still an
9 interesting setup.

10 So we are just going to look at a few
11 of the residential examples here. The Fort Collins
12 time-of-day rate has a summer and non-summer
13 difference between how they structure their rates.
14 There is a fairly low customer charge. Crucially the
15 hours for the on-peak period are different between
16 the summer and non-summer periods. In the summer the
17 peak is 2 p.m. to 7 p.m. But then in the non-summer,
18 October to April, terminology here gets awkward, is 5
19 p.m. to 9 p.m. The evening hours instead.

20 They also have a tiered kilowatthour
21 overlay inclining block overlay. In part, that's
22 driven by the transition from an older rate design
23 that include a significant inclining block structure.

24 This is not a default or mandatory
25 rate, but another interesting residential time-

1 varying rate is the Oklahoma Gas & Electric variable
2 peak pricing rate. And what they do is for an on-
3 peak period of 2 p.m. to 7 p.m. in the summer, they
4 announce the day beforehand whether the next day is
5 going to be a low, a standard, a high, or a critical
6 peak pricing day. So it's a way to granularly send a
7 price signal, depending on actual system conditions,
8 a day in advance.

9 And then how you might structure your
10 time-varying rate can vary quite a lot depending on
11 your mix of system resources and how your system
12 actually works. In Hawaii where there is obviously a
13 very, very high penetration rate of solar, their
14 optional time-of-use rates look quite different than
15 time-of-use rates across the rest of the country.
16 Because there is so much generation available in the
17 middle of the day, that is now effectively the
18 off-peak. They call it -- oops -- they call it mid
19 day here. But obviously the lowest rate in any of
20 these time periods is 9 a.m. to 5 p.m. The on-peak
21 time is the evening hours 5 p.m. to 10 p.m. and the
22 other hours are in the middle.

23 Hawaii overall has quite high rates
24 because they are dependent on oil imports. And of
25 course, part of the issue with Hawaii is that they

1 are islands. So there is no broader regional grid to
2 share excess solar generation. So this is not my
3 prettiest chart. But the key thing I want to show
4 here is how time-of-use netting works. If you move
5 -- net metering customers who use time-of-use netting
6 can actually change their compensation structures and
7 their bills quite a lot. This is maybe an
8 exaggerated example based on the Hawaii rates that
9 are a little bit of an outlier. I think it gets our
10 points across.

11 If you assume a customer -- I have two
12 things circled here. Apologies, it's a little hard
13 to see. If you assume that customer usage is sort of
14 spread across off-peak, mid-peak and on-peak, and
15 this is a net zero customer, a net zero kilowatthour
16 customer, over the course of the month it's pretty
17 easy to have a substantial bill for a solar customer
18 under this framework. In this particular case,
19 generation is almost all in the 9 a.m. to 5 p.m. time
20 frame. And if you have the load spread in this
21 particular pattern, there is a bill of around \$80
22 which is -- you're getting beyond the debate where
23 solar customers don't contribute to the system, but
24 rather the question is how much and whether these
25 amounts are fair.

1 Under an older net-metering framework a
2 net zero customer would more typically have a bill
3 around \$11, just the customer charge. So this is a
4 pretty big difference. So when you go to time-of-use
5 rates you do still need to look at sort of the bill
6 impacts analysis for different types of customers.

7 All right. So now we will do a little
8 bit more of a deep dive on four different net-
9 metering reform examples of slightly different kinds.
10 To start with, California's NEM 2.0. It's funny,
11 they are already debating NEM 3.0. Briefing is
12 happening now, and we will see if there is a decision
13 in the next six months. Things always take longer, a
14 year.

15 So California is, you know, a very
16 sunny state. They have had significant residential
17 solar adoption under their original net-metering
18 program in the 2000s and early 2010s. In particular,
19 they had an inclining block rate design that was very
20 -- that gave major benefits to large customers that
21 installed solar. They had both the federal tax
22 credit, but also state tax credits, and then
23 originally they had a self-generation incentive
24 program for solar, but that was sort of phased out
25 during this time period.

1 By the time you get out to the mid
2 2010s the net system peak had shifted from the
3 afternoon to the late afternoon or early evening.
4 And that was due to both rooftop solar but also
5 utility-scale solar. There is the general transition
6 that the CPUC was working on from inclining block
7 rates to time-of-use rates for all residential
8 customers. And then there was new legislation.

9 So all of that came into the new NEM
10 2.0 reforms. That includes -- the framework was
11 previously quite generous. The NEM 2.0 had a modest
12 one-time interconnection charge, small minimum bill.
13 Several California utilities don't have a customer
14 charge at all. So going to a small minimum bill was
15 a significant change.

16 And then there was a requirement for
17 net-metering customers to be on a time-of-use rate.
18 And it's very complicated. They have lots of
19 different legacy time-of-use rates and then newer
20 designs.

21 Another key part of this reform is
22 non-bypassable charges would be billed based on all
23 imports from the distribution grid, and they couldn't
24 be offset based on credits. All in all, this means
25 that many customers under NEM 2.0 do have substantial

1 bills, although there's significant debate about that
2 whether it's the right amount.

3 Next we will go to South Carolina,
4 North Carolina where there was a sort of a unique
5 joint settlement across these two states between Duke
6 Energy and a number of solar, clean energy
7 environmental groups.

8 The background for that is that
9 California -- South Carolina statute that was passed
10 in 2019 that required reforms to net metering, and
11 then there is a variety of different related
12 activities in North Carolina that were sort of
13 bundled together with this. And then the rate
14 structure itself included a minimum bill of \$30.

15 I think there is a thought that that
16 won't be binding in most cases, that the bills will
17 be higher than this anyway, so it won't particularly
18 impact the customers. Includes time-of-use and
19 critical-peak pricing.

20 The way they are doing rollover and
21 crediting is a little bit complicated. The rollover
22 credit value is an avoided cost rate that's separate
23 from the actual time-of-use and critical-peak prices.
24 There is a special treatment for non-bypassable
25 charges again. And a monthly grid access fee for

1 larger facilities.

2 Crucially the time-of-use and critical-
3 peak pricing scheme is more complex than the simpler
4 time-of-use rates that California is using so far.
5 Also there is no movement generally to put all
6 customers in these jurisdictions on time-of-use rates
7 unlike in California.

8 So now we will move to sort of
9 community solar focus reforms. In Minnesota they now
10 have had a value source credit scheme for community
11 solar gardens for many years now. Took a couple
12 years to get up and running. That was based on a
13 statute passed in 2013. The subject itself required
14 consideration of several different values, but
15 there's been considerable debate about methods as
16 well as what traditional value streams to consider.

17 And the way this works is for community
18 solar gardens it's all exports. So the entire
19 generation of these assets gets credited at a
20 levelized cents per kilowatthour, dollars per
21 kilowatthour rate. And that's based on a value of
22 solar calculation that's updated annually. And it's
23 locked in. So the credit value you get in a given
24 year is the credit value you get for the rest of your
25 25-year life span.

1 Key components here. This is a
2 vertically integrated utility so it's a little bit
3 different. This is Excel in Minnesota. Avoided fuel
4 costs. Avoided O&M. Capacity. Different types of
5 capacity. Avoided environmental cost.

6 This does require the transfer of RECs
7 as part of this scheme. So this is real -- typically
8 a simple rate for the generators but involves some
9 administrative -- what scale are those? I think it's
10 up to one megawatt. There is arguments about
11 segmentation, but I think it's designed to be up to
12 one megawatt.

13 All right. And last but not least, the
14 New York VDER tariff, value distributed energy
15 resources tariff, has been part of the broader reform
16 and energy vision initiative. There is real desire
17 at the DPS for a transactive energy system and
18 smarter pricing.

19 There is a whole separate set of
20 NYSERDA programs that provide incentives to projects
21 as well as additional incentives assistance for LMI
22 projects, community solar.

23 When this started to be debated in
24 2016, 2015, there was a -- started to be a large
25 queue and large demand for community solar under the

1 programs. And the original community solar framework
2 was a fairly simple retail rate crediting scheme.
3 There is a lot of different things going on in REV
4 more generally, but importantly for this tariff, the
5 REV benefit cost frame work had been established
6 separately and influenced the credit structure.

7 So the way that the VDER tariff is set
8 up is there is a value stack, quote unquote, credit
9 structure that applies to exports for larger C&I
10 projects and community-distributed generation. And
11 the way the credit is structured is fairly complex.
12 It starts with an hourly wholesale energy rate.
13 There is a generation capacity value. There is
14 actually three different structures for the
15 generation capacity value depending on the technology
16 or the different options you want to choose. And
17 that sort of varies in complexity.

18 And then there is a delivery value
19 credit. Finally, we have gotten to a locational
20 distinction. Although I should mention that the
21 wholesale energy rate in this credit is zonal. So
22 that for the bigger utilities in New York it varies
23 from place to place. But more interestingly,
24 perhaps, the delivery value credit here -- there is
25 one lower value for the entire service territory for

1 a utility. And then there is a location-specific
2 higher value in constrained areas.

3 So the way I actually think of it there
4 is sort of a three-tier delivery value scheme in New
5 York now. There is a general credit here in VDER.
6 There is location-specific and constrained areas.
7 And once you get to an actual upgrade need, then
8 there is the non-rez alternative procurement process.

9 There is an environmental value as part
10 of the VDER structure that's based on the social cost
11 of carbon, but it's only for technologies that are
12 eligible under the RPS in exchange for their RECs.
13 And then there is a policy-based credit structure as
14 well. Originally, that was a market transition
15 credit for community DG. And it's transitioned to
16 what's called a community credit with a slightly
17 different structure.

18 I think this is projects over 250
19 kilowatts. This is more or less mandatory now. I
20 forget the actual cap on the size. It might be 5
21 megawatts. I think that's the -- 750. Okay. Yes
22 that actually makes sense. Most projects are right
23 up to the maximum size they are allowed. Yes.

24 So that's -- the other states we could
25 talk about as well. It's really the end of my

1 presentation. Some key take aways here. You can do
2 more efficient pricing. It is possible. The key
3 question is how complex can rates get without
4 confusing customers or risking adverse bill impacts.
5 Enabling stand-alone distributed generation and
6 remote crediting does seem key for access for certain
7 categories of customers.

8 The question that New York and
9 Minnesota wrestled with is are your rates sufficient
10 and fair enough to expand these programs and tariff
11 access. And then I know you asked about
12 administrative concerns for these programs. It does
13 seem to me that a more complex regulatory system than
14 the past may be necessary. But the pace of change
15 can be managed, and how complex you want to make
16 things and what time line is certainly an important
17 policy choice. So how do you manage administrative
18 costs and the pace of change.

19 So I think I'm about at my time. We
20 have a wide range of resources. I'll also mention
21 that we are doing a report for the Michigan Public
22 Service Commission that is now a draft for public
23 comment that gets into net-metering reform issues as
24 well. Happy to share that too.

25 So thank you very much.

1 MR. MARREN: Thank you, Mark. That was
2 very helpful, and I appreciate the work you've put in
3 that presentation.

4 We will now just sort of open it up for
5 questions from the crowd here. I guess I'll start
6 with the commissioners since I see that at least one
7 has turned his camera on. And then if anyone else
8 has a question, they can just put their name into the
9 chat, and we will get a queue going. And we will
10 call on you in order.

11 Chairman Roisman, I think you're
12 speaking. But I can't hear you.

13 MR. ROISMAN: You hear me now?

14 MR. MARREN: Yes. Now we can. Thank
15 you, sir.

16 MR. ROISMAN: Okay. Sorry. Thank you,
17 Mark. That was very helpful. And we appreciate you
18 taking the time to put it together.

19 One question that I had for you had to
20 do with the incentive side of all of this. I mean as
21 I understood your presentation pricing has two goals.
22 One is to -- is to make sure that everybody pays
23 their fair share. And the other is to use pricing to
24 move people to go in one direction versus a different
25 direction.

1 And I'm wondering whether any states or
2 RAP or anybody, has done any kind of marketing
3 analysis to determine what kind of incentives or
4 disincentives are needed to move the needle? Or are
5 we just sort of assuming that if we give people more
6 money for something, they are more likely to do it,
7 and if we give them less money for something, they
8 are more likely to not do it?

9 MR. LeBEL: So I think for the most
10 part, -- well okay. So the general interaction
11 between net metering and the rate design and the
12 other various incentive value streams that a
13 developer or customers can get, it gets fairly
14 complicated. So it's actually parsing it all out is
15 not a trivial task between the federal tax credit,
16 state tax credits, state incentive programs, and then
17 the net-metering compensation. That's fairly, fairly
18 complicated.

19 I would say there's been a general
20 assumption that if you're more generous, then you get
21 more demand. You know, I think that the incentive
22 programs have had -- there's been some
23 experimentation on this front. You know,
24 Massachusetts has moved between from the SREC program
25 to the Smart program, has moved to a significantly

1 different framework. It is more procurement based,
2 particularly for the larger projects. And that has
3 its pluses and minuses just like anything else.

4 But your -- you can shoot for megawatt
5 targets sort of independently from your compensation
6 levels assuming your compensation levels are generous
7 enough to get you your numbers.

8 I mean similarly the REC program in
9 Rhode Island is more procurement based as well. We
10 didn't talk about this a lot in the presentation in
11 large part because those procurement programs,
12 incentive programs, are typically discussed
13 separately from the net-metering rate design
14 question. But it all certainly comes together.

15 Maybe that's not a satisfactory answer,
16 but sort of where we are.

17 MR. ROISMAN: Okay. Thank you.
18 Candidly, what I was hoping is that somebody had
19 taken a look. The State of Vermont has changed its
20 incentives for net metering over the last two or
21 three years. We hear a lot about every time we get
22 ready to change it that we are going to kill solar.
23 And but we don't -- we haven't seen any sort of well-
24 designed studies to find out how much did our change
25 in pricing impact at least that one goal, the goal of

1 getting more distributed generation in Vermont.

2 So I wondered had any state, I assume
3 other states have also been changing their incentive
4 programs. Has anybody tried to look at at least the
5 difference before and after the changes were made to
6 see if there was noticeable differences in conduct?

7 MR. LeBEL: So I asked him for this,
8 but I haven't gotten a response yet. But Dr. Faruqui
9 from the Brattle Group and his colleagues have tried
10 to do a national study of how changes in compensation
11 levels have led to changes in adoption. And I --
12 they reference -- I think it was a private study that
13 they haven't published yet, but they reference it in
14 another article. And I tried to ask them for, you
15 know, it's one of those things where they footnote
16 publication forthcoming. Ask authors for reference.
17 And, you know, they may or may not get around to
18 giving you the underlying study.

19 But they found a -- a modest but
20 noticeable change from, you know, lower compensation
21 levels led to lower adoption levels. You know, I
22 think when an individual state is doing this, there
23 is so many other things that are changing at the same
24 time, it's a complicated thing to estimate
25 econometrically.

1 But, yeah. That's the one rigorous
2 study that I have been aware of. Obviously there is
3 more. There is the Nevada experience where everyone
4 sort of left simultaneously. You can argue about
5 whether that's a one off, a unique case. But --

6 MR. ROISMAN: Thank you.

7 MR. LeBEL: Wisconsin and other states
8 want to know this too. We have gotten this question
9 more than once now.

10 MR. ALLEN: Margaret, are you going to
11 ask a question?

12 MS. CHENEY: Yeah. Thanks. And I did
13 see there was a comment in the chat about the fact
14 that our system alone collects data and may answer
15 that question.

16 But more generally a question to Mark.
17 So there have been a number of costs that I, you
18 know, hear about, if you think of costs more
19 generally such as complexity. The complexity not
20 just for the customer, but potentially needing a more
21 complex regulatory system, and perhaps unintended
22 costs such as we saw on that sample bill where the
23 customer actually paid more.

24 So if you put in the basket all those
25 kinds of costs from doing time-of-use or more complex

1 compensation system, what would you put in the basket
2 of benefits to changing to such a system? What are
3 the benefits given the costs? And those costs I
4 don't mean just monetary.

5 MR. LeBEL: Yeah. Well I mean it's
6 funny that you refer to the Hawaii example as an
7 unintended consequence. I think many people do
8 intend to collect more money from solar customers
9 when they make these changes. And I think that's a
10 legitimate part of the debate. What is the fair
11 number as these things evolve.

12 So, you know, as the solar customers --
13 as it becomes more common, and there is sort of a
14 declining -- the declining marginal benefits of new
15 solar I think are two things that -- that really
16 means that typical, historical, traditional whatever
17 you want to call the monthly retail rate net-metering
18 system, it really starts to break down for those two
19 reasons. You have to find new ways to share a whole
20 bunch of different costs.

21 You know, we have some other ideas on
22 this front. And it's not the end of the world if
23 solar customers end up having a slightly higher bill
24 than they did under, you know, traditional net
25 metering. You do want to look at how you change

1 adoption levels and how overall fairness of the
2 system.

3 But another idea that we have talked
4 about for several years now is you could start to pay
5 for distribution system costs, not just on imports
6 from the grid, but also on exports to the grid that a
7 customer has to pay for putting energy out into the
8 system. And there is a fairly straightforward
9 rationale for that. They are benefiting from the
10 existence of the distribution grid to be available
11 for them to put their energy out there. That's
12 another way you could possibly spread non-bypassable
13 costs.

14 So coming up with ways that are
15 relatively efficient and fair to spread all of these
16 costs is important, and it should be done
17 intentionally and not unintentionally and can be
18 debated.

19 I think that in terms of the
20 complexity, there is so many new opportunities
21 because of technology. And you can -- there are plus
22 and minuses to that. The old system where you just
23 assume that the vertically-integrated utility had all
24 the resources to fire up at the snap of their fingers
25 had a lot of virtues to it, but we are clearly moving

1 to a different world. And if we are going to do this
2 grid of the future, how do you tie it altogether?

3 I think that you just can't get caught
4 in the wrong corner. That if you try to move to the
5 grid of the future, without using these -- without
6 monitoring and using these assets as a resource, you
7 could end up with the worst of both worlds is the
8 concern, I think. That you have all these sort of
9 generation assets at scale, that are duplicative in
10 some sense.

