State Climate and Energy Program—State Technical Forum
Renewable Energy Certificates
Tuesday, October 21, 2008

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Introduction

Julia Miller: This is Julia Miller from the United States Environmental Protection Agency and I'd like to welcome everyone to the Tech Forum call today. This is the fifth year of Tech Forum calls, and for those of you who have been on the calls before and are familiar with them, we usually do almost sort of a full year season where we start in the fall and we run through the end of spring/beginning of summer. So this is the first call for the 2008-2009 season. Normally, we do the call on the second Thursday of each month, but do to scheduling issues, this month we were knocked a little bit off of our usual schedule, but next call right now is tentatively scheduled for November 13. All the calls are from 2 to 3:30 Eastern time.

I'd like to thank our speakers for participating. I know it's a lot of time and energy to put together presentations and prepping for the call. So, I'd like to thank Matt and Micheal and Stan for helping us out here.

The next call, as I mentioned, is tentatively scheduled for November 13. We are thinking about doing that on Evaluation, Measurement, and Verification for Energy Efficiency, and we'll give out more information on that probably next week. I know a lot of you go to the Tech Forum site to get information on the calls and get background materials. We do have an EPA site that also has a lot of information on the forum calls and we've recently updated it. So, everything should be current now.

So, Catherine, is the Web site for that on the agenda or some other place? It's kind of a long address, so I don't want to read it out to everyone.

Catherine Morris: Yeah, no, we haven't put it on the most recent agenda. We'd already put that together yesterday. So, you want to go to www.epa.gov/cleanenergy/energy-programs and there should be an option there for State and Local programs and you'll be able to access it. We will put that site on the agenda from now on, so you can download past topics and documents. It's really a great resource, with background documents, presentations, and summaries.

Julia Miller: Yes, and everything can get sorted by topic, which is really great and useful, as well as sorted by date. In future, it looks like we'll be able to post all materials from the calls within two to three weeks after the call. So, we'll make sure that everyone gets that Web site.

And one last thing that I wanted to mention—there's another Webinar coming up on Thursday. It's EPA's Combined Heat and Power Partnership. They're hosting a Webinar on the role of CHP in State Renewable or Energy Efficiency Portfolio Standards, so I thought a lot of folks on this call might be interested in that as well. So, if you are interested, you go to www.epa.gov/chp and sign up for that.

So, that is all from my end. Catherine, if you want to go through some of the logistics for the call, that would be great.

Catherine Morris: Okay. Thanks a lot. We have 40 folks on the phone, and let me just run through a couple of key aspects of the webinar tool we're using. One is that you can raise your hand, and we have a hand raised already—not sure if that is intentional. Do you have a question about the logistics? Or if you are just practicing, that's okay too.

We have a couple of ways we can interact. Obviously we are going to encourage you to please speak up. We have three great speakers today to talk about renewable energy certificates and state portfolio standards. And what we'll be getting most out of this call is interaction and follow up after the presentations about what's happening in your state, what we need to know more about, and we're going to answer a lot of your questions as well. We hope you'll share some of your experiences. Don't be shy. Please speak up. I know it's hard when you can't see each other to find when is the appropriate time to interject.

The other option we have for you is a question and answer—online question and answer bar on your tool bar. Where you open the Web site you should see in the right corner of your tool bar one of the options is to ask a question and send it to the organizer. It will actually be sent to Erin, who is sitting next to me helping me with the technology here, and she will be able to collect those questions and try to get through as many of them as possible. Again, we would prefer that you ask them yourself when everyone can here, and identify yourself.

The other key element of this is that we have on our audio. We would rather not have to mute everyone. So, if you would please just use the mute button on your own phone or *6 if you don't have a mute button, so that way it cuts down on the background noise. Do not use your hold button. Your hold music will completely override the conversation. So, don't put us on hold. If you have to get off and get back on, that's okay.

And, one final thing. There are documents—presentations, an agenda, and background documents—that you can access on the Keystone Web site. We had an interface that we tried out in the first few webinars. We have a different interface that we are using now, and it will actually host them on this site. It's on the agenda, but if you don't have the agenda, I'll spell it out. You have to go to www.keystone.org/public_policy/statetechforum and that should get you to the documents. Also, at the end of this call, you will be redirected to that site. So, you'll automatically go there to get documents afterwards.