11 So I think all these states are
12 wrestling with that question of how do you sort of
13 start to take advantage of these new technologies
14 without overwhelming yourself with administrative
15 costs. That was probably too long an answer, but
16 hopefully it's --

17 MS. CHENEY: That's good. I had one
18 more quick question. Just a yes or no, I guess, and
19 that is in terms of complexity. You know, we have so
20 many different kinds of utilities in Vermont. And we
21 don't have universal advanced metering
22 infrastructure. Is AMI required for this kind of
23 compensation structure?

24 MR. LeBEL: So I think there are plenty
25 of time-of-use meters that are out there besides AMI.

1 So, you know, whether it's worth paying for those
2 separately is a question and who pays for them. But
3 there is plenty of AMR time-of-use meters out there
4 if that's what some utilities have right now.

5 You know, AMI is helpful for so many
6 things. I mean New England has been struggling with
7 this. I mean I live in Massachusetts. The vast,
8 vast, vast majority of people do not have AMI. There
9 is a couple munis that have AMI, and that's it. So,
10 you know, without AMI you're really looking at some
11 of the simpler versions here. You know, monthly
12 netting, or time-of-use netting, or what's called
13 inflow/outflow. But those are sort of fairly simple
14 metering setups that you can do with AMR meters. So.

15 MS. CHENEY: Thank you.

16 MR. ALLEN: Mark LeBel, I have just a
17 couple questions, if I could. One's fairly specific,
18 and the other one's kind of broader.

19 The first question really relates to
20 the New York example, and you know, essentially
21 they're geographically differentiating the rates.
22 Part one of my question is how specific or how -- how
23 detailed of an area can they get in that
24 differentiation?

25 And the second part of that is how much

1 or how far does the technology allow us to go in
2 thinking in terms of detailed geographic, you know,
3 application, differentiation of rates.

4 MR. LeBEL: So in terms of who gets the
5 higher credit, I think they can do it circuit by
6 circuit. So if it's a circuit that has a projected
7 constraint in the next 10 years, any VDER tariff
8 project that goes on that circuit gets the extra
9 credit. You know, the way that they have done the
10 value -- the price distinctions for the credit so far
11 has been extremely simplistic. So they are sort of
12 applying a very simple, you know, lower and higher
13 pricing value. That doesn't necessarily reflect, you
14 know, differences between constrained areas and what
15 the upgrade costs might be.

16 So there is -- that's the LSRV, it's
17 called the location-specific resource value, I think.

18 MS. SCHILLING: There was a
19 clarification in the chat on that. Mr. Moore. James
20 Moore, if you want to speak up. The chat is not on
21 the record.

22 MR. MOORE: Yeah. Sorry. Just trying
23 to be helpful. Just wanted it to be really clear,
24 the VDER pricing is not circuit level pricing in New
25 York. The main drivers on that is a split, you know,

1 you're asking kind of how they have segmented it.
2 Commissioner Allen, they have split up New York into
3 seven main load zones, all of which probably have
4 populations larger than Vermont's. And, you know,
5 Long Island, the city, yeah, and then they kind of
6 slice up western New York.

7 Kyle might be able to speak to that as
8 well.

9 MR. LeBEL: So that's true of the
10 energy pricing. The DRV and LSRV is more granular
11 than that, I believe.

12 MR. ALLEN: Okay. Well thanks for
13 providing those two different lenses on that. My --
14 sorry.

15 MR. MOORE: Sorry, Commissioner. The
16 other point there to remember. Those VDER projects
17 in New York are also at a radically different scale
18 than, you know, this proceeding is focused on net-
19 metering projects. All of Vermont's net-metering
20 projects are smaller than the VDER projects being
21 built in New York. And the VDER projects in New York
22 are set up differently than, you know, net-metered
23 projects.

24 MR. ALLEN: Thanks, James Moore. Let
25 me get to the second question. And that, you know, I

1 apologize if it overlaps a little bit with either
2 Commissioner Cheney or Commissioner Roisman's
3 questions. I got knocked off for a little bit, so I
4 had to scramble.

5 But my question really relates to
6 question of why and how to kind of -- why relative to
7 the other kind of examples you've given. It seems to
8 me that your presentation generally was pointing in
9 the direction of trending toward a more cost-based
10 pricing, forward-looking avoidable cost-based pricing
11 is probably an appropriate thing. And you provided a
12 number of examples of states that I think seem to be
13 trying to kind of move in that direction.

14 And I can think of, you know, a half
15 dozen reasons that they are -- they might be moving,
16 and it sounds like New York is, you know, going
17 through several iterations and is moving at some
18 pace.

19 But my question is really kind of why
20 -- how do they consider kind of the countervailing
21 concerns associated with economic development in
22 their kind of consideration of the path forward?

23 MR. LeBEL: Yeah. I mean I -- so in
24 New York when the VDER construct first started to be
25 debated there was a period of time where it wasn't

1 clear which types of projects would get net-metering
2 reform. And what would happen at a fairly early
3 stage is they sort of segmented off. Said we are not
4 going to do very much on the small end.

5 What they saw a lot of is a lot of
6 applications from bigger projects to be under the
7 different net-metering umbrellas, particularly
8 community solar projects that got -- under the older
9 framework, they got full residential retail rate
10 credit value.

11 So they were looking at megawatts and
12 megawatts and megawatts of these projects that were
13 slated to come online. And they wanted a way to both
14 sort of figure out a fair and efficient compensation
15 structure for that to sort of move away from the
16 residential retail rate for many of those projects.
17 But they also had a real eye to not totally
18 undercutting that market.

19 So the market transition credit that
20 was originally part of the VDER tariff for community
21 solar projects was designed to be a step down from
22 the full retail -- residential retail rate that was
23 originally what the community solar projects got. So
24 there is sort of a 90 percent, 80 percent.

25 They had an intentional step down built

1 into the market transition credit. And then NYSERDA
2 also helped back fill and ensure that the market, you
3 know, still worked. So there was a sort of a multi-
4 prong effort on the community solar piece here to
5 ensure that moving to this smarter pricing system
6 didn't kill the market for community solar. I think
7 they view what they have done as a success. There's
8 been a ton of VDER projects built over the last few
9 years.

10 I'm sure there are developers in the
11 market who may be on the call today or may be willing
12 to come speak to you about their experience with
13 that.

14 MR. ALLEN: Thanks.

15 MS. SCHILLING: All right. So seems
16 like maybe the commissioners have had an opportunity
17 to ask their questions.

18 So now I'll turn to the questions and
19 comments we have gotten in the chat. And there have
20 been quite a few. So I'll start with James Moore.
21 You had a question about behavior change related to
22 time-of-use rates.

23 MR. MOORE: Yes. Thank you. I wanted
24 to kind of add on to Commissioner Roisman's question.
25 You know, the -- there are a lot of pretty

1 complicated time-of-use schemes out there and that
2 you shared. And I'm really curious, you know, is the
3 juice worth the squeeze? Like, do we actually see
4 time-of-use changing behavior on the demand side
5 dramatically? And maybe at what level of time-of-use
6 changes need to actually, you know, what spread in
7 prices do you actually need to make those changes?

8 And then the final kind of add on that
9 I would ask is, which customers have the ability to
10 make those changes and which ones don't? So who is
11 getting the short end of the stick? Because they get
12 home in the evening and they don't have the ability
13 to use electricity late at night because they have
14 got to cook food for the family, and that's when they
15 need the electricity or whatever.

16 MR. LeBEL: Thanks, James. So this is
17 another set of questions that actually Dr. Faruqui
18 and Brattle Group has looked a lot at over the decade
19 or so. They have a whole data base and tried to do
20 some econometric estimates of the elasticity and
21 responsiveness of customers.

22 They find some things that are not
23 going to be surprising. The bigger the differential
24 the more customer response you get. If you have
25 enabling technology customers can respond more.

1 So I think that some of that
2 information is out there. You know, I think that
3 thinking intelligently about who gets what kinds of
4 time-varying pricing is important. One idea I like,
5 that's part of our Michigan draft report, is you
6 could think about segmenting the residential customer
7 class into two. You can have a basic residential sub
8 class and an advanced residential sub class. The
9 basic sub class can include smaller users and low-
10 income users. It can stay on a rate that's much like
11 today.

12 The advanced rates could be all the
13 customers you think are price responsive. Everyone
14 with DG, storage, EVs, large users who should have
15 shiftable load or economic resources. You can try to
16 push that segment of advanced residential customers
17 into more granular time-varying rates more quickly.
18 So you know, I think there is, you know, absolutely
19 concerns from low-income advocates, consumer
20 advocates, that some customers will be disadvantaged
21 by time-of-use rates or other time-varying rates.

22 Peak-time rebates are another good way
23 of addressing that question. So I think there is a
24 number of answers to that set of issues though.

25 MS. SCHILLING: Okay. The next person

1 who stated that they had questions was Kyle Wallace
2 with Sunrun. Kyle?

3 MR. WALLACE: Thanks, Mark, for your
4 presentation. I just had a couple questions.

5 The first was kind of a follow up to
6 James's question specifically on the Oklahoma Gas &
7 Electric rate schedule with the kind of day ahead
8 signal.

9 Is there any data on if customers
10 actually respond to those type of signals on a day-
11 ahead basis?

12 MR. LeBEL: I have no idea. But it was
13 interesting to ask Oklahoma Gas & Electric about. So
14 --

15 MR. WALLACE: Okay. And then another
16 question was you had made a comment about, you know,
17 the diminishing value of solar for the system is the
18 peak shifts.

19 And I mean, just my question is, about
20 when you have storage, you know, under the Hawaii
21 time-of-use example, you know, if you shifted a lot
22 of that off-peak usage to match, you know, during
23 peak hours, you know, that customer could still have
24 a really low bill.

25 But under the time-of-use rates would

1 you see that as a fair result? Or, you know, how
2 does storage kind of change these conversations?

3 MR. LeBEL: So storage is absolutely a
4 game changer, affordable storage. So I agree about
5 that. So I think that there are, yes, obviously if
6 customers install solar plus storage and, you know,
7 zero out their bill in a different way than
8 traditional net-metering solar customers, there are
9 some interesting questions there.

10 One, you know, I mentioned this
11 earlier, and this is in the Michigan draft report.
12 The idea of a distribution flow charge that if you're
13 a solar plus storage customer part of your payment
14 can be based on both imports and exports to the grid.
15 So if you're using the grid, and there is very little
16 argument about that, then you can have a billing
17 determinant that reflects that.

18 So I think there is other innovations.
19 You know, there are pros and cons to everything. I
20 think we are open to a small demand charge to reflect
21 line transformer costs at some point, that that could
22 be a relatively efficient way of handling a couple
23 different concerns. But we do think that should be
24 at a pretty low level, around a dollar a kilowatt.
25 Obviously depends on the economic analysis and cost

1 numbers for a given jurisdiction.

2 But, you know, I think that you could
3 have -- if enough customers adopt solar plus storage,
4 I think you need to keep iterating and keep
5 innovating so that the pricing schemes are more
6 efficient. That, you know, at some point we could
7 get to real-time pricing for some residential
8 customers. And that's not something we would
9 recommend right away. It would take a lot of time.
10 But you do have to think about how you need to keep
11 adjusting these rate schemes to ensure that they are
12 efficient and fair. So.

13 MS. SCHILLING: All right. Let's see.
14 I think the next person with a question was Annette
15 Smith. Ms. Smith?

16 MS. SMITH: Annette Smith with
17 Vermonters for a Clean Environment. I'm wondering if
18 other states factor in land use such as Vermont does
19 with preferred siting.

20 MR. LeBEL: Thanks, Annette. I think
21 the way Vermont does this is fairly unique. I think
22 -- so other states have incorporated this, but it's
23 on the incentive program side. Massachusetts now has
24 a complicated system of adders and subtracters within
25 the small program, which is the incentive program.

1 Which -- I haven't looked at in a couple years, but
2 had -- if you were a big solar project and you wanted
3 to cut down a lot of forests, they would penalize
4 you. So that is built into other states' overall
5 programs.

6 But I think the way Vermont does it
7 within net metering is fairly unique.

8 MS. SMITH: Do other states have a
9 separate process for addressing the land use issues
10 of renewable energy siting?

11 MR. LeBEL: There is always an
12 interaction between sort of state and local control
13 over the land use questions and what happens at the
14 Public Utility Commissions. You know, obviously if
15 there is land that's protected, as a state park or
16 anything else, then no one can touch it. You know, I
17 think that a number of states have sort of limited
18 some local jurisdictions' ability to what could be
19 perceived as unfairly limiting solar development in
20 certain ways and sort of put a state overlay on local
21 jurisdiction.

22 But in many places, these solar
23 placements are hotly debated local items. I know my
24 town has put -- thinking about putting a solar
25 installation near our town transfer station. And

1 there have been many, long, multi-hour meetings
2 addressing citizen concerns about this project. So
3 you know, there are trade-offs there. If you take
4 away local control, people get unhappy. But --

5 MS. SMITH: So in most other states
6 it's done at the local level, or at least part of it.
7 But are there any state level reviews like Vermont
8 has?

9 MR. LeBEL: So I mean again, there is a
10 complicated overlay. That Massachusetts, you know,
11 12 or 13 years ago, the original Green Communities
12 Act said that towns couldn't unfairly restrict solar
13 installations and provided some benefits if you
14 adopted a certain ordinances to enable solar. But
15 then so that's sort of a state overlay on an
16 inherently local process.

17 You know, whether Public Utility
18 Commissions have tried to get involved, I think they
19 generally have not. But as I said, the incentive
20 program in Massachusetts, which is not run by the
21 Department of Public Utilities, it's run by the
22 Department of Energy Resources, does have this sort
23 of greenfield/brownfield set of incentives and
24 subtracters as part of the incentive program.

25 MS. SMITH: Excuse me. I'm familiar

1 with the Massachusetts system. And I'm just
2 wondering, for instance, New Hampshire or Maine, if
3 they are doing that mostly -- the siting through
4 local zoning, what role does the Public Utility
5 Commission play in those states?

6 MR. LeBEL: Yeah. I'm not aware of a
7 particular role for the Public Utility Commission on
8 those sort of siting questions in those states. But
9 it's possible that there is one that I'm not aware
10 of. So.

11 MS. SCHILLING: Okay. So I'm not
12 seeing any other specific questions in the chat.
13 There were a few comments. I don't know if anyone
14 wants to speak up and state their comments on the
15 record? If so, they could do so now. Also if anyone
16 else has any questions, you could either type into
17 the chat that you have a question, or you could turn
18 your mic on now.

19 So last opportunity to ask Mark LeBel
20 questions or make comments. Commissioner Allen.

21 MR. ALLEN: Yeah. Mark LeBel, one
22 other question that occurs to me. I mean you
23 emphasize the kind of importance of kind of
24 sensitivity to the complexity, I think, of the rates
25 that are introduced to end users as we move forward.

1 But I wonder if there is a role for essentially the
2 developer or the middle player in helping to provide
3 that simplicity as part of -- helping to manage
4 customer concerns, over complexity and managing the
5 complexity on the back end.

6 MR. LeBEL: Absolutely. I think that's
7 going to be an increasingly important thing going
8 forward. You know, particularly once you have
9 storage is installed for a lot of people. That said,
10 I think people still want to have control over when
11 they turn their lights on and off and when they hit
12 go on their dryer. And that could have inadvertent
13 impacts on their bills under certain rate structures.

14 So I still think there is going to be
15 -- people don't necessarily want to hand over every
16 aspect of their lives to their aggregator. So I
17 think there has to be a little bit of a balance
18 there, unfortunately, if that's a theme to my
19 answers.

20 MR. ALLEN: Thanks.

21 MS. SCHILLING: Okay. I'm not seeing
22 any other questions or commenters. Mark, do you have
23 any final thoughts?

24 MR. LeBEL: No. Thank you for the
25 invitation and for this great discussion.

1 MS. SCHILLING: Thank you.

2 MR. MARREN: Yes. Thank you very much,
3 Mark. Our next presenter is REV. Renewable Energy
4 Vermont. Are all of your presenters ready to go?
5 And which one of you should I make a presenter?

6 MS. SCHILLING: I just made M.
7 McDermott the presenter.

8 MR. MARREN: Okay. Great.

9 MS. HAYDEN: Thanks, Jake. It's Kim
10 Hayden. I will be leading off. This is a REV
11 presentation, and my assistant has been nice enough
12 to help with the slide, trying to be efficient with
13 the slides on both sets of slide decks. I'll be
14 presenting first, and then Jim Merriam, James Moore
15 and Peter Sterling the new executive director will
16 present the second slide deck.

17 And I'm not going to speak to all the
18 detail in my slides because there is a lot of detail.
19 The way I generally do these is to include the
20 citations and full text of statutes, et cetera, so --
21 just so that we have a complete record.

22 My presentation will focus on the
23 climate and greenhouse gas reduction, now
24 requirements, under the Global Warming Solutions Act
25 framework under Title 10 section 578 and how that

1 relates to the commission's consideration of the net-
2 metering program more generally. Next slide.

3 Maureen?

4 So the first question that the
5 commission asked in its agenda was how can the
6 commission improve the current net-metering
7 compensation structure? And I think the short answer
8 from a greenhouse gas reduction perspective is the
9 PUC should expressly account for greenhouse gas
10 reduction mandates that apply to the electric sector
11 in its consideration of compensation, and that
12 compensation should achieve the immediate and
13 accelerated deployment of new net-metering climate
14 mitigation projects in order to comply with the
15 mandates of the United Nations Framework Convention
16 on Climate Change, the Paris Agreement, the Global
17 Warming Solutions Act, Section 8010 of Title 30 the
18 net-metering statute, Vermont state energy policy
19 under section 202(a) and state Integrated Resource
20 Planning or procurement requirements under section
21 218(c). Next slide.

22 So the following statutes are relevant
23 to the commission's jurisdiction to setting
24 net-metering compensation. And on the next slide I
25 speak more specifically to those that relate to

1 greenhouse gas reduction requirements. The state
2 energy policy section 202(a), net metering section
3 8010, the Integrated Resource Planning statute
4 section 218(c), and section 578 of Title 10 now all
5 require compliance with the Global Warming Solutions
6 Act mandates under 10 V.S.A. section 578. Next
7 slide.

8 So the Global Warming Solutions Act of
9 2020 really was a game changer. It moved our
10 greenhouse gas reduction requirements from goals or
11 targets to mandatory requirements and also requires
12 that greenhouse gas emissions be accounted for
13 geographical -- emissions outside of the geographical
14 boundaries of the state and those within the state
15 that are caused by electricity consumption within
16 Vermont. The mandated targets are also very
17 aggressive. 26 percent by 2025. 40 percent by 2030.
18 So these are very immediate, near-term mandates that
19 Vermont must meet in the electricity sector as well
20 as the thermal and transportation sector. Next
21 slide.

22 State energy policy under section
23 202(a). There are three stated policies all of which
24 expressly require utilization of environmentally
25 sound generation sources, and the third stated policy

1 specifically requires that energy service needs, in
2 this case electricity needs, will achieve the
3 greenhouse gas reductions requirements under section
4 578 of the Global Warming Solutions Act. Next slide.

5 The greenhouse gas reductions
6 requirements of section 578 are also the -- a
7 touchstone of the net-metering statute in the section
8 prescribing the rules that the PUC shall establish
9 for the net-metering program. Section 8010 (c) (1)A)
10 specifically requires that the rules advance the
11 goals and total renewable targets of 10 V.S.A.
12 section 578. Next slide.

13 Vermont's procurement statute -- it's
14 more than procurement, but in this case we are
15 talking about procurement, the least-cost integrated
16 planning statute section 218(c) of Title 10 also
17 specifically requires that the commission consider
18 the state's progress in meeting its greenhouse gas
19 reduction goals and requires that procurements --
20 that any plan for procurements have the lowest
21 present value life-cycle cost including environmental
22 and economic costs. And importantly, economic costs
23 are not simply those with the lowest price or
24 cheapest bills. The economic costs, directed by the
25 legislature, are those that consider the state's

1 progress in meeting our greenhouse gas reduction
2 goals now mandates, and the value and financial risks
3 associated with greenhouse gas emissions from various
4 power sources.

5 The societal test the PUC held in
6 Docket 7081, should remain the principal touchstone
7 in project evaluation and selection. Next slide.

8 So the Global Warming Solutions Act
9 expressly requires that greenhouse gas reduction
10 mechanisms comply with the Paris agreement, and this
11 is set forth in section 10 V.S.A. section 578(a). It
12 also refers to the state's membership in the United
13 States Climate Alliance, which is the 2017 alliance
14 that was signed by states that essentially when Trump
15 decided to exit the Paris agreement in 2017, a number
16 -- I think it's 46 states -- joined together under
17 the United States Climate Alliance and pledged to
18 implement the policies to achieve the objectives of
19 the 2016 Paris agreement. Next slide.

20 Climate mitigation mechanisms under the
21 Paris agreement and the Global Warming Solutions Act
22 require under section 4.13 of the Paris agreement,
23 that mitigation mechanisms which are, you know, in
24 this case renewable energy projects or potentially
25 offset credit mechanisms, shall promote environmental

1 integrity, transparency and accuracy. And in
2 accordance with the guidance adopted by the United
3 Nations' framework convention on climate change,
4 which was adopted in the early 90's, the first
5 international convention on climate. Next slide.

6 Importantly, section 6.4 of the Paris
7 agreement requires that mitigation mechanisms must
8 deliver overall mitigation in global emissions. That
9 is, any project, any renewable energy project offset
10 credit mechanism, must actually achieve global
11 emission reductions. Next slide.

12 The UNFCCC, United Nations Framework,
13 requires mitigation projects and offsets to
14 demonstrate additionality. And the Kyoto protocol
15 clarifies that additionality means that the energy
16 resources must result in reductions in emissions that
17 are additional to any that would occur in the absence
18 of a project. Next slide.

19 Google, I think, explains additionality
20 quite well. It is a tricky concept. But they are, I
21 think, a very apt example. It discusses the
22 situation where you have a power company with the
23 wind farm built many years ago that wants to sell
24 some credits to Google thinking, you know, they can
25 earn some additional dollars to get the offset

1 credits. Such a transaction would not be additional.
2 As Google explains, we would be handing money over
3 for green electricity but in the grand scheme,
4 nothing would change. The carbon output of the whole
5 system would be the same, and no new renewable energy
6 would be built. Next slide.

7 So a lot of Vermont's electricity
8 portfolio today resembles the example that is
9 described in the Google additionality fact sheet. We
10 have a lot of old hydro resources and ineligible
11 carbon offsets from Hydro-Quebec, and it's not just
12 Hydro-Quebec. There are vintage -- old vintage
13 resources that are being used through Vermont's REC
14 arbitrage practices to offset, you know, we are
15 selling our class I RECs out of state and offsetting
16 with Class II and Hydro-Quebec attributes to meet our
17 RPS requirements. But that practice -- and making a
18 lot of money, by the way. A dollar REC from
19 Hydro-Quebec could be used in placement of a 27 REC
20 from Kingdom Wind. And this was the example given by
21 the Department of Public Service in a report to the
22 legislature in 2020. That doesn't mean that this
23 practice is consistent with the Paris Accord
24 requirements or the UNFCCC. Next slide.

25 Additionality is not only essential for

1 offset credits. It's the fundamental -- it's
2 fundamental to the very definition of an offset. We
3 saw in terms of Vermont practices in the most recent
4 renewable energy standard compliance filings GMP
5 reported 1.7 million megawatthour hours of carbon
6 offsets acquired from Hydro-Quebec. Again, these old
7 hydro attributes and offsets have no additionality,
8 and therefore, no environmental integrity, and fail
9 to conform with the UNFCCC, the Paris agreement, and
10 the Global Warming Solutions Act. Next slide.

11 New Hampshire site evaluation committee
12 when it was looking at the Northern Pass project, and
13 which by the way denied that project, did
14 specifically address the question of additionality
15 and incremental resources. Counsel for the public
16 there expressed concerns that savings -- greenhouse
17 gas reduction savings could be realized only if
18 incremental clean energy displaced fossil fuel
19 generation. The commission -- the council agreed.
20 And in that case, Hydro-Quebec imports would not
21 result in any actual greenhouse gas emission
22 reductions because they would not be displacing any
23 fossil fuel resources. Next slide.

24 And to the extent that our Hydro-Quebec
25 imports and Hydro-Quebec carbon offsets that are

1 being used for Tier I come from newer dams, they
2 don't move the needle on greenhouse gas reductions.
3 A research study, which included a researcher from
4 Hydro-Quebec in 2012, looked specifically at the
5 carbon. And I'm using that broadly to include
6 methane emissions from Hydro-Quebec's Eastmain one
7 reservoir which flooded 380 square miles in 2006.
8 And in the very first year of operations the
9 reservoir emitted 77 percent more carbon than a
10 natural gas plant. Next slide.

11 And I guess I would add with respect to
12 that, that given our very immediate term carbon
13 reduction requirements now mandated by the Global
14 Warming Solutions Act of 25 percent by 2025 and 40
15 percent by 2030, those kind of resources that have
16 higher emitting carbon are simply not going to
17 qualify and meet the requirements of the reduction
18 mandates. I added this slide only because in the
19 last workshop there was a lot of discussion about
20 impact to resources associated with renewable energy
21 and net metering in particular. And, you know, these
22 resources for these large mega dams permanently
23 eliminate significant natural resources. Next slide.

24 New net-metering systems provide
25 additionality, environmental integrity, and reduce

1 greenhouse gas emissions now. Delay -- when the
2 legislature enacted the Global Warming Solutions Act
3 it made specific findings, one of which was that
4 delay in the deployment of climate mitigation will
5 increase the cost of decarbonization and result in
6 significant economic damage to Vermont. And that's
7 section 2.3 of the Global Warming Solutions Act.
8 Rather than pressing the brakes harder, we should be
9 hitting the net-metering accelerator. I mean the
10 question is what are we really trying to fix here
11 with modifying net-metering compensation?

12 According to the Department's Annual
13 Energy Report, 2021, to the legislature, which
14 reported on 2019 results, net metering represented
15 only about 1 percent of retail electric sales in
16 Vermont. Vermont has some of the lowest electric
17 retail prices in New England. And those have
18 remained largely flat between 2014 and '20, the same
19 period during which the department reported
20 relatively rapid increase in net metering. Next
21 slide.

22 I think the plan of action for the
23 commission, given the very dire and immediate need to
24 clean up the electricity sector which will be used to
25 electrify the thermal and transportation sectors, is

1 that we need to change Rule 5.100 to accelerate net
2 metering now. And that a very important
3 consideration for the commission is, in any decision,
4 will this reduce -- will any decision reduce
5 greenhouse gas emission reductions and help us meet
6 these very near-term mandates, or will it become an
7 obstacle? Thank you.

8 MR. MOORE: Maybe question for Kate.
9 Would you prefer that we pause so that folks can ask
10 Ms. Hayden questions, or should REV kind of continue?
11 The next deck is shared by a few presenters. And
12 then take questions at the end.

13 MS. HAYDEN: If I may, Jake, my
14 preference would be that we -- because we did
15 coordinate our presentations -- really as a kind of
16 single one but in two parts, that we wait until the
17 end.

18 MR. MARREN: I think that's how we had
19 the agenda, so if that's how you prefer, that's fine.

20 MR. MOORE: Great. Thanks. So I'm
21 going to start with the first five or six slides and
22 then hand it over to Jim Merriam who will hand it
23 over to Peter Sterling. Let's go ahead to the first
24 slide please.

25 And first I just want to say thank you

1 to the commissioners. You know, we appreciate the
2 opportunity to be part of this discussion as we look
3 at Rule 5.100. In that context we wanted to state
4 kind of up front the principles that we as REV
5 collectively bringing to this conversation. And the
6 first is that it feels like over the past few years
7 at least there's been an increasing focus on rates
8 and a move away from what Ms. Hayden pointed out is
9 the actual kind of statutory principles of a full
10 societal accounting related to net metering. And
11 it's all about kind of rate accounting, and we think
12 that it's really important to keep that full societal
13 calculus in mind, and recognize that that full
14 societal calculus is changing with every single
15 scientific report that's coming out on climate. Our
16 societal calculus needs to change, and that right now
17 our societal calculus in the regulatory space is way
18 behind our scientific requirements for a sustainable
19 future.

20 I really appreciate that RAP kind of
21 presented first and laid out a lot of what's going on
22 out there primarily with larger projects, but then
23 also in some places, you know, ratepayer wide, it
24 changes. I think as we look at net metering, keeping
25 it simple is really critical. For -- and we will

1 touch on this in a later slide.

2 We would encourage that all changes to
3 net-metering compensation should be geared towards
4 expansion of the program. That the program -- and
5 you'll see this in some slides later on -- has seen
6 dramatic reduction in applications, rather severe,
7 and that we are heading in the wrong direction. We
8 have the opportunity to turn that ship around.

9 There have been tremendous number of
10 studies from larger jurisdictions, whether it's
11 California or Massachusetts or Connecticut, or and I
12 think Kyle's going to touch on some of those, but
13 there is lots of good learnings out there, so it's
14 great for Vermont not to try and figure it out on our
15 own.

16 We think there may be opportunities to
17 use net metering to kind of unlock new benefits
18 moving forward and are excited to talk about that.
19 And we want to celebrate that net metering is a
20 proven, successful program that provides a really
21 meaningful way for all Vermonsters to directly reduce
22 greenhouse gas emissions, save on their electric
23 bills, create broader economic benefits for the
24 entire State of Vermont.

25 And next slide I'm going to actually

1 pull out even a little more and start with a comment
2 from the chair of the Intergovernmental Panel on
3 Climate Change where the -- throughout this cycle we
4 have been telling the world that science has spoken,
5 and now it's up to the policymakers for action. And
6 I think the time line of that action is really,
7 really critical. You know, when Vermont first
8 started talking about reducing greenhouse gas
9 emissions, and the global community first started
10 talking about reducing greenhouse gas emissions, that
11 was 1990.

12 And at that point the kind of end of
13 the change period of 2050 was 60 years away. So a
14 really long period of time, and everyone kind of drew
15 these charts of change increasing exponentially over
16 time. Now here we are 2021. And we have failed as a
17 global community at -- certainly as a national
18 community in the U.S., and certainly as a state, to
19 actually reduce our greenhouse gas emissions. So
20 more than half of that period is behind us.

21 So the idea -- and now the science says
22 we need to move faster. So the idea that we can make
23 small changes and incremental tweaks and make bigger
24 changes in 2040 or 2050 is blind to the scientific
25 reality. What we need is dramatic reductions in

1 greenhouse gas pollution over the next 5 and 10
2 years. And that context is really important. You
3 know, Ms. Hayden was speaking to, you know, you've
4 got these, oh, but they are new reservoirs. There is
5 new Hydro-Quebec power. Those new reservoirs behave
6 like coal plants when they are first built. And they
7 don't start behaving like a natural gas plant from a
8 pollution standard for a full 10 years into their
9 life. And you don't really start seeing benefits
10 compared to natural gas until decades into their
11 life.

12 We don't have the ability to pump in
13 additional CO2 and methane over the next two decades
14 planning on a hundred year life cycle of a new
15 reservoir. The climate science does not support
16 that. And Vermonters are already bearing the cost of
17 climate change. And we need to factor that in to our
18 considerations.

19 And net metering is not, you know, a
20 silver bullet by any stretch. REV would never say
21 that. I would never say that. But it's one element
22 that's working, and we need an all-of-the-above type
23 response to address our moral obligations to mitigate
24 our climate change. And I think, in part, because it
25 is the -- one of the primary programs that the PUC

1 has jurisdiction over, it gets a lot of attention.
2 How do we tweak this to impact the broader scheme?
3 But when you look at Vermont's overall electricity
4 portfolio, net metering is still a tiny slice of
5 generation, a teeny tiny slice of generation.

6 And what we really need is to move some
7 of this conversation out of net metering and into
8 policies that probably require legislative action to
9 put in place that helps us build additional
10 generation that are at larger scales. We talked
11 about New York. They left alone basically everything
12 below 750 KW, and yet here in Vermont that is the
13 vast majority of our generation. We don't have a
14 program that really supports larger-scale stuff,
15 especially now that the standard-offer program is
16 full.

17 And we have seen the analysis done down
18 to unit, you know, kilowatthour generation, that when
19 we bring on new net-metered projects in Vermont and
20 across New England, we are directly offsetting
21 natural gas generation. And in a very few instances
22 like, you know, oil peakers, but it's like 99.6
23 percent of the time it's fossil fuels. And our
24 climate does not care one bit if we are offsetting
25 natural gas in a power plant or in a home. It is

1 natural gas that's not being burnt.

2 And sometimes we get really focused on
3 well we should, you know, we have got a big problem
4 in transportation, or we have got a big problem in
5 the building we do. Those are big problems. But if
6 we have a means to reduce, we have an effective
7 program, we should be leaning into what's working
8 while we are developing other programs that also
9 work, and not dialing back what's working while we
10 don't have programs that are making the required
11 reductions in other sectors.

12 And I think Ms. Hayden spoke well to
13 the renewable energy credits at least from
14 Hydro-Quebec and how those can kind of mask Vermont's
15 true greenhouse gas emissions, but I think we have
16 gotten to a place where, it's going to sound harsh,
17 we have gotten to a place where Vermont's energy
18 policy is morally bankrupt when it comes to the way
19 that we treat renewable energy credits and the way
20 that we participate in our regional grid. I think of
21 it as, like, we are all huddled around on an island,
22 and we have got the food, and there is a flood. And
23 we have got to get the food to the top of the hill.
24 Collectively. We need to make that progress. And
25 the good news is we have already moved 30 percent of

1 the food to the top of the hill.

2 And so what Vermont did is we ran up to
3 the top of the hill, wrapped our arms around the 30
4 percent that was already done, and said we are good.
5 You all do the work to move the rest of it to the top
6 of the hill. We are going to count this stuff that's
7 already been moved and already been done and, you
8 know, give ourselves a pass. And I think that
9 Vermont deserves better than that.

10 And now we have the statutory framework
11 to actually require meaningful additive reductions,
12 that now is the right time to look harder and redo
13 the way that we think about our energy policy and our
14 energy accounting here in Vermont. Next slide.

15 So this slide was shared. It may -- a
16 number of you may recognize it. I think probably a
17 lot of folks were on the same call when California
18 and Massachusetts both presented to our state
19 agencies they were looking at the Global Warming
20 Solutions Act policies, and also the Department of
21 Public Service as it's planning on a rewrite of our
22 energy plans. And this slide really struck me
23 because in many ways you could tell a similar story
24 in California. The biggest slice of the pie from
25 greenhouse gas production is transportation. It's

1 not just similar to Vermont. They have a lot more
2 industrial than we do. When you look at 9 percent of
3 electricity from instate, or exports and then
4 imports, you say a lot of that residential is
5 probably electricity and some of the ag and some of
6 the commercial, but really you could say, look, in
7 California what we are going to do is we are going to
8 buy RECs from, you know, Canadian hydro, and we have
9 done some good things on electricity. We have made
10 some good progress in California.

11 And to be clear, their penetration
12 rates for residential solar are more than twice what
13 they are in Vermont. They have made tremendous
14 progress way beyond what we have done in Vermont.
15 And they could say, look, we really need to focus on
16 industrial and transportation. That's where it's at.
17 Stop focusing on electricity. Let's go to these
18 other things. But thankfully, they have looked at
19 the big picture and they recognize that that doesn't
20 work for our climate.

21 And instead, if you go to the next
22 slide, what they have said is we need to increase our
23 deployment rates by 3X. Immediately. Right away.
24 And that's not like we need 3 times more generation.
25 We need 3 times more built every single year than

1 what we are building now to address -- just in wind
2 and solar -- to address our climate emissions. And
3 they have recognized that we need 8 times as much
4 storage in terms of near-term build rate increase.