I think with that…the only other thing I would like to add before we get started is to thank those of you who participated in or responded to the questionnaire we send out this summer to get your feedback about both the topics that we've covered and future topics that you would like to hear. And we really listen to you. We've looked through your responses—and we have over 40 people who responded to that—so we have a pretty good idea of convergence of interests. And that's driving a lot of the topics that we're going to cover in the next six to nine months. But, again, we always leave the line open for your suggestions. Next month will be on Monitoring and Verification and then the

other topics that we have lined up are Managing the Electric Grid, Energy and Water, Biofuels, Climate Adaptation Planning and Strategy, Whole Building Design, and a couple of others. So, we are looking for always your feedback on whether or not these are the topics that are high on your priority list, and we want to hear that.

One of the questions is to repeat the web address for the agenda, so I'll give that to you one more time. It is www.keystone.org/public_policy/statetechforum.html, and that will take you to the documents.

Okay, did you have a question before we get started on the logistics or is anyone having trouble getting on the Webinar?

Howard Bernstein: Yes, this is Howard Bernstein. I am unable to open my outlook on this computer for some reason. And, therefore, I don't have that link to the webinar. I tried joining manually with my printout, but I wasn't allowed to join.

Catherine Morris: Okay, we might be able to get you an address that you can use.

Courtney: Hi, Howard. It's Courtney. Did you try remote access to get into your email that way?

Howard Bernstein: Excuse me?

Courtney: If you log into your email through Explorer by the remote access you can get access to your calendar that way to get the link.

Caller: What exactly are we supposed to be looking at on screen at this moment?

Catherine Morris: Right now you are sitting in our waiting room. You're in a place where you see EPA Clean Energy-Environment Technical Forum.

Current Issues with RECs

Catherine Morris: But, we're going to get started by handing it off to Matt Clouse. Matt Clause is at EPA with the Green Power Partnership, and he agreed to give you kind of an overview of this topic, and also he's been working on a particular white paper that he'll tell you a little bit about. Before I turn it over officially to that, I will introduce the other two speakers. Sam Watson from the General Council of the North Carolina Public Utilities Commission will be talking about a very recent change to their RPS and how that is likely to play out over the next couple of years. And he'll be followed by Michael Li, who is the Chief of Staff at the Maryland Energy Administration. Michael is going to talk about the Maryland RPS, obviously, and how some of the policies they have are interacting with REC markets. We're hoping this will give you kind of a foundation to continue discussion about how RPS policies specifically affect price, quality, and availability of RECs.

With that, Matt if you would get us started, I'd appreciate it.

Slide 1: Current Issues with RECs

Matt Clouse: Thanks, Catherine and thanks, Julia, our State and Local Branch colleagues. Again, my name is Matt Clouse. I'm the program director for EPA's Green Power Partnership. I've been asked to lead off today by highlighting some key issues surrounding renewable energy certificates. When I talk about renewable energy certificates, I'm going to say the acronym RECs. So, if you hear me say that, I'm talking about certificates. Some of you may also have heard of the term renewable energy credits, green tags, or even tradable renewable energy certificates. At this point I would argue that RECs, or renewable energy certificates, has become the term of art.

So, let's start by reviewing the issues I want to bring to your attention. I wanted to quickly give an overview of compliance markets, voluntary markets, a little bit of a picture of supply and demand, REC fungibility, REC definitions, RECs and how they could be affected by carbon regulation, RECs as offsets, and lastly tracking systems for renewable energy certificates.

Julia Miller: Hey, Matt, this is Julia. Do you might if I jump in and mention that, for those of you who haven't read the background document, a lot of these issues are covered in that document, and you can find that on the Keystone Web site. Alright, go ahead.