5 And here in Vermont, we have utilities
6 that are now telling customers you can't install a 3
7 KW -- we are not going to do anymore net metering for
8 five years. Meanwhile, because, you know, we don't
9 want to make the upgrades right away. It's going to
10 take a long time, and we don't think we should do
11 that, meanwhile 60 percent of the generation in New
12 England is fossil-fuel based. And that's what we are
13 relying on, or we are relying on false REC
14 attributes.

15 So I thought that the California
16 example was a good one to kind of say, wait, no. We
17 do need to work on transportation. We absolutely
18 need to work on industrial. We absolutely need to
19 work on our building envelopes. But we also need way
20 more clean generation coming online. Those fossil
21 fuel power plants in southern New England primarily
22 need to be turned off to address our -- we need to
23 stop burning the fossil fuels.

24 And the only way that we are going to
25 get to a place where those can be turned off and we

1 increase electricity demand through electrification
2 of the transportation sector, through electrification
3 of heating, and ideally through conservation measures
4 as well, is a tremendous buildout of renewable energy
5 across the entire region. We need all the offshore
6 wind that they can hopefully build in the next
7 decade. And that alone isn't going to cut it. We
8 all need to be rowing in the same direction.

9 And I think the next slide is the
10 beginning of kind of our attempt to directly address
11 your questions as well. And so should the commission
12 consider the value of DG tariff or other pricing
13 mechanisms in general? And I guess what I would say
14 is that, and I think Kyle's going to speak to this,
15 what we have seen is that the residential retail rate
16 can be a very effective structure for getting
17 aggressive deployment. If we think that there is a
18 different structure that could lead to a 3X type
19 deployment rate, would REV be open to that? Sure.
20 But if it's not headed towards dramatic increase in
21 deployment, we do know that complicating this further
22 will reduce adoption. We have seen that already in
23 -- we talk to thousands of Vermonters every year at
24 SunCommon at the residential level. And people do
25 not understand their current utility bills. You've

1 got a fixed charge, that is already non-bypassable.
2 You've got a whole bunch of other charges, little
3 line items on all of this stuff that are non-
4 bypassable. We have already made a bunch of the
5 changes that Mark referenced. You know, California
6 NEM 2.0 making. You can't offset most of your bill.
7 Or most of those charges or any of those charges I
8 think now, with current net metering.

9 So we made a bunch of those changes
10 already in Vermont. And it can be -- is a very
11 complicated bill. What people do get is like, okay,
12 if I produce a kilowatthour from my solar I'll have
13 to buy one kilowatthour less from the utility.
14 Great. But as soon as we start getting a lot deeper
15 than that, you will see a dampening of demand and
16 adoption because it just -- it's -- it moves the
17 conversation out of kind of a position of comfort for
18 residential customers.

19 The scale, I think, matters. I think
20 we need a program in Vermont that supports larger-
21 scale solar happening. Net metering alone is not
22 going to get us to where we need to go, and larger
23 scale solar has a lower kilowatthour rate and
24 provides fewer benefits than distributed generation.
25 But frankly, I think we need both. We can't be

1 picking one or the other while our climate emissions
2 continue to rise or flatten but certainly not
3 decrease as we need them to.

4 And that most of the conversation in
5 Vermont is, you know, about these what are in most
6 states are viewed as very small-scale projects. The
7 last comment really is -- might sound like
8 reiteration of the first point, oh, yeah, retail.
9 But it's really for larger projects where a business
10 owner or a third-party owner is looking at building
11 solar, that retail rates provide a financeable
12 foundation. Whereas anything that provides -- that
13 increases -- or the lack of certainty of business
14 owner's ability to, you know, pay off its solar loan,
15 is going to keep a bank from making the loan. And
16 it's going to keep business owners from moving
17 forward at the same time as we want more deployment,
18 especially, I would say, more deployment at smaller
19 scale in the built environment, more larger scale in
20 the non-built environment because we don't have many
21 opportunities for large scale in the built
22 environment here in Vermont.

23 So Jim, I think you're up for the next
24 slide. And thank you again for the opportunity.

25 MR. MARREN: Thanks, James. I just

1 wanted to note we are loving the presentation.

2 Thanks for all the work. You guys are running up on
3 your allotted time, so if we could try to keep our
4 overall meeting on schedule, we would appreciate it.

5 MR. MERRIAM: Thanks. Thank you. I
6 will try to speed that long here. So we are
7 answering again another question that the commission
8 posed which is steps the commission can take to
9 ensure equitable participation in net metering and
10 other programs.

11 So REV recommends that we establish
12 some type of an appropriate adjustment to encourage
13 low- and moderate-income participation. You know,
14 some states have done it such that, you know, they
15 solely addressed this problem with just straight
16 grants which aren't necessarily sustainable in the
17 long run. Others have established a revenue stream
18 that is dedicated to ensuring that low- and moderate-
19 income individuals have access to solar. And then
20 other states like Massachusetts have an incentive, an
21 additional component to the net-metering compensation
22 that incentivizes participation for the low income.

23 I think it's really important on a
24 renewable energy side, and we would just encourage it
25 to be a further discussion.

1 Next slide, please. Should the
2 commission consider minimum bills? Next question to
3 follow up on. You know, the devil's definitely in
4 the details. But we would just want to make sure
5 that, you know, the consistent theme here is that it
6 doesn't discourage participation, and we make sure we
7 are not impacting those that are most vulnerable.
8 Often minimum bills can hurt low-income individuals
9 that are very conscious of their energy use and their
10 bills overall.

11 Next slide, please. So here are -- the
12 question was, how can we improve the current
13 compensation structure? So the first one
14 recommendation -- set of recommendations all kind of
15 focus on how we can start balancing the reduced
16 compensation we have seen over the last few years
17 with a corresponding reduction in the soft costs.
18 And this gets to some of the points raised in the
19 chat with respect to market saturation and some of
20 the volatile solar costs that are being experienced.

21 So the first recommendation for REV
22 would be to eliminate the customer cap, and that
23 would allow for a lower cost of acquisition. And I
24 think as the rates have gone down concerns with cross
25 subsidies should be diminished or eliminated.

1 REV also recommends to do a
2 cost/benefit review of the entire process. You know,
3 we ask projects to provide a lot of additional
4 societal benefits, whether it's remediation of an
5 improperly closed gravel pit, eradication of invasive
6 species, all of these have a societal good associated
7 with them. But that is not necessarily reflected in
8 the compensation or credited in the compensation
9 discussion.

10 And then lastly in this category,
11 similar theme to be able to reflect the balance in
12 cost and compensation is to take a look at
13 eliminating the collocation or allowing collocation
14 on preferred sites. And this goes along well with
15 the desire of towns, town energy plans, in terms of
16 where they have sited -- they have determined where
17 energy projects should be sited.

18 Another category here would be creating
19 a compensation structure that incentivizes
20 community's solar residential and small commercial.
21 So very similar to some of the challenges we see in
22 the low-income community whether that's access to
23 credit, the desire to take on debt, or inability to
24 host on their own household, or business solar, the
25 ability to aggregate them into a community array is

1 desirable.

2 The current compensation makes it
3 difficult for those projects to actually move
4 forward. There's higher administrative costs
5 associated with them, and current rates make that a
6 real challenge to administer.

7 And then, lastly, explicitly remove the
8 REC value from compensation. Right now it's
9 confusing to a lot of individuals when they look at
10 compensation for net metering. They see that as a
11 cost of energy and don't fully recognize that the
12 value of the REC is also embedded in those numbers.
13 So I think for clarity -- and there was a question
14 on, you know, should components of the compensation
15 be unbundled. I think the REC values should clearly
16 be unbundled so that people understand what the true
17 costs and compensation are.

18 And then we also recommend that all the
19 RECs have the ability to be retired in state. So
20 some assurance to customers that their RECs are being
21 retired in state particularly with the strong
22 economic incentive to retire them with the utility
23 for that additional compensation.

24 Next slide, please. Next slide. Thank
25 you. Should the commission change rates to reflect

1 avoided cost. No is the easy answer. Because
2 avoided cost, as Ms. Hayden has pointed out, is not
3 the only -- I'm sorry -- I think you're two slides
4 ahead or a slide ahead now.

5 Avoided cost is not the only thing that
6 we should be considering. And if you take a look at
7 the benefits of avoided carbon from local generation,
8 and as Mr. Moore pointed out, every kilowatthour of
9 solar that is generated offsets a corresponding
10 kilowatthour of natural gas, greenhouse gas emitting
11 generation, the benefits of that when added back into
12 the cost of -- or compensation for net metering
13 actually show that like in the case of the category 3
14 system, that the societal benefits actually outweigh
15 the cost of compensation.

16 So it's in society's best interest or
17 better differently to do actually more category 3
18 installations in this particular case. So we would
19 recommend that we include societal benefits into this
20 discussion and not just exclusively look at avoided
21 costs in rates. And as I've mentioned, as pointed
22 out, it's part of the provisions of the Global
23 Warming Solutions Act. Next slide please.

24 Are there other strategies that the
25 commission should be considering with respect to net

1 metering? Here we wanted to point out that we do
2 have existing structures that look at the broader
3 societal benefits. And we would like to see net
4 metering in a similar capacity viewed in a similar
5 way. So as an example, if you looked at just the
6 lost sales from residential efficiency lighting
7 measures, no resource acquisition dollars or
8 non-resource acquisition dollars included in that
9 calculation, the impact of residential lighting in
10 terms of rates through lost sales is about the
11 equivalent of 50 megawatts of solar impact on rates.

12 So we all know that efficiency and
13 residential lighting is the right thing to do because
14 we know that there is -- greater societal benefits
15 are there. And we would like to just make sure that
16 those same standards and rules can also be applied to
17 the discussion around net metering and compensation.
18 Next slide, please.

19 Again continuing with the question on
20 are there other strategies the commission should be
21 considering. Following back on some of the previous
22 discussions, REV recommends that small-scale projects
23 less than a megawatt have the compensation calibrated
24 to accelerate the deployment of desired projects. So
25 currently right now it's difficult, if not

1 impossible, to economically build parking canopies,
2 community storage, some landfills, and more evenly
3 pair storage with generation because the compensation
4 rates are too low. And we argue we need to do more
5 of this.

6 And as a result, compensation is the
7 mechanism to be able to encourage more participation
8 and accelerate the deployment. Next slide.

9 Again on the same strategies, we just
10 wanted to make sure that, you know, similar to what
11 Mr. Moore was talking about, that our recommendations
12 include, you know, pulling up a little bit to
13 remember what is important here which is the focus is
14 on decarbonization. And we really think that the net
15 metering is a component of that discussion, and we
16 really need to make sure that we are looking at it as
17 one of the tools in this transformation in
18 decarbonizing heating and transportation sector.

19 And as I noted before, or we noted
20 before, every kilowatthour of generation from solar
21 is offsetting a kilowatthour of natural gas. And in
22 terms of decarbonization that's really critical and
23 is a significant importance to why we need to be
24 doing more.

25 And then we will note that recent

1 changes in net-metering compensation have
2 significantly reduced or severely impacted deployment
3 rates of net metering. And this is at a time when we
4 should be really accelerating all of our tools to be
5 able to meet the greenhouse gas challenge we face in
6 front of us. Next slide please.

7 And I'm going to give this over to
8 Peter.

9 MR. STERLING: Hi. I'm Peter Sterling.
10 I'm the new interim Executive Director here at REV.
11 It's my very first time before the Public Utilities
12 Commission, and I really want to thank the
13 commissioners and the staff for the opportunity for
14 this dialogue. I'm looking forward to working with
15 the PUC, to get Vermont moving toward a cleaner
16 energy future that works for all Vermonsters.

17 So here we go. Next slide, please. I
18 would like to wrap up REV's presentation here today
19 with a quote from Bill McKibben. I'll let you all
20 take a minute to read it. I really do think it
21 captures the prevailing sentiment out there in the
22 public. Are we doing enough and doing it fast enough
23 to stop the environmental catastrophe from climate
24 change? So I hope that's enough time for folks to
25 look through that quote.

1 Could I get to the next slide, please.
2 Thank you. So on behalf of the almost 200 businesses
3 who are members of REV, I would like to ask the PUC
4 to please make immediate and meaningful comprehensive
5 changes to address our climate crisis. I would like
6 to ask that we implement Vermont statutes that
7 require us considering climate when making decisions,
8 and whether we should be incorporating climate into
9 all of our decisions.

10 I would like to recognize that the -- I
11 would like to ask the PUC to recognize the total
12 societal benefits of net metering exceed any rate
13 impacts. And finally, I would like to ask the PUC to
14 please stay focused on decision making that's pairing
15 decarbonization through electrification with instate
16 renewables to maximize benefits to all Vermonters.
17 Next slide.

18 Thank you very much. Again REV really
19 appreciates the commission's and the staff's time and
20 effort to lead this discussion.

21 MR. MARREN: All right. We have been
22 on the clock now for two hours. So before we jump
23 into questions, I would like to give our very skilled
24 court reporter a break because she's typing every
25 word we are saying. So let's take 10 minutes. And

1 when we come back, we can take any questions folks
2 have for REV's panel of presenters.

3 Does that sound good? See everyone
4 back here at around 11:40.

5 MS. SCHILLING: Thanks, Jake.

6 MR. MARREN: Thanks, Elizabeth.

7 (Recess was taken.)

8 MR. MARREN: All right. It's 11:40.
9 We will come back now. And we will open it up for
10 questions for Renewable Energy Vermont. I will note
11 we are running a little bit behind schedule today.
12 So we try to ask folks to keep their questions
13 focused. And hopefully we can move on to at least
14 get one more presenter done before lunch time, if not
15 both. So Kim, yes, we will make sure that the slides
16 are posted in ePUC.

17 MS. SCHILLING: I believe they have all
18 been filed in ePUC.

19 MR. MARREN: Yeah, they have.

20 MS. SCHILLING: I see a first question
21 from Ms. Smith. The Vermonsters for a Clean
22 Environment.

23 MS. SMITH: Annette Smith, Vermonsters
24 for a Clean Environment. First of all, I want to
25 thank Renewable Energy Vermont for the presentation.

1 There are a lot of things in the presentation that I
2 agree with, for instance, about Hydro-Quebec, about
3 the role of RECs, and there are other aspects of what
4 was said that I think are very good.

5 But I want to also note a deficiency,
6 and point out what I have been observing with the
7 Climate Council as I have been following their work.
8 And there is clearly a tension building between the
9 sole mandate in the Global Warming Solutions Act to
10 reduce emissions and the need to address the real-
11 world impacts of climate change through mitigation
12 and to address resilience.

13 And so it is possible that when the
14 Climate Action Plan is presented to the legislatures,
15 that they may put those two aspects on equal footing.
16 I am aware that in one committee where a presentation
17 was made that it was acknowledged that it was
18 overlooked in an important way. So given that
19 Vermont is going -- is already facing more flooding,
20 more drought, I would like to know how Renewable
21 Energy Vermont proposes to address the land use
22 impacts of siting which are currently not being
23 addressed through net metering.

24 MS. HAYDEN: I guess I'll take that,
25 and if others want to weigh in. So a couple of

1 thoughts there. And I agree with you that there is a
2 tension over at the Climate Council looking at
3 resiliency mitigation and then, you know, new
4 programs or mechanisms that can address carbon
5 reduction in the near term.

6 Net-metering solar -- and this really
7 goes back to the last workshop, so I don't want to
8 belabor it. We will be filing comments -- REV will,
9 that kind of puts that into perspective. But the
10 overall, for example, for forest impacts, forest
11 impacts are a small fraction in terms of clearing as
12 compared to, for example, and the reason I left the
13 Eastmain reservoir slide in the slide deck was to
14 show we are talking about massive deforestation that
15 is happening to our neighbors to the north.

16 And by the way, it's not just natural
17 environment. It's impacts on the indigenous
18 communities as Hydro-Quebec gears up to try to have
19 more mass exports into New England. There is a
20 tension. Net-meter projects, at least at the scale
21 of 500, are required to be decommissioned and -- at
22 the end of their life the forest will return. It's a
23 small fraction of the overall landscape, which has --
24 in Vermont we have got 4.5 million acres of trees.

25 So I think there is a tension, and I

1 think it's unfortunate that we are in this situation
2 now with the IPCC now reporting that we are very
3 close to that 2.5 percent degree temperature change
4 which looks like we are not going to be able to come
5 back from.

6 So, you know, I think we have to
7 acknowledge that we have put ourselves globally in
8 this situation where there will be land use impacts.
9 But to the extent we can mitigate those in the 248
10 process, I think does a good job of requiring
11 mitigation through avoidance and minimization for
12 most resources. We try to do that. I think it
13 addresses those concerns in a balanced way.

14 MR. MOORE: Annette, I would add on to
15 that. I appreciate the question. I think there is
16 -- there is this tension, because we hear all the
17 time that we want, you know, the cheapest stuff and
18 the cheapest solar. But then we don't put the value
19 on the fact that, like, we could have a lot of
20 generation sited near or at load over parking lots in
21 the State of Vermont. But we don't want to pay the
22 value. We just say we -- so I think there are real
23 levers, some of which, you know, REV touches on that
24 we could absolutely put the value on land use.

25 You note that the Rutland High School

1 had solar over the parking lot. It can be done.
2 They're just really expensive because you're building
3 a big structure. And, you know, we have set the
4 program up in such a way that those projects are
5 somehow supposed to be the same price as, you know, a
6 greenfield development. And we could say that there
7 are other societal benefits that those projects bring
8 with generation near load over a built environment,
9 so on so forth, EV charging. We don't do that. And
10 it's at our own detriment, I believe.

11 I appreciate you bringing it up.

12 MS. SCHILLING: James, can I ask a
13 quick follow-up question on that. I know we are on a
14 bit of a tangent. Can you just explain a little bit
15 more about the increased costs of a solar on a
16 parking lot as opposed to a greenfield?

17 MR. MOORE: Sure. You're creating a
18 large, elevated steel structure that is, you know, 15
19 to 20 feet off the ground that can't have lots of
20 little foundation. You know, if you look at a solar
21 in a field, you can go out there, you put little pins
22 in the ground. You don't really care if it's grass.
23 It's totally fine. Or it's whatever. And it's been
24 -- it's very easy and inexpensive to do that.

25 When you get into a canopy project,

1 you're erecting a large steel structure with
2 foundations. You should see the foundations on some
3 of these.

4 MS. SCHILLING: Okay.

5 MR. MOORE: Massive civil projects to
6 sink foundation sometimes 20 feet into the ground.

7 MS. SCHILLING: All right. So the
8 foundations and the canopy is -- I just wanted to
9 clarify that. Thank you.

10 MR. MERRIAM: If I could just add to
11 what Ms. Hayden and Mr. Moore mentioned, I think an
12 acre of solar from a land use perspective will
13 sequester 30 times the amount of carbon that an acre
14 of forest will. So we are talking about something
15 that is a good mitigation measure. And to kind of
16 build off Jake's points about generation at the load,
17 if we look forward and utilize net metering and
18 storage as an opportunity to build in resilience to
19 communities, it's actually a critical component to us
20 as we move forward and we face increasing threats of
21 climate and the disruption that it can bring.

22 MS. SCHILLING: All right. Do we have
23 other questions for REV? I see that Ms. Smith posted
24 another comment in the chat. If you would like that
25 on the record, please speak up now.

1 And are there any other questions?

2 MS. SMITH: So this is Annette Smith,
3 Vermonters for a Clean Environment. What I posted in
4 the chat is that I think we can do better. And I
5 would like to see the industry come forward with some
6 ideas.

7 I mean I'm noticing -- I don't see
8 anyone from the Agency of Natural Resources on this.
9 There is a -- the utilities and developers are very
10 well represented in this discussion, but Natural
11 Resource effects are not. And I'm going to say again
12 these need to be on equal footing and we need -- we
13 have -- I mean I hear the focus on greenhouse gas
14 emissions, but we also have a tremendous loss of
15 biodiversity, and we have to protect that. And it
16 can't be an afterthought, and it can't be an, oh
17 well, we have to reduce the greenhouse gas emissions
18 and not talk about it.

19 So I want to push the industry to come
20 up with constructive ideas that -- because people
21 don't need to fight over this. But that's what we
22 are ending up with. If we can work together on how
23 to do it better, I think that it will advance
24 progress much faster.

25 MS. SCHILLING: Just wanted to clarify

1 for the record, Kevin Anderson --

2 MR. MERRIAM: I think one of the things
3 we did point out was solar canopies and a built
4 environment, and Mr. Moore was just discussing it's
5 an expensive proposition. So using that as a test
6 case, we would love to have a conversation around
7 that both at the regulatory level and at the
8 legislative level to see how can we more incent that
9 utilization of land. I think we all agree it's
10 preferred.

11 MS. SCHILLING: I just wanted to
12 clarify for the record that ANR is on today's call.
13 Kevin Anderson is representing ANR today.

14 MS. HAYDEN: To the extent I can
15 respond again, I think Vermont's land use --
16 statewide land use law, Act 250, which is
17 incorporated by reference into 248 is one of the most
18 rigorous land use siting laws from -- that I'm aware
19 of.

20 And I think at least on the projects --
21 and I'm not here today representing developers just
22 for the record. I'm a director of energy and
23 environment at Paul, Frank & Collins, we are a law
24 firm that through my -- the practice that I head, we
25 represent exclusively clean energy and renewable

1 energy projects, developers.

2 And so I just want to clarify that for
3 the record. I am committed to finding solutions for
4 climate change, in particular, because that is the
5 most critical threat that I think we face today. We
6 have experienced, you know, we are experiencing it
7 all summer. My daughter was at Stamford last year,
8 and I literally had to pull her out of there to get
9 her away from the fires.

10 So I'm not here representing as a
11 mouthpiece for developers. But as a lawyer that's
12 been working through the practice of 248 projects
13 over the decades, I think we have done a very good
14 job in Vermont at balancing land use impacts and
15 necessary infrastructure. And right now solar
16 deployment is necessary infrastructure that we need
17 for the state.

18 We work with the Agency of Natural
19 Resources on all projects. And as I said, mitigation
20 -- minimization and mitigation are an -- and
21 avoidance are key tactics that are used to try to
22 reach the appropriate balance that the statute
23 requires. And only those projects that can reach
24 that balance are actually given a CPG.

25 MS. CHENEY: I have a question. I want

1 to go back to something Mr. Merriam said. First it
2 was -- sounded like a statistic. You talked about
3 how solar projects sequester more carbon than
4 forests. And I believe sequester might be the wrong
5 verb. Do you mean offset? And if so, where do you
6 get that statistic? Because solar panels don't
7 sequester carbon.

8 MR. MERRIAM: I apologize. Offset.
9 You're correct. And that calculation comes from the
10 EPA calculator.

11 MS. CHENEY: Can you repeat what that
12 statement was?

13 MR. MERRIAM: Can I repeat what --

14 MS. CHENEY: The statistic. You said
15 -- I didn't write it down. You said it was a
16 multiplier factor.

17 MR. MERRIAM: 30 times.

18 MS. CHENEY: 30 times. What does 30
19 times what?

20 MR. MERRIAM: So solar will offset 30
21 times the amount of carbon that a forest can
22 sequester.

23 MS. CHENEY: Okay.

24 MR. MERRIAM: On a per acre basis. And
25 that is utilizing the EPA calculator and the New

1 England fuel mix.

2 MS. CHENEY: And would you agree that
3 both are important?

4 MR. MERRIAM: Absolutely agree both are
5 important. I think that the scale we are talking
6 about solar impacting forests in Vermont is pretty de
7 minimis in scale. And the value the solar brings is
8 imperative. So I think if we were talking about
9 significant acreage in true prime forest, there would
10 be a much greater conversation or need, but the
11 reality is that most solar is going in in a built
12 environment, on the edges of a built environment.
13 You know, for practical purposes, we are not building
14 in the national forest because there is no
15 infrastructure there. So we are building next to
16 traditionally three-phase power, existing
17 infrastructure. So these are areas that are already
18 impaired, so to speak, or slightly impaired.

19 And we are trying to overall reduce
20 greenhouse gas emissions.

21 MS. SCHILLING: Other questions for
22 REV? Commissioner Roisman?

23 MR. ROISMAN: Yes. I had a question.
24 I think it was Mr. Moore who made the point that the
25 cost of constructing the infrastructure for say a

1 parking lot to be used as a location for a large
2 solar project was very high.

3 Do you have, Mr. Moore, or does REV
4 have any actual data on what it costs? And what your
5 margins of profit are. And how much money you would
6 need in the way of incentives to build more on
7 structures over parking lots.

8 I hear the generic point, and I
9 understand you've asked -- you've answered Ms.
10 Schilling's question about why is it that the parking
11 lot is a more expensive than say putting the same
12 amount of panels in a field. But what are the actual
13 numbers? We don't have those. And we haven't seen
14 them. Do you have them, or are they available from
15 some source that we could take a look at?

16 MR. MOORE: Yeah. I can definitely
17 share with you, I think, you know, I can count the
18 number of like pretty small-scale parking canopies,
19 you know, 200 KW or less, you know 150 AC, in Vermont
20 on one hand. You've got the Alchemist Brewery. We
21 are installing one right now at the Lawson's Finest
22 Brewery down in the valley. And then there is one
23 installed at Echo in Burlington. And then there is
24 the one I'm aware of at the high school in Rutland.
25 That's really like the only four projects over the

1 last -- well forever -- of any scale that I'm aware
2 of in State of Vermont. And we have been involved in
3 early development work on the Echo project and
4 obviously installed the Alchemist. Installing
5 Lawson's. And iSun was the installer on record or
6 Peck Electric at the time for the park canopy in
7 Rutland as well. I was the sub on that.

8 So I can get some of that information
9 and bring you that -- more project details. I've
10 shared that stuff before with some of your former
11 colleagues there at the commission and said you can
12 do these rates, but you're not going to get any
13 canopies built. And they said, oh well, we will see.
14 I think we have seen we aren't getting meaningful
15 development there. So I'll try and get you some more
16 details.

17 MR. ROISMAN: If I've heard what you
18 were saying, you were saying that all things
19 considered, it would be preferable just in a sort of
20 preferred site context, if a great surge of solar
21 were to occur over all the preexisting parking lots,
22 places that are already taking open space, already in
23 other ways provided, you know, some kind of a
24 disruption of the natural environment. And that --
25 but it was too expensive.

1 And so, of course, the counter of that
2 is well you need something. Right? And if you came
3 to us and said I would like you to readjust what kind
4 of net-metering rates you have or rates in general,
5 for those kinds of projects, we would need to know,
6 just as you would if a utility said we want to charge
7 people more for a certain service, we would need to
8 have all the data that showed a reasonable rate of
9 return for the person putting the system in, and what
10 their real unavoidable costs were of doing it to get
11 an idea of what that is.

12 So that would be very useful
13 information for us to have, including maybe data from
14 the four projects that apparently did find it
15 economically feasible to put those projects in.

16 MR. MOORE: I don't believe those
17 projects were what you would consider economically
18 feasible from a, you know, if you were to look at a
19 regulated rate of return of 10 plus or 9 or 10
20 percent, they are not getting those. They did those
21 purely as a value statement and will get some of the
22 money back, but they are not getting that kind of
23 return on those projects. And that's why there are
24 so few of them is because most people, businesses --
25 those companies put a significant premium on their

1 own of the climate benefits and of the very visible
2 statement that those projects made. It was not about
3 financial return.

4 MR. ROISMAN: Well, of course, that is
5 value that, I mean, REV has made today I thought a
6 very persuasive and well-documented case that we need
7 to do something about this climate problem, and we
8 need to do it right away. And if we don't, the
9 consequences will be even worse than we are already
10 experiencing.

11 So there is good reason for everyone
12 whether it's installers, or owners, or the State of
13 Vermont, or public interest groups to all pitch in
14 and make whatever sacrifices are needed. I mean at
15 the end of the day, it's money, right? We are
16 talking -- these things don't just spring up
17 automatically.

18 So the question is who is going to put
19 up the money? And we all have a stake in it. So,
20 you know, the fact that those companies were willing
21 to make some economic sacrifice to put it in is not
22 irrelevant from our consideration. And we would love
23 to see more of that.

24 But anyway, thank you. And thanks for
25 that information.

1 MR. MOORE: And I guess what I would
2 build on that, Chairman, is, you know, REV is not
3 coming and saying that net metering is the silver
4 bullet. It's -- or the parking canopies would be.
5 It's truly that it is a program that has been shown
6 to work -- to deploy resources, and we would
7 encourage other programs as well that might be more
8 appropriate for different types of projects with
9 different cost structures.

10 MS. CHENEY: I have a question for you,
11 James, talking about parking lot canopies and
12 ancillary benefits. I was recently in Middlebury and
13 noticed that the -- there is a solar parking lot
14 canopy installed with electric vehicle chargers. And
15 I'm wondering is that a sort of a business model
16 potential to, you know, combine those two benefits
17 with parking lot canopies? Is that done as a
18 routine? I know that you've been kind of in the
19 forefront on parking lot canopy development.

20 MR. MOORE: Yes. And I misspoke. I
21 was leaving out one other really important
22 installation that SunCommon did at the Green Mountain
23 Power headquarters in Colchester. They have also
24 installed a parking canopy over the parking lot there
25 that is actually partially owned by 30, 35, I think,

1 ish, Green Mountain Power employees. So I didn't
2 mean to leave that one out. But we have got
3 experience on those.

4 In terms of the EV deployment, charging
5 -- I love parking canopies, in part, because they
6 make a very physical connection for whoever is there
7 with driving and clean, local electricity generation.
8 We are going to be installing a whole bunch of
9 chargers at the Lawson's project. There is a fast
10 charger located at the -- well it's a medium charger
11 now -- located at the Alchemist Brewery. There are a
12 number of chargers located at the Green Mountain
13 Power headquarter project for their employees.

14 Right now those chargers cost thousands
15 and thousands of dollars to install. And it's an
16 awful lot of, you know, 15 cent kilowatthours. Those
17 projects do not work financially. We, at SunCommon,
18 installed a fast charger in the valley, in the Mad
19 River Valley, at Mad River Taste Place. A state
20 grant from VW covered approximately 80 percent of the
21 cost.

22 We still don't believe that we will --
23 that we will collect any return on that project. We
24 did it as a part of our mission and a part of public
25 education. But it was not like a financial

1 investment.

2 MS. SCHILLING: Okay. Any final
3 questions for REV? If you have a question, you can
4 type it in the chat. Do you have a question? Or
5 turn on your mic now. Any final comments from the
6 REV presenters?

7 (No response).

8 MS. SCHILLING: All right. I believe
9 our next presentation is by Sunrun. Who should I
10 make the presenter for that presentation?

11 MR. WALLACE: That would be me. Kyle.

12 MS. SCHILLING: You are now the
13 presenter, Kyle.

14 MR. WALLACE: Okay. All right. Thank
15 you for the opportunity to present today.

16 My name's Kyle Wallace. I'm a senior
17 manager of public policy at Sunrun. We are a
18 residential solar and storage installer. And we
19 operate across the country. Have over 500,000
20 customers nationwide.

21 And so the main purpose of my
22 presentation today is to look at both somewhat
23 nationally but then also regionally what other states
24 have done when they have looked at net metering,
25 particularly for the size of projects that we are

1 talking about here in Vermont.

2 Generally, I would say that we believe
3 that net metering is a foundational structure for any
4 solar compensation policy, and that it doesn't need
5 to be significantly changed. It's a very flexible
6 policy. There were a lot of ideas thrown out by, you
7 know, other parties, Mark LeBel, I really appreciated
8 his presentation. You know, there is a lot you can
9 do with it without having to make wholesale changes.
10 And so I think that it's really important to keep
11 that in mind.

12 Additionally, the way that, you know,
13 we kind of think about it with the current kind of
14 net-metering penetration rate of 1 percent of sales
15 at this point, and thinking about what does the
16 future look like with the electrification of
17 transportation and heating and the increased demand,
18 you know, we really see that the distributed energy
19 resource like solar and storage and EV chargers and
20 Smart Home, you know, devices, are going to be
21 critical for helping manage that demand to optimize
22 it to have, you know, the lowest cost grid possible,
23 and that, you know, there is really value there.

24 And you have to think about these net-
25 metering systems, what value are they providing

1 today, but also what value do they provide in a world
2 where potentially, you know, electricity demand
3 doubles or significantly higher than today. There is
4 a lot of value there. And so, you know, we think
5 that you want to have all of your tools in the tool
6 kit, including net metering, to make sure that you're
7 incentivizing the resources you need to make sure
8 that it's a zero carbon electric grid.

9 Generally what we have seen other
10 commissions across the country decide is that, you
11 know, the net-metering structure really has to match
12 the sophistication of the customers that it's
13 serving. And so if those customers can't understand
14 the tariff structure, if it's too complicated, if the
15 value is too uncertain, whether that's, you know,
16 long-term value is uncertain, immediate value is
17 uncertain, that creates a lot of perceived risk, and
18 that leads to a lot of customers not feeling
19 comfortable installing solar. You know, they want to
20 make sure that they can understand what that value
21 proposition is.

22 And so I think keeping that in mind
23 that, you know, the more complicated you make it, the
24 harder it is for everyone to understand and to, you
25 know, feel like there is a sufficient value to

1 continue to install solar, especially on the
2 residential and small commercial scale.

3 And then finally, I would just say
4 that, you know, there is the compensation side.
5 There is also the value side. And REV talked a lot
6 about that value. And I would echo those comments.
7 But I really think we should think about how DERs can
8 increase value to the system and try to focus on that
9 value side of the equation first, if there is any
10 perceived imbalance of the compensation and the value
11 these systems are providing.

12 So this chart is a simple chart that
13 just shows kind of the availability of monthly net
14 metering for residential and small commercial
15 customers across the country. As you can see, the
16 vast majority of customers, residential and small
17 commercial customers, are able to access retail net
18 metering on -- or monthly net metering. There are a
19 few states that have moved away from it. I'll talk
20 about Utah and Nevada a little bit later, and but the
21 majority of the states that don't have that available
22 it's because they never had retail net-metering type
23 policies in the first place.

24 And so looking at a couple of examples
25 nationally, Mark already went into some detail on

1 California, Hawaii and South Carolina, so I won't
2 spend a lot of time. But for California, I do want
3 to just note that the time-of-use elements in the
4 net-metering 2.0 program there, along with the non-
5 bypassable charges are quite complicated for
6 customers to understand. It's a lot to try to
7 estimate what the value proposition is for each
8 individual customer given there are a very large
9 number of time-of-use rates available. And there is
10 a lot of administrative burden associated with that
11 of determining, you know, is there -- are time
12 periods grandfathered for so long? When do customers
13 need to change schedules? There is just a lot of
14 moving parts and it's a very -- it's a very rigorous
15 and burdensome administrative process to keep all
16 those tariffs updated.

17 And it's difficult for customers to
18 fully understand what all their options are and which
19 one is best for them. Because these customers, they
20 don't think about their electricity usage in an
21 hourly or a minute-by-minute basis. And so it's very
22 difficult to try and get them to stop thinking about
23 just, you know, a monthly number, like, you know, a
24 net kilowatthours that they used and try to start
25 saying, well, you know, if you use between these

1 hours it's this value. These hours it's a different
2 value.

3 So I will say there is a lot of
4 challenge there. And I think California's been able
5 to make it work because they have the higher rates.
6 Very high solar resource. And so the economic value,
7 you know, there is some buffer there where the value
8 is still pretty clear.

9 Hawaii, I will just note that, you
10 know, they are unique as Mark said. They are
11 geographically isolated. A lot of solar -- or a lot
12 of coal and oil resources that are very expensive.
13 And so the high rates, the high solar resource really
14 made solar very valuable for customers.