Slide 2: Overview of Compliance Markets

Matt Clouse: Sure. If you are not aware, there are two active markets for renewable energy certificates—RECs. The first here on slide 2 are the compliance markets. These are the markets created by state renewable portfolio standards. We now have over half of states developing their own portfolio standards for renewables and using RECs. Many of them are using RECs as a compliance mechanism. As far as market volume, it's

significant—close to 70 million megawatt-hours were traded in 2007. And a key point on this slide is the variance that we see in prices by markets, and we'll come back to that.

Slide 3: Overview of Voluntary Markets

In the voluntary markets, we have a lot of activity in independent REC marketers and brokers involved in transactions. We have about 20 percent of the volume we saw in the compliance market in the voluntary markets, but the growth can be significant if we continue to have 35 percent growth rates. A big if, given our current credit crisis. And, in the voluntary markets, non-residential demand has been driving the growth, and that is perhaps why I'm here today as a leaf of the Green Power Partnership. Our program has been working with Partners to encourage purchasing of green power, RECs, and on-site renewable energy systems, all of which involve RECs in some way. And, in this marketplace, the prices are lower than in compliance markets, in part because in the national marketplace, there's less constraints with geographic eligibility. But, it's also worth noting that retail prices—as you see in these last two bullets—are going to be higher than what you see in the wholesale market.

Slide 4: Estimated and Projected Supply and Demand for Renewable Electricity

And, with that, I'd like to go to a slide that shows some work that we funded the National Renewable Energy Lab to do. We asked them to take an initial look at the supply and demand for RECs. And what you're seeing here with the dotted green/dashed green line is the voluntary demand. And the top curve, that maroon curve, is the total demand represented by voluntary and compliance markets. So you can see above the green line and below that top curve is the estimated/projected size of the compliance markets. And the middle two curves show an estimated/projected supply line. And what we're suggesting here with this initial look that was done in 2007 is that demand is on pace, potentially, to exceed supply. We're working again on this recently, but it's something that EPA is working with NREL to update.

Slide 5: REC Fungibility

We spoke of variation in prices, not only in the compliance market but in the voluntary market. And with different states' standards for definitions for resource eligibility, generation location, and delivery requirements, we have different size markets that result in different levels of competition and potentially higher prices—I think, definitely higher prices. So, one idea to suggest here as we look at fungibility is that harmonizing these standards and RPS policies could increase fungibility and create a larger pool of renewables and larger markets. This is one of the issues that the Clean Energy States Alliance is currently working on with states to talk about ways in which harmonization could occur.

Slide 6: REC Definitions

Particularly with REC definitions, there's a lot of variation. You have different technologies being eligible and you have Tier 1, Tier 2, and potentially even Tier 3 structures. And then when getting into the issue of emissions, some renewable energy certificates explicitly include emissions reductions, others don't and preclude that. But, most states respond at this point and that becomes important when we start talking about the carbon issue.

Slide 7: RECs and Carbon Regulation

So, cap and trade. This is an issue particularly for the voluntary market where voluntary market sales are in large part driven by environmental benefit claims or environmental benefit statements that the purchasers wish to make. If the carbon allowances are capped and renewables don't receive allowances, then there may be a temporal displacement of emissions from the marginal fossil use. In other words, renewables may displace fossil generation, but because the amount of allowances is limited and they've been given out to emitters, those emissions won't be reduced unless allowances are retired. Therefore, it makes it harder for purchasers in the voluntary market to make emissions reductions claims and drive those markets. RGGI, the Regional Greenhouse Gas Initiative, has attempted to address this issue for the voluntary markets by setting aside a percentage… Let me step back to say, in the model rule, the RGGI model rule, states were given the option to develop set asides for allowances. These allowances will be set aside prior to allocation of the allowances in a way to preserve claims. At this point most RGGI states are using the optional clause in the IRM legislation and rulemaking.

I'd like to make a 30 second plug. On Thursday from 1 – 2:30 the Green Power Partnership will be hosting a webinar for those in the green power market that are interested in making claims once they buy green power from one of these RGGI states.

So that was a question for states on how they intend to use RECs for RPS legislation and something that they should take a look at is their definition of RECs.