15 And even once they removed net metering
16 the economics for solar and storage were pretty
17 favorable as well. And so that's how their market
18 has been able to continue.

19 And I will just note that it's
20 interesting as they have been looking to retire a
21 coal plant on Oahu, and they have actually realized
22 that they need more solar to be discharged during the
23 day, and that they are looking at different programs
24 to try to aggregate customers with solar and storage
25 to basically replace that fossil fuel generation.

1 And so it's been interesting seeing
2 over the last few years where they went from we don't
3 need any more solar on the grid with their -- with
4 their extremely high penetration rates to now saying,
5 actually, we would like to see a lot more distributed
6 solar because there is a lot of real value in
7 displacing these fossil fuel plants.

8 I won't -- and then just on South
9 Carolina briefly, there is one piece that Mark didn't
10 mention which is -- I think is important. They also
11 provide an up-front rebate for the solar customers to
12 participate in a Smart Thermostat program. And that
13 helps offset some of the impacts of the minimum bill,
14 and the time of use where -- compensation reduction
15 for those solar customers. So I think that's an
16 important piece where they looked at that value side
17 of the equation and said if we can have the
18 participation here to help with Duke's extremely
19 expensive winter morning peaks, there is a lot of
20 value there for all ratepayers.

21 Moving to more of the regional look.
22 New York, Mike was -- mentioned went to their value
23 distributed energy resources tariff. Importantly
24 that's only for the larger projects over 750 KW. All
25 the mass market residential and small commercial

1 customers retained a net-metering structure since
2 that order. And over the last few years there have
3 been many workshops, comment periods, meetings with
4 staff, white papers, on exploring different options
5 of what can they do for the compensation for these
6 smaller customers. Looking at a lot of the ideas
7 that Mark mentioned in his presentation.

8 And ultimately, the Public Service
9 Commission last year opted to retain a net-metering
10 structure at the retail rate with the inclusion of a
11 small monthly charge that's based on the size of the
12 system to recover certain public policy program
13 costs. And so ultimately -- I have the quote there.
14 I won't read the quotes. But you can see that, you
15 know, they had concerns that applying a more
16 complicated structure like the value stack which is
17 difficult to finance. It was difficult even for
18 large projects to finance initially. They had to
19 make changes over time to make it easier and more
20 financeable. That type of complexity wouldn't fit
21 the smaller customers and would make it very
22 difficult for the market to thrive.

23 Connecticut has also been looking at a
24 net-metering successor tariff based on some
25 legislation that was passed in 2018 and then amended

1 in 2019 to extend net metering through the end of
2 this year. They initially were going to require all
3 exports to the grid on an instantaneous basis to be
4 credited at a certain value, but the 2019 legislation
5 allowed the utility commission there to consider
6 monthly net metering.

7 And one thing that I want to just note
8 is their process, I think, was very good in that at
9 the beginning they looked at what are the objectives
10 that we are trying to meet with this tariff. And
11 they held stakeholder groups or meetings and
12 solicited comments on these topics. So that from the
13 outset there was a clear understanding for all
14 parties of, you know, what were they trying to do.
15 And I think that it really helped throughout that
16 process. You know, they wanted to maintain a healthy
17 solar industry. They wanted a zero carbon grid.
18 They wanted to balance participant and non-
19 participant costs.

20 And then the next one, on consumer
21 protection I thought was really interesting because
22 they viewed having a more simplified tariff and
23 program design was actually a consumer protection
24 element, that they wanted that to be a driving factor
25 of their design to make sure customers could actually

1 understand it. That it made sense. That it was
2 simple. And I think that that was an interesting
3 approach that I haven't necessarily seen in other
4 states.

5 And then finally, they also wanted to
6 encourage inclusivity, more equitable access to
7 solar. Particularly from the environmental justice
8 communities and low-income customers. So I thought
9 all of those objectives were very good.

10 And ultimately, what that led to was an
11 order on the residential side in February, and they
12 also had an order in June for the non-residential
13 market segment where they retained monthly net
14 metering with the export rate at the -- or the export
15 rate at the retail utility rate. And decided, you
16 know, that was the most equitable and simplest and
17 fair outcome for customers.

18 They will conduct an annual process
19 looking at those rates and seeing if there are any
20 adjustments needed as either an incentive or as a
21 small non-bypassable charge to ensure that customers
22 are receiving a fair rate of return. But that, you
23 know, that they are still generally just staying with
24 the net-metering structure for the foreseeable
25 future.

1 And that also allowed them to include
2 additional adders, essentially incentive adders, that
3 can be direct payments to the participants for
4 low-income customers and then projects that are
5 located in environmental justice communities which
6 are certain municipalities designated by the state.
7 And so, you know, they are really trying to drive
8 more installations in those areas, which I think is a
9 very good approach, to make sure that they are
10 expanding the access to solar.

11 And once again, I have a quote, just
12 with some of the rationale behind maintaining monthly
13 net metering rather than going to instantaneous
14 export crediting. And also I want to draw attention
15 to the last few lines of that quote where they talk
16 about the ability of monthly netting to, you know, be
17 kind of a blank canvas on which other price signals
18 and programs can be layered on and overall improve
19 the benefits to the grid and all ratepayers.

20 And so that was one of their
21 considerations is they wanted to avoid a situation
22 where their solar compensation was driving customers
23 towards one behavior but then, you know, their energy
24 storage demand response program was sending a
25 separate signal. And then customers ended up with

1 conflicting price signals that, you know, were -- led
2 to suboptimal outcomes.

3 Massachusetts has looked at net
4 metering several times over the last few years.
5 Small residential systems are exempt from their net-
6 metering cap and receive essentially the retail rate.
7 And even the larger systems that are subject to the
8 cap receive a rate that is tied to the retail rate.

9 And over the last few years they have
10 looked at adding demand charges for Eversource and a
11 fixed charge in National Grid territory, and in both
12 cases those were ultimately rejected by -- one by the
13 DPU; one by the legislature.

14 And then once again, New Hampshire I
15 have a quote there of why they retained monthly net
16 metering for -- in their 2017 NEM 2.0 order as well.
17 And once again, it highlights the need for this --
18 these programs to be understandable for customers to
19 ensure that these projects continue to be built.

20 Then moving on to just a couple of the
21 kind of negative examples of where there have been
22 wholesale changes made to the compensation structure
23 and the impact on the market. Nevada is one of the
24 most visible cases. I'm sure many are familiar with
25 it. At the end of 2015 the commission there replaced

1 net metering with instantaneous export crediting at
2 the avoided cost rate for the utility and imposed a
3 monthly fixed charge as well. And as you can see,
4 the installations for the residential sector just
5 fell off a cliff, and the market there was virtually
6 eliminated overnight.

7 Just a note that the data in that graph
8 is completed projects, and so the policy changes lag
9 a little bit, which is why you still see
10 installations going through the middle of 2016.
11 Those were already in the pipeline before the changes
12 occurred. But, you know, there was significant job
13 loss. Sunrun had to close our facilities. The
14 company I worked at prior to Sunrun was Vivint Solar.
15 It was acquired by Sunrun. We were planning to
16 expand and had to put that on hold obviously with
17 these changes.

18 So in response, the legislature
19 reinstated monthly net metering after seeing, you
20 know, a year and-a-half or so of the dead market
21 essentially. And after the reinstatement of that
22 monthly net-metering structure, the market has grown
23 back to kind of the pre2016 levels. And they have a
24 healthy solar market today on the residential side.

25 I will note that Nevada doesn't have a

1 lot of the commercial-scale solar. It's kind of a
2 policy gap in their state energy policies, and so
3 really it's residential and utility-scale primarily.
4 But just wanted to make that clear that this was
5 exclusively residential from -- for this data.

6 The second example which I think is
7 honestly a little more interesting than the Nevada
8 example is Utah. And I say it's more interesting
9 because with the changes that Nevada made it was
10 pretty clear that the market couldn't survive. The
11 hit to the compensation was substantial to where
12 there really -- the customers were getting, you know,
13 a tiny amount of compensation. And it just clearly
14 wasn't going to work. Utah was a little different,
15 because the -- initially Rocky Mountain Power, which
16 is owned by, you know, the same company that owns the
17 NV Energy in Nevada, they proposed a similar punitive
18 rate structure that would put solar customers on a
19 demand-based rate with compensation at avoided cost.

20 They proposed that. And obviously
21 there was a long, drawn out proceeding at the
22 commission and settlement talks. And ultimately,
23 there was agreement to move away from retail net
24 metering to instantaneous export crediting, but the
25 kind of compromise was the export credit would still

1 be approximately 90 percent of the retail rate.

2 So when you think about that, you might
3 have half of your system's energy being exported to
4 the grid and you're getting 90 percent of the net-
5 metering value for that 50 percent, it's not a major
6 hit to the economics.

7 However, as an industry, we thought
8 that that compromise would work. We thought it was
9 something that even though it wasn't as simple of a
10 structure, it was more complicated, we thought it
11 would work. And the data makes it clear that it did
12 not. Even just the kind of uncertainty regarding the
13 proposal and the settlement really chilled the market
14 through 2017, as you can see after that major drop.
15 I mean no change had actually taken place, but just
16 the uncertainty alone caused significant contraction
17 in the market.

18 And then once the settlement went into
19 effect at the end of 2017, we can see in 2018 it
20 drops again. And that's really just due to the fact
21 that this tariff was more complicated despite there
22 being a similar value to what net metering was
23 providing.

24 So I want to point that out that this
25 was a case where the intention was not necessarily to

1 kill the industry with the settlement. The industry
2 agreed and thought we could make something that was
3 more complicated work, and it just hasn't played out
4 that way. And ultimately, Sunrun had to close our
5 Utah office earlier this year, unfortunately.

6 So just in conclusion, you know, we
7 don't believe that major changes are necessary at
8 this time for the net-metering structure. And we
9 agree with REV that we need to make sure that we are
10 accelerating the deployment of these type of systems,
11 and that there is real value that can be provided to
12 the grid and all ratepayers, and that we really can't
13 -- we really can't kind of limit our ability to meet
14 the climate goals, but then also, you know, a true
15 zero carbon grid. You know, we need to have these
16 type of systems at a scale that's much larger than we
17 see today.

18 And, you know, that regionally most --
19 all the states that I've looked at just recently have
20 come to the same conclusion, that, you know, they
21 need to keep a net-metering type structure in place.
22 And so I think that that backs up that, you know,
23 Vermont would be out of step to make a significant
24 change to go to a value-stacked-type compensation
25 structure or crediting an avoided cost or something

1 like that. I think there would be significant
2 challenges for the industry to make that work.

3 I see the question from James. Yes. I
4 think it's important to note for Massachusetts there
5 are additional incentives. You have the Smart
6 program which provides a fixed incentive value over a
7 10- or 20-year period depending on the project size,
8 with various adders for low-income energy storage and
9 some other preferred siting type adders.

10 And then New York also has a state tax
11 credit up to \$5,000 for solar customers as well as a
12 rebate from NYSERDA, that's available in all the
13 state except Long Island at this point. So they were
14 saying even with these other incentives, you know, it
15 still was necessary to keep a net-metering type
16 structure to ensure the value proposition was strong
17 so that the market could thrive and meet the, you
18 know, the 6 gigawatt goal for New York of solar, and
19 for Massachusetts for them to hit their state targets
20 as well.

21 MS. SCHILLING: Thanks. Kyle. Are
22 there other questions for Kyle? If you have a
23 question you can type in the chat. Do you have a
24 question? Or you can turn on your mic. Commissioner
25 Allen.

1 MR. ALLEN: Yeah. I just want to thank
2 Kyle for providing some other state examples. I find
3 those particularly helpful. I did have one question,
4 and I frankly don't know if this is to Kyle Wallace
5 or one of the other presenters, but there is a
6 reference to 1 percent that I thought Kyle had made
7 reference to early in his presentation. And I'm
8 struggling with that just because I know that, you
9 know, net metering, I think, is roughly 300 megawatts
10 relative to a state load of like 950 megawatts of
11 peak. But even when I apply capacity factors and the
12 like, I don't come down to anything close to 1
13 percent, so I'm just asking for clarity on that.

14 MS. HAYDEN: Riley, this is Kim. So
15 the Department of Public Service's 2020 -- 2021
16 Annual Energy Report states that net metering
17 represents -- I think that they are covering again --
18 a 2019 period, about half of Tier II which was 2.2
19 percent of retail sales. So I think it was 53
20 percent of Tier II at 2.2 percent of retail sales.
21 So that's approximately 1 percent.

22 And in our written comments, I can -- I
23 thought I had the link there, but it may be the link
24 to the 2020 which has the other two graphs, I think
25 it's the second to last slide of my presentation.

1 But that's where that comes from. It's from the
2 Department's Annual Report.

3 And again, in terms of, you know, so we
4 are looking at percentages of retail sales and not
5 capacity because capacity factor for solar is
6 significantly lower. Right? But when we do our
7 written comments, we will provide that. Okay?

8 MR. ALLEN: I would appreciate that.
9 Thank you, Kim Hayden.

10 MS. HAYDEN: You're welcome.

11 MS. SCHILLING: Other questions for
12 Kyle?

13 MR. MOORE: Could I --

14 MS. SCHILLING: James, go ahead.

15 MR. MOORE: I think adding a little bit
16 to the context that Ms. Hayden just put in there. I
17 don't know what that report was in terms of, like,
18 retail sales, how that accounts for generation that
19 was used behind the meter in the home. And so on so
20 forth. But I think for me, the big picture is that
21 even when you include all of net metering and all of
22 the non-net-metering solar in Vermont, whether it's
23 standard offer or direct utility contracts, my
24 recollection from conversations with regulators and
25 utilities is there were still, you know, maybe in the

1 7 percent of energy produced, and with probably less
2 than half of that coming from net metering.

3 So I don't know whether 1 percent is
4 the right number or 4 percent is the right number.
5 But what I think is really important is the pace of
6 change, if we have gotten to 4 percent over a decade,
7 and what do we need to do over the next 10 years to
8 actually address our climate crisis.

9 And again, net meter solar, not the
10 only component, but we -- net metering is such a tiny
11 contributor right now, and it receives such focus and
12 has seen such dramatic reduction in deployment, that
13 regardless of whether it's 1 percent or 4 percent of
14 sales or energy, I hope that our legislators will
15 move away from the capacity calculations because I
16 think it really clouds the debate. Because what we
17 are talking about here is for zero carbon is all of
18 our kilowatthours being clean. And we are far, far,
19 far away from that.

20 MR. ALLEN: I actually didn't mean to
21 kind of focus on the capacity side of it. It's just
22 that those numbers are kind of clear and relatively
23 stark. It's when you convert them to energy that the
24 waters muddy a little bit, and it's not quite as
25 clean a calculation.

1 So yeah, I didn't mean to focus on
2 capacity. So Elizabeth, I'm having trouble kind of
3 turning off my camera and mic. So I'm actually going
4 to shut down and then join you -- join you all again.

5 MS. SCHILLING: Okay. Sounds good.
6 Any final questions for Kyle? Not seeing anything.
7 Kyle, any final comments?

8 MR. WALLACE: No.

9 MR. MOORE: Can I ask a quick question?

10 MS. SCHILLING: Yeah, Jake, go ahead.

11 MR. MOORE: I'm sorry. It's James.

12 MS. SCHILLING: Sorry.

13 MR. MOORE: What's working best? Like
14 if Vermont wants to make this work, what do we point
15 to and say here's some components that, you know,
16 really make this sing.

17 MR. WALLACE: Yeah. I mean it's
18 difficult because every state is very unique in kind
19 of their needs, and I think that when you look at the
20 states with the highest penetration, the Californias,
21 the Massachusetts, the New Jerseys, you know, they
22 have all understood that there is a lot of value that
23 is captured both through, you know, the avoided
24 electric costs but also the societal benefits, the
25 health benefits.

1 And they have made sure that, you know,
2 we want to have a healthy solar industry. I think
3 that that has to be a driving factor. If you don't
4 have that as one of your objectives, then you're
5 going to end up with compensation structures that
6 don't work. And ultimately, you're going to lose
7 jobs. You're going to not have the impact on the
8 electric grid of these zero carbon resources close to
9 load that can drive significant benefits,
10 particularly when paired with EV charging and storage
11 and all of the technologies that are emerging.

12 You know, I think that -- I'm not -- I
13 don't want to say that net metering is as is, is what
14 needs to be for all time. I definitely agree that
15 there are changes that need to be made over time as
16 you hit higher penetration levels. And, you know,
17 you want try to align that value, and so, you know,
18 in those higher penetration states, you know, time-
19 of-use rates make more sense to try to drive adoption
20 of storage, because then that's shifting the value of
21 the solar to those peak hours.

22 So I think that's a valuable theme,
23 once you've started hitting those higher penetration
24 values. But, you know, the simplicity, not going
25 away from what has worked and, you know, paring down

1 incentives over time that are in addition to net
2 metering, we have seen that in various states, but
3 you know, I think it's really been about the
4 simplicity, the consistency, and knowing that the
5 state is going to help. You know, is not going to
6 just decide that one day we don't want to have, you
7 know, distributed solar anymore. Having that kind of
8 longer-term certainty has been very helpful.

9 MS. SCHILLING: Jake, did you have any
10 questions?

11 MR. MARREN: I don't have any
12 questions. But if we are finished with Mr. Wallace,
13 not forcing that point right now. But I think that
14 we should talk about whether we should take a break
15 for lunch at this point, and then come back for our
16 last presenter after that.

17 MS. SCHILLING: The other presenter we
18 have is Aegis requested 20 minutes.

19 MR. MARREN: Yeah.

20 MS. SCHILLING: Who is on from Aegis?

21 MR. MARREN: I think it's Mr. Behn.
22 Nils, we can't hear you. Sorry.

23 MS. SCHILLING: Maybe that's a good
24 reason to take a break so he can figure out his
25 audio.

1 MR. MARREN: Yeah. Let's do that. How
2 about we take a little less than an hour. We will
3 shoot to come back at 1:30. We will have a last
4 presentation. And then we can have any final
5 comments and a discussion about next steps.

6 So we will see everyone back here at
7 1:30.

8 MS. SCHILLING: And Nils, you can try
9 calling in if your computer audio is not working
10 properly. Great. Thanks.

11 (Recess was taken.)

12 MR. MARREN: All right. Nils, are you
13 with us?

14 MR. BEHN: I believe I've worked it
15 out. Can you hear me?

16 MR. MARREN: I can. Great.

17 MS. SCHILLING: Yes.

18 MR. BEHN: Thank you for keeping the
19 mic on. That helped.

20 MR. MARREN: Are you all set, Nils?

21 MR. BEHN: I am, yes.

22 MR. MARREN: All right. Well take it
23 away.

24 MR. BEHN: Okay. Do I need to click on
25 the screen down below?

1 MR. MARREN: Yes.

2 MR. BEHN: Okay. There we go. Great.
3 I'll clean up my screen a little bit. No. I don't
4 want to do that. Okay. For some reason I'm having
5 -- there we go. There we go. Okay. Can you all see
6 my screen?

7 MS. SCHILLING: Yes.

8 MR. BEHN: Great. Thank you. Okay.
9 Thank you, commission, for holding this workshop.
10 It's very much appreciated. It's very timely as
11 well. So I will jump right into it. Okay.

12 So in summary, what I'm going to be
13 covering today is just essentially giving some
14 background on really how severe the climate emergency
15 that we are in is. And hopefully I'll impress upon
16 everyone how we have no time to waste.

17 So I'll also be discussing Vermont's
18 energy mix and how it is not lowering our carbon
19 emissions and discussing a comparison of, you know,
20 the dollar value of the carbon offset of net metering
21 as it compares to energy efficiency.

22 I'll be discussing PUC rule changes and
23 how they have harmed Vermont's economy and our
24 environment. These are rule changes as it relates to
25 net metering.

1 And then I'll conclude with a
2 discussion of simple changes that we can make to get
3 us back on track.

4 Okay. So this graph shows CO2
5 particulate atmosphere -- in the atmosphere over an
6 800,000 year period. And you can see on the far
7 right-hand side how there is this massive spike as a
8 result of anthropogenic injection of CO2 into the
9 atmosphere. We are currently -- 2020 was the hottest
10 year of all, and the last seven years have been the
11 hottest on record. So there is no question that the
12 climate is heating up.

13 So here's some facts to give you some
14 context of how important acting now is. We have 50
15 percent of the world's coral reefs have been
16 destroyed due to climate change. The pace of glacier
17 loss is four times faster today than it was in the
18 1980s. 2020 was the worst wildfire season in U.S.
19 history, and 2021 is on track to exceed that.

20 And then just a couple weeks ago, we
21 had hurricane Ida sweep through New York City and it
22 created the first ever New York City flash flood
23 emergency where 45 people died in the region. So
24 there is no question that not only is this happening
25 globally, it's happening regionally as well.

1 The graph on the right-hand side is a
2 graph showing a decline in sea ice over the last four
3 decades. And that adds up to about 13.1 percent per
4 decade of sea ice loss. It's a trend that's very,
5 very clear. And with 40 years of tracking of this,
6 it really just speaks extremely well to how climate
7 change is affecting our planet already.

8 So the future is here, and we are
9 falling behind. We have got a transportation and
10 heating sector that is transitioning from fossil fuel
11 to electricity. And the result of that's going to be
12 a significant increase in electricity demand by more
13 than 25 percent. And the only meaningful way to
14 address that increase in electricity is by finding
15 carbon free sources, and that it needs to be coming
16 from new renewable energy.

17 Old hydro does not -- it's business as
18 usual. It does not move the needle at all in
19 reducing our carbon footprint and our carbon impact.
20 The graph on the right-hand side, I think, is a
21 really important one. This was produced by the
22 Washington Post. And it shows Vermont's energy mix
23 very -- in very simple terms, and how much renewable
24 energy we have as proportion of our total energy mix.
25 And you can see, I'm color blind, but I believe

1 that's an orange line going across with the arrow
2 here. Everything above this line is fossil fuel
3 generated even today.

4 We have what -- Kim Hayden did a really
5 good job of explaining is we have REC arbitrage
6 happening in this section right here. What is
7 labeled as fake hydro RECs. These RECs are not
8 clean. And Kim, I'll leave it -- leave you to look
9 at what Kim had to say about this. She did a better
10 job than I can of explaining how that is not clean
11 energy.

12 So I think it will be helpful for all
13 of us to get a sense of sort of the life cycle or
14 path that these hydro RECs take as it relates to
15 Vermont. So something to be aware of is Hydro-Quebec
16 flooded 6 million acres of land. A lot of that was
17 indigenous lands, and obviously a lot of that was
18 very valuable natural landscape for the indigenous
19 flora and fauna. That began 40 years ago or more.
20 And that area, 6 million acres, by the way, is almost
21 exactly the footprint of the State of Vermont.

22 So those -- those plants, those hydro
23 plants in Quebec, they really do nothing to reduce
24 our carbon impact today. They emit methane which Kim
25 and James did a good job of explaining. And they

1 don't do anything to lower our carbon footprint. So
2 Vermont buys these Hydro-Quebec RECs to cover up our
3 fossil fuel energy use, and we are pretending that
4 they reduce our carbon footprint. But to make -- but
5 the fact is that they actually make us dirtier.

6 To make things worse now that Vermont
7 is pretending to have abundant clean energy, we are
8 selling those RECs out of state, and the result of
9 that is that polluters end up buying those RECs and
10 that enables them to continue to pollute. So the
11 result is that we get a dirtier energy supply and a
12 planet that continues to be in crisis and is going to
13 be more in crisis as time goes by.

14 Ironically, this article just came out
15 two days ago. And the Vermont Attorney General is
16 suing fossil fuel companies for misleading the public
17 on climate. Here's a quote from Attorney General
18 Donovan. And he says: Vermonters have a right to
19 accurate information in order to make informed
20 decisions about the products they purchase.

21 I would argue that Vermonters do not
22 understand what's going on with REC arbitrage and
23 Hydro-Quebec RECs. And I would be really interested
24 to see what the Attorney General has to say about how
25 that's being handled.

1 So here's a -- what I would like to get
2 into now is a comparison of a really popular program
3 in Vermont which is the efficiency program. And it's
4 been around for a long time, gotten widespread
5 support throughout the state. And it's been very
6 successful in reducing our carbon impact. So to --
7 I'll just draw some attention to this.

8 So the Energy Efficiency Charge adds 7
9 percent to the customer's bill. So that adds up to
10 about \$6.72 to the average monthly Vermont
11 electricity bill. And again, we have seen amazing
12 carbon reductions through this program.

13 Now for the net metering program, what
14 we are seeing is a .37 percent addition to a
15 customer's bill if you take into account the
16 methodology that the Department of Public Service is
17 using to identify, quote unquote, ratepayer impacts.
18 This does not take into account societal impacts.
19 And so what this does is this adds 34 cents to the
20 average monthly Vermont electric bill. That is de
21 minimis.

22 Now let's put this into perspective so
23 we can look at this apples to apples, because right
24 now efficiency and net metering in probably
25 everyone's eyes, because they have a different level

1 of contribution to our carbon footprint, we need to
2 look at it from an apples-to-apples comparison.

3 So what we have done here is we have
4 taken 10,000 tons of carbon per customer per year.
5 So we want to understand how effective dollar for
6 dollar is energy efficiency reducing carbon as it
7 compares to net metering. And what we see is for the
8 same amount of carbon, the average residential
9 customer is spending 67.2 cents per year to reduce
10 10,000 tons of carbon through efficiency. But for
11 net metering they are only spending 9 cents to get
12 the same 10,000 tons of carbon reduction per year.

13 So what we get from this is that
14 efficiency's great, because we have to have an
15 all-of-the-above approach to addressing climate
16 change. We have to do everything. And what we are
17 seeing is efficiency grade, but net metering is 7
18 and-a-half times more cost effective at cutting
19 Vermont's carbon impact.

20 Now there's been a lot of questions
21 about how rule changes have affected the state, and
22 in particular, deployment of solar. And we will talk
23 about deployment in just a minute. But if we look at
24 the Vermont Department of Public Service Clean Energy
25 Development Fund's job report that came out in 2020,

1 it has some very powerful and enlightening
2 information regarding jobs; job growth or job loss
3 over time. And if we compare the job loss in the
4 renewable energy sector to policy, we see that there
5 appears to be a very strong correlation between
6 changes in policy and net-metering rules in
7 particular, to job loss.

8 So at the top of the screen we have
9 2014 where there was strong support of net metering
10 and renewable energy in general. And in that year,
11 we added 565 renewable energy jobs to Vermont. And
12 by the way, these are jobs that are typically younger
13 people. And those people are taxpayers. And we have
14 an aging -- we have an aging population, and people
15 are aging into retirement now. And we are losing
16 that tax revenue from those retirees.

17 So it's really important for us to
18 maintain our younger population to keep our tax roles
19 high. So every one of these renewable energy jobs,
20 almost every one of them, represents a younger person
21 who wants to build a life here in Vermont, grow a
22 family, own a house, and have a good healthy job. So
23 2014 strong support. 2015, again, strong support.
24 We added 1,854 renewable energy jobs that year. That
25 was by far the fastest growing job sector that year

1 in Vermont.

2 And this is -- the piece here is
3 support for these programs supports our economy in a
4 very big way. So and then -- whoops. Sorry. And
5 then we have a change of guard in the Governor's
6 mansion, the Governor's office. And this is not
7 intended to be a partisan comment here. It's just a
8 -- I want to show that policy changes things in a big
9 way.

10 So there is a moratorium in 2016 on
11 wind power. And we lost 436 renewable energy jobs
12 that year. And then there was a reduction in 2017 in
13 the net-metering rates, and we lost another 266
14 renewable energy jobs.

15 Again, another reduction the next year,
16 2018, more jobs lost. 2019, another reduction. More
17 jobs lost. And then 2020 was a major hit to
18 renewable -- to net metering in particular as it
19 relates to rates. We were at the bottom of what
20 makes projects economically viable. We were getting
21 close to the bottom anyway, if not near -- if not at
22 there.

23 And then another 3 cents was taken out
24 per kilowatthour. So when you're looking at net-
25 metering rates that are 15, 16, 17 cents, 3 cents is

1 a large percentage of the revenue for a project.
2 Especially when you're working on really thin
3 margins.

4 So I'm expecting that we will see in
5 2022 as the effect of this change in 2020 comes in,
6 we will be seeing a huge spike in job loss as a
7 result of that. So again, just to kind of reiterate
8 the point. This is more graphical. You can see that
9 stable support with Efficiency Vermont in this upper
10 graph has resulted in stable job numbers over time.

11 The top bar is the most recent year,
12 2020, and the bars that go down are going further
13 back into time. So PUC restrictions on net metering
14 have resulted in a loss of 930 jobs since 2016.
15 Again, the top bar is the most recent year. So we
16 are at an all-time low since 2016. And then you can
17 see each year dropped.

18 And then prior to the current
19 administration's -- renewable energy has added an
20 average of a thousand jobs per year. There was
21 massive growth. And our policymakers -- we want to
22 have strong jobs in the state. These are really good
23 paying jobs. They are far above average in terms of
24 pay rates. There is no reason why we wouldn't want
25 to support the net-metering program. It creates

1 jobs, it creates renewable energy to lower our carbon
2 footprint and addresses climate change. There is no
3 reason for us to be hobbling the industry.

4 This speaks directly to the Chairman's
5 question related to wanting to see the effect of
6 these policy changes on actual deployment of
7 renewable -- or solar projects and net-metering
8 projects. So this graph very -- speaks directly to
9 that. We have the different colors represent
10 different sizes of projects, and all three of these
11 sectors the community-scale, small-scale and
12 residential, all contracted over the last four years
13 really, as a result of rule changes by the PUC.

14 The massive decline, I would say this
15 is akin to what Kyle mentioned in Utah and in Nevada.
16 This is a dropping off of the cliff, which for some
17 reason no one's really speaking about right now. But
18 what this graph is generated from is this is the CPG
19 applications. So this is a representation of how
20 viable projects are in those years as a reflection or
21 a reaction to policy.

22 And you can see that people were just
23 in the 2019, they are not putting in applications
24 because the numbers just do not work. So again, just
25 to hammer this point home. Let's take a look at 2020

1 and put this into perspective. This is 2020
2 net-metering rule changes. So this is what was going
3 on in this year when there was a reduction of 3 cents
4 to the net-metering rates. So in 2020 that was the
5 worst year in over a century due to a pandemic.
6 Vermont at that point in 2020 at the point of this
7 rate reduction ranked number two in the country for
8 most jobs lost per capita due to the pandemic. It
9 was the worst year in recorded history for wildfires
10 in the U.S. And it was the hottest year in over
11 800,000 years.

12 So this is really frustrating, but the
13 PUC and the DPS responded by hobbling Vermont's long-
14 established solar industry which again, has been one
15 of our strongest economic drivers. The rule changes
16 suppressed one of Vermont's best tools for combating
17 climate change. And it really puts into question the
18 administration's concern for good paying Vermont jobs
19 and the climate.

20 So why should we support net metering?
21 Obviously, it's an absolutely cost effective way to
22 combat climate change. It creates great jobs in the
23 state that are well above average in terms of pay.
24 It strengthens Vermont's independence. The less we
25 are dependent on outside energy source, the better.

1 We will be more resilient. It helps upgrade the
2 aging grid and adds resiliency.

3 Every commercial-scale project or
4 community-scale project that we build pays for
5 significant upgrades to the utility and helps keep
6 young Vermonters in Vermont. Projects pay taxes to
7 the towns and the state. And projects pay lease
8 payments to struggling landowners like farmers. It's
9 the only alternative to the monopoly utilities.

10 The way our utility structure is --
11 system is structured in the state, the utilities are
12 effectively monopolies in their regions. So this is
13 the only alternative that a ratepayer has to
14 supplying their power. And, of course, it grows
15 Vermont's economy.

16 So what we should do to fix net
17 metering? Because there is a lot to be fixed. But
18 it's really simple. There are a lot of things that
19 we can do that will be very straightforward to
20 integrate into the program.

21 So first of all, we need to recalibrate
22 the net-metering rates to accelerate deployment.
23 That accelerating deployment needs to be a primary
24 focus of what the rates are. We shouldn't be setting
25 rates knowing that it's going to inhibit deployment

1 of solar. So just a no brainer in a time when we
2 have to act as fast as possible to address the
3 climate issue that we are in.

4 We should restore 2017 permitting --
5 the 2017 permitting process for 150 kilowatt or less
6 projects. Prior to that change, projects of 150
7 kilowatts or less were able to put in an application
8 instead of a full petition. Petition costs us about
9 \$35,000 and has hundreds of pages of content
10 including expert testimony, and a lot of studies and
11 so on.

12 Before, we would have a seven- or
13 eight-page submittal with a wetland delineation and
14 that would be our submittal for 150-kilowatt project.
15 There is no reason why we can't go back to that and
16 still protect landowner rights and the environment.
17 We need to encourage instate renewables. And we
18 really should be tripling the annual Tier II
19 requirements. I know that that is a legislative
20 question, not a question for the PUC, but still.
21 General encouragement of the instate renewables, I
22 think, should be a focus for the PUC.

23 We absolutely have to stop allowing
24 dirty hydro to count as renewable. It's not. And by
25 the Department's own admission, they are not counting

1 the carbon or greenhouse gas impact of the hydro RECs
2 that we are purchasing. So that's just an admission
3 of the fact that it's dirty.

4 So we would recommend moving from a
5 one-year CPG duration to a two-year CPG. Vermont has
6 a very short construction season, and it seems like
7 there are any number of reasons why projects get
8 delayed. And if we do want to encourage the
9 deployment of renewables, we should just eliminate
10 that simple issue of the one-year CPG and allow us a
11 two-year CPG duration.

12 We need to create an energy storage
13 program. The only way we are going to be able to get
14 the level of penetration of renewables into the grid
15 that we are going to need to be handing off a planet
16 that we are proud to hand off to our grandchildren is
17 by adding energy storage. But currently energy
18 storage does not pencil out. It's impossible to make
19 energy storage work economically right now. But the
20 benefits to the planet and to the grid and to the
21 smart grid are enormous, and we need to make sure
22 that every project that gets built can put in energy
23 storage economically.

24 That's what's going to build a
25 resilient grid that can respond when it's needed. We

1 need to increase the project size cap to 1 megawatt.
2 There are a number of projects that we have built
3 that are in amazing locations. They are in a gravel
4 pit that you can't see from anywhere. And that
5 gravel pit could support a much, much larger project.
6 But we were restricted to a 500-kilowatt project due
7 to the rules. It would be great if we could somehow
8 identify or make those sites, and really any site
9 that can support a one-megawatt project, allow it to
10 happen. That's how we open up locations for new
11 renewables that are not going to have an impact.
12 They have already proven they don't have an impact.

13 We can protect our watershed, and Ms.
14 Smith, this addresses one of your questions in
15 regards to asking our industry for suggestions about
16 how we could build projects responsibly in the
17 environment. And I think this would be a really good
18 addition to the list would be to allow solar in farm
19 fields that are designated as Class II, but they are
20 actively being hayed or tilled or grazed. Those
21 Class II wetlands you could put solar in those
22 fields, and it would actually protect the watershed
23 because no longer are you having disturbance of the
24 soil through tilling or manure spreading or just
25 activities with tractors on those fields. And there

1 are a number of sites where farmers have fallow
2 fields that they can't use because either they have
3 closed down operations because of milk price or
4 whatever, or farmers are struggling. And they need a
5 way to get revenue into the coffers so they can keep
6 operating.

7 And leasing their land to -- so the sun
8 can be harvested on their land is a great way to do
9 that. So we need to expand preferred site
10 categories. There are a number of greenfields that
11 there is no trees on them. You can't see them from
12 anywhere. But they are not considered preferred
13 sites. There are a tremendous amount of areas like
14 that. And expansion of preferred site categories is
15 going to have to happen for us to allow the much
16 faster deployment of renewable energy in the state.

17 So here's one that is really vexing for
18 me. Is there is a cap on a -- a customer can only
19 use 500 kilowatts of net metering regardless of their
20 electric load per the current rules. Unless you're a
21 school. You can take one megawatt. So why -- what
22 is the purpose of that? There is no reason why we
23 should not allow a customer to offset every
24 kilowatthour of their electric bill with net
25 metering. It used to be that way only a few years

1 ago, but then there was a rule change. And the only
2 reason that I can come up with is to eliminate
3 competition with the utilities or some other reason.

4 I don't want to get into conspiracy
5 theories here, but there is really no reason. There
6 is no practical administrative reason. There is just
7 no reason for this. We need to allow a large energy
8 user to offset all of their energy with net-metering
9 credits. This is obviously not accounting for the
10 non-bypassable charges. And then, of course, we need
11 to make sure that -- and I believe statute mandates
12 this, but we need to make sure it's happening. We
13 need to factor in all of the societal benefits,
14 including the climate benefits and other societal
15 benefits to the state, when we are figuring out what
16 net-metering rates should be.

17 So I guess I'll just close with just a
18 comment here about how important it is that we are --
19 right now we have two options. We are in -- we are
20 at a point where we can decide where we are going to
21 go. If we continue the assault on net metering, we
22 are going to have more job losses, carbon emissions
23 are going to continue to rise, Vermont businesses
24 will flee the state to survive, and Vermonters will
25 lose. But if we support net metering we are going to

1 see an invigoration of Vermont's commitment to
2 combating climate change. We are going to keep
3 Vermont businesses in Vermont. We are going to
4 restore what was the fastest growing economic sector
5 in the state. And we are going to add hundreds of
6 good paying jobs each year to our economy and to the
7 tax rolls.

8 The PUC has an incredibly important
9 role in helping this happen and a very powerful role.
10 And I guess I would just ask you all to really think
11 about what you've heard today, because I think
12 everyone has done an amazing job of providing
13 extremely compelling information about how important
14 this is for our state.

15 And I'm just hoping that it will help
16 shift your thinking about net metering and how we
17 need to proceed going forward. And I really
18 appreciate the time. And thank you very much.

19 MS. SCHILLING: Thanks, Nils. Do folks
20 have questions for Nils Behn? If you have a
21 question, you can pipe up by typing in the chat, or
22 you can just turn on your camera and your mic.

23 And Nils, if you want to stop sharing
24 your screen, then all of our pictures will get
25 bigger. Thanks.

1 MR. BEHN: There we go.

2 MS. SCHILLING: Chairman Roisman.

3 MR. ROISMAN: I just -- you had some
4 charts in there that provided data from the
5 Department of Public Service. And I wonder if you
6 could provide us with the page numbers where those
7 charts appear in the Department's report just so we
8 have got a clear reference to where they come from.

9 MR. BEHN: Absolutely. Yes. I'll make
10 sure that in our written follow up to this meeting
11 that we provide that information for you.

12 MR. ROISMAN: Okay. Just to be clear,
13 the charts you showed us were the charts as they
14 appeared in the Department's report? Not a chart
15 that you put together from data that you found in the
16 report. Just want to be clear on that.

17 MR. BEHN: Right. Yeah. So the Clean
18 Energy Development job fund report.

19 MR. ROISMAN: Yeah. Okay. Great.
20 Thank you.

21 MR. BEHN: Thank you.

22 MR. ROISMAN: And I did have one other
23 question. At one point you made the point that I
24 think it was the transition from either 2019 to 2020
25 or 2020 to 2021, that basically the amount paid for

1 net metering had passed the point where you could
2 make a return on the investment. Something like
3 that.

4 And I had asked at the beginning
5 earlier today whether we have any statistics, actual
6 data on cost. I mean basically the argument you're
7 making, which is a particularly valid point to make,
8 is that the same kind of argument that utilities make
9 to us when they come to rates. They present to us
10 all of their costs, and explain why they are
11 reasonable costs, and then they say we want a rate of
12 return of whatever 8, 9, whatever percent. And we
13 evaluate that and make a judgment.

14 You're essentially asking us to do the
15 same thing which doesn't seem an unreasonable thing
16 to do. But we don't have the input data on what does
17 it cost to buy the panels. What does it cost to move
18 them to the location. What is labor costing. If
19 you're buying land or leasing land, you know, for
20 these larger projects, what is that running. And,
21 you know, sort of that -- the same kind of detail
22 that we would see in a typical rate proceeding so we
23 can appreciate where we get to the point that what we
24 are doing is economically discouraging the further
25 use of net metering.

1 Because frankly, we continue to see
2 fairly robust applications for net metering of --
3 following each of those steps that you laid out in
4 your testimony when we lowered the rates for net
5 metering. And that's continued into the latest --
6 the end of 2020. So it's important for us to see
7 that underlying data if it's available, if someone
8 has done a study or something like that.

9 I'm not asking for anecdotal data, you
10 know, I had this one project and -- but sort of
11 across your industry here in Vermont. That would be
12 very helpful, if it exists.

13 MR. BEHN: Yeah. No. I think that's
14 an excellent point. It really is important. There
15 is obviously a bit of a challenge because we -- we
16 need to be careful to preserve, you know, sort of
17 intellectual property or, you know, trade secrets in
18 terms of costs of things, in terms of protecting it
19 from other competitors. Right? So I think if there
20 could be a framework where some of this information
21 could be provided privately to the PUC, I think that
22 you would find a lot of participation from solar
23 companies. Like Aegis could provide you with that
24 kind of context and information about project costs
25 and also about the economics of projects and how

1 viable they are and where is the tipping point on
2 economics?

3 I think that if we can find a way to be
4 sharing that, you know, safely, we would love to do
5 that.

6 MR. ROISMAN: Well, as you know, we do
7 have procedures for receipt and evaluation of
8 confidential data, so that's certainly something we
9 can look at and see whether there is any role for
10 using that kind of a process here. As you know, the
11 rulemaking is not technically a contested case. So
12 we actually have more freedom to look at information
13 than we would if this were an application that Aegis
14 had made for a particular project where we would then
15 be in a contested case context.

16 But we will certainly look into it.
17 And thank you for making that offer.

18 MR. BEHN: Sure. And one thing, just
19 going back to the conversation around solar carports,
20 for example, certainly providing a percentage of
21 difference between ground-mounted racking versus
22 solar carport racking. That's something that we are
23 very comfortable sharing openly. But it's just more
24 specifics in terms of costs that would be.

25 MR. ROISMAN: Okay. Thank you very

1 much, Mr. Behn.

2 MR. BEHN: Sure. Thank you.

3 MS. CHENEY: I was just a little
4 unclear about your answer to Chairman Roisman about
5 the data for -- from the clean energy department -- I
6 mean -- sorry -- the Department of Clean Energy, you
7 know what I mean. Clean Energy Fund, Department of
8 Public Service data. So clearly that's where the
9 source is. But were the charts in your presentation
10 lifted from that report, or did you create the charts
11 from the data in that report?

12 MR. BEHN: All of the charts related to
13 jobs are directly cut and pasted from the Clean
14 Energy jobs fund report.

15 MS. CHENEY: Okay. Thank you.

16 MR. BEHN: Sure.

17 MS. SCHILLING: Ms. Smith?

18 MS. SMITH: Yes. I guess I have a
19 couple of comments. One is that your presentation of
20 the job losses I found a bit misleading in that you
21 referenced a wind moratorium and tied that to 200
22 jobs lost. And there never has been a wind
23 moratorium. And so I just wanted to get that into
24 the record that I think that the way that you
25 presented it was not an accurate portrayal of what

1 happened.

2 And my other comment follows up on
3 Chair Roisman's question. In a utility rate review
4 one of the things that is identified is the rate of
5 return or the return on investment. And I have been
6 frustrated by the lack of transparency in the solar
7 business, in general. And I want to make it clear, I
8 am very much a proponent of renewable energy. I just
9 found a commentary that was published on Vermont
10 Business Magazine that calls me an anti-renewable
11 crusader. I find that to be very unproductive and
12 inaccurate.

13 And so my frustration is that I look at
14 some of these companies that are especially doing 500
15 kilowatt projects, and I see a huge amount of staff.
16 And it's all net-metered projects. And I wonder how
17 much profit there is that is enabling these -- this
18 large, what I would say large overhead. And then the
19 other piece of it that there is no transparency on is
20 the role of the investment tax credit beneficiary,
21 which I understand enables the person with a lot of
22 wealth to instead invest in a solar project and get a
23 nice rate of return, which I don't know exactly what
24 it is. I know what I've heard, but I don't want to
25 perpetuate rumors.

1 And so helping to -- and I totally
2 appreciate the need for there to be confidentiality
3 on competitive issues. But I think that if there was
4 a way to be more transparent in the financing of it
5 all, who is making the money? Where is it going?

6 I mean we all want to support Vermont
7 jobs. But we are told that instate renewables are
8 going to keep the money in the state. Yet I think
9 there is a lot of money going out of the state on
10 renewable development. And so anything that you can
11 do, especially within the industry, to help bring
12 some transparency, I think it would help build
13 support.

14 And I guess also I'll comment on your
15 discussion about Class II wetlands on the water
16 issues. There -- I keep running into citizens who
17 are concerned that they have heard that there are
18 PFOS chemicals in solar panels. And I've twice asked
19 the Agency of Natural Resources which is going out
20 and doing testing for PFOS, would you please check
21 the drip line of old solar panels versus newer ones,
22 and see if any PFOS is getting into the environment.
23 This is an overarching issue throughout so much of
24 our environment right now.

25 If the industry doesn't think that's a

1 fair question, then I think it could be answered by
2 some simple testing. And I would like to see that
3 happen before more solar panels are put on, for
4 instance, search protection areas for water supplies,
5 so there is an assurance that there are no PFOS
6 chemicals that are leaching out. And I have no idea
7 if they do or not. I'm not accusing anybody. But I
8 think that's a reasonable request to make, to
9 reassure people that there isn't a problem.

10 And if there is, I think we should know
11 about it so that we can take that into consideration.

12 MR. BEHN: Thank you. That's a lot --
13 Jake, you're on mute.

14 MR. MARREN: Can you hear me now?
15 Sorry about that. The last point about PFOS, I
16 appreciate the issue, Ms. Smith. Let's try to keep
17 today's workshop focused on compensation for net
18 metering systems. We have sort of strayed a little
19 bit into natural resources issues which is important,
20 for sure, but not the subject of today's workshop.

21 So we don't need to keep that
22 discussion going right now. Feel free to submit
23 written comments on it at another time, but for today
24 let's stick to compensation.

25 MR. BEHN: Thanks, Jake. Yeah,

1 Annette, a lot of good interesting points that you
2 make and a lot to unpack there. But I guess to
3 start, effectively there is a moratorium, I guess
4 it's not called a moratorium, I know it isn't, but
5 when you require a one-mile setback from a utility-
6 scale wind turbine, that effectively makes it
7 impossible to install.

8 So in regards to who is investing in
9 these projects. I can give you an example of a large
10 portion, more than half of our projects built last
11 year, actually probably 2/3 of our projects built
12 last year and the year before were invested in by
13 Vermonters, Vermont companies that have tax liability
14 and can apply the tax credits.

15 And so I would say the majority of the
16 projects that we have built, and we only do
17 commercial-scale projects, community-scale projects,
18 are local projects. Local investors. And locally
19 built. We are using subcontractors from within the
20 state in almost all cases. And we are building a lot
21 of economic vitality in the state through building
22 these projects.

23 So I don't know that I captured all of
24 your questions, but feel free to reach out if you
25 would like more clarification on some of your other

1 points.

2 MS. SCHILLING: Are there other
3 questions? Any final comments from the presenter?
4 Nils, would you like to make any final comments? Or
5 are you all set?

6 MR. BEHN: Just thank you very much to
7 the commission for holding this workshop. I really
8 appreciate it. Thank you very much.

9 MS. SCHILLING: Thanks.

10 MR. MARREN: All right. It's been a
11 pretty long workshop. So at this point we were going
12 to talk about next steps.

13 As we have done with all of our
14 previous workshops, I think our intention was to
15 have, you know, an opportunity for written follow-up
16 comments, and we would ask that those be submitted by
17 Friday, October 15. So that gives you about a month
18 to get any additional written comments specifically
19 on the topic of net-metering compensation.

20 There are separate deadlines for
21 comments on the other topics of the workshops we have
22 held. Those are coming up soon, so look back at the
23 memoranda that we have issued in this case if you're
24 interested in those deadlines for the other topics.

25 I think also though, with those

1 filings, it might be helpful if you think there are
2 other procedural steps that the commission needs to
3 take at this point, whether it's having more
4 workshops, or doing some other kind of process, feel
5 free to put that into your written comments so the
6 commission can consider it.

7 Is there anything else that folks would
8 like to talk about today? I'll sort of open things
9 up one more time. If anyone saw anything that they
10 just now want to make a sort of substantive comment
11 about net-metering compensation at this point, now is
12 your last time to do it in person with us. Otherwise
13 I ask you to put it in your written filings that
14 you'll be submitting in October.

15 MR. PHANUEL: Eric Phanuel. Jake, I've
16 got a comment.

17 MR. MARREN: Yes, sir. Mr. Phanuel.

18 MR. PHANUEL: There was a lot of
19 interest on pricing and rates of return and whatnot.
20 And we actually had a project, it's a really good
21 test case I guess, same size roof project and canopy
22 project on the same site for an actual customer that
23 actually got built.

24 And the price per watt for the canopy
25 project versus the roof project it was a 55 percent

1 premium per watt. It just gives you a little bit of
2 an idea of what you're dealing with. Those were 50
3 kilowatt AC arrays, roof versus canopy.

4 MR. MARREN: Interesting. Yeah, if you
5 have -- I think I actually recall this project. But
6 if you have, you know, anything, you can submit it
7 with your written filings kind of documenting that or
8 showing that that's all relevant stuff that the
9 commission can look at. So feel free to send it in.

10 MR. ROISMAN: And Jake, let me just add
11 to what you said there. I think it would be useful
12 for us to know where the price differential occurred.
13 In other words, was it because of panel difference?
14 Was it because of infrastructure work? Because --
15 was it because of labor? You know, just so we have a
16 better understanding of what's making the one much
17 more expensive than the other. That would be helpful
18 if it's available.

19 MR. PHANUEL: Sure.

20 MR. MARREN: All right. I think that
21 concludes today's workshop. I appreciate all the
22 presenters and their very good efforts for sharing
23 their perspectives with us. So thank you very much
24 everyone. Have a nice afternoon.

25 (Whereupon, the proceeding was

adjourned at 2:22 P.M.)

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C E R T I F I C A T E

I, Kim U. Sears, do hereby certify that I recorded by stenographic means the Workshop re: Case No. 19-0855-RULE, via videoconference, on September 16, 2021, beginning at 9:30 a.m.

I further certify that the foregoing testimony was taken by me stenographically and thereafter reduced to typewriting and the foregoing 157 pages are a transcript of the stenograph notes taken by me of the evidence and the proceedings to the best of my ability.

I further certify that I am not related to any of the parties thereto or their counsel, and I am in no way interested in the outcome of said cause.

Dated at Williston, Vermont, this 20th day of September, 2021.

A rectangular box containing a handwritten signature in cursive script that reads "Kim U. Sears".

\$ \$11 - 22:3 \$30 - 24:14 \$35,000 - 139:9 \$5,000 - 118:11 \$6.72 - 131:10 \$80 - 21:21 0 05402-0329 - 1:22 1 1 [9] 4:20, 62:15, 103:14, 119:6, 119:12, 119:21, 121:3, 121:13, 141:1 1,854 - 133:24 1.7 - 60:5 10 [15] 20:21, 39:7, 53:25, 55:4, 55:6, 56:11, 56:16, 57:11, 67:1, 67:8, 84:25, 98:19, 98:19, 118:7, 121:7 10,000 [3] 132:4, 132:10, 132:12 102 - 2:13 11:40 [2] 85:4, 85:8 12 - 50:11 125 - 2:14 13 - 50:11 13.1 - 128:3 15 [5] 3:25, 89:18, 101:16, 134:25, 154:17 150 [3] 96:19, 139:5, 139:6 150-kilowatt - 139:14 157 - 158:9 16 [4] 1:6, 1:9, 134:25, 158:5 17 - 134:25 19-0855-RULE [3] 1:2, 3:8, 158:5 1960 - 12:11 1960s - 12:15 1980 [2] 12:11, 12:20 1980s - 127:18 1990 - 66:11 1:30 [2] 125:3, 125:7 2 2 [4] 4:21, 6:15, 19:17, 20:3 2.0 [7] 22:10, 23:10, 23:11, 23:25, 74:6, 106:4, 113:16	2.2 [2] 119:18, 119:20 2.3 - 62:7 2.5 - 88:3 2/3 - 153:11 20 [4] 62:18, 89:19, 90:6, 124:18 20-year - 118:7 200 [3] 84:2, 96:19, 149:21 2000s - 22:18 2006 - 61:7 2010s [2] 22:18, 23:2 2012 - 61:4 2013 - 25:13 2014 [3] 62:18, 133:9, 133:23 2015 [3] 26:24, 113:25, 133:23 2016 [6] 26:24, 57:19, 114:10, 134:10, 135:14, 135:16 2017 [9] 14:1, 57:13, 57:15, 113:16, 116:14, 116:19, 134:12, 139:4, 139:5 2018 [3] 109:25, 116:19, 134:16 2019 [8] 24:10, 62:14, 110:1, 110:4, 119:18, 134:16, 136:23, 145:24 202(a [3] 54:19, 55:2, 55:23 2020 [17] 55:9, 59:22, 119:15, 119:24, 127:9, 127:18, 132:25, 134:17, 135:5, 135:12, 136:25, 137:1, 137:4, 137:6, 145:24, 145:25, 147:6 2021 [9] 1:6, 1:10, 62:13, 66:16, 119:15, 127:19, 145:25, 158:5, 158:16 2022 - 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