Slide 8: RECs as Carbon Offsets

Matt Clouse: In the voluntary market we are seeing RECs being marketed as voluntary carbon offsets. Some states, like the RGGI states, have rules promulgated, but in this case we are talking about the voluntary market. And there are a number of certifiers who are recognizing renewable energy as offsets. This issue revolves around issues of additionality and ownership. And, from EPA's perspective—and I think the Climate Leaders guidance is available on their Web site via the link I've provided here—RECs can be used to reduce indirect emissions from electricity use, but not direct emissions from process use. EPA's perspective on that is that additionality is not so much a concern—they use a performance-based standard. The issue here is one of ownership. And, simply put, the contract for RECs between the generator and the end user generally does not include the marginal fossil units whose emissions were displaced. And so it's typical for ownership to be claimed in that case. Renewable generation can offset carbon

emissions, and great examples would be when landfill gas or methane destruction occurs or when an on-site renewable electricity facility reduces on-site fossil fuel usage.

Slide 9: REC Tracking Systems

Matt Clouse: And, lastly, I would also like to point out that renewable energy tracking systems are being developed in almost all of the states with RPSs as a way to track watts for the state. Not highlighted here, APX is developing a North American Renewables Registry that potentially covers those states and provinces.

Slide 10: Tracking Systems Seams Issues

Matt Clouse: As these tracking systems are set up to address compliance issues for each of these RPSs, one of the questions is how is inter-regional trade captured? That is particularly important for the voluntary market, as the voluntary market could use a tracking system to assist in providing greater credibility and more information that could help with supply and demand projection, essentially with price recovery. So, the Environmental Tracking Network of North America, and they are calling themselves ETNNA, is a new nonprofit that is creating a platform for these tracking systems and stakeholder discussion issues like combination to facilitate tracking.

Slide 11: Contact Information

Matt Clouse: And, with that, I will wrap up my brief remarks on issues you should be aware of with renewable energy certificates.

Catherine Morris: Thanks a lot, Matt. Matt is not able to stay for the duration of the call, so I'm going to be sure to give people plenty of time to have their questions answered about your presentation. If you would just identify yourself and your organization and we'll take questions that way. And you want to press #6 if you are muted, and that will open up your line again.

Uh oh. Somebody put us on hold. Matt, are you still there?

Matt Clouse: I am still here.

Catherine Morris: One of the organizations you mentioned, Matt, is ETNNA, and you'll see if you go to the background document that there's a number of their recent issue papers that are sited, and there are links to that to get more in depth discussion of a lot of these topics that we've touched on.

Matt Clouse: That's right. The background document has a lot more on these issues we've covered.

Catherine Morris: No questions for Matt?

Matt Clouse: I’m able to be on the line a little bit longer, if need be, if you’d like to transition to the next presentation.

Catherine Morris: Okay. We’ll come back and open it up again after our next presenter. I know that he has…Michael Li is joining us at the end of the call. He has not signed on yet.

Renewable Energy and Energy Efficiency Portfolio Standard in North Carolina

Catherine Morris: But I want to turn it over next to Sam Watson, who is General Counsel, as I mentioned, of the North Carolina Public Utilities Commission. And, Sam, you'll be able to—there you go—load your presentation. If you could walk us through a little bit about what is happening in North Carolina, I know you are really between stages. I hope whoever put us on hold is going to come back on. I'm not really sure what to do about that.

Julia Miller: Hey, Catherine, I did the request for an operator, but they haven't answered yet, so I'm still trying

Catherine Morris: Well, if you can try to talk over this, shortly maybe we'll be able to get rid of the background noise when someone comes back on who I think has put us on hold.

Sam Watson: Very well. I will try to speak in short bursts and get in between the music.

Catherine Morris: Let me try this. Julia, are you able to use the mute all to mute everybody? And then maybe Sam can come back on via #6? Is there a way to override that? She may be on the other line. Let's go ahead and start it off. Go ahead, Sam.

Slide 1: Renewable Energy and Energy Efficiency Portfolio Standard in North Carolina

Sam Watson: Alright, well, thank you for inviting me to join you. I know there's a bunch of North Carolina folks, and I appreciate you having me on. Also, thanks for the promotion. Unfortunately, I am not the General Counsel. I am an attorney in our General Counsel's office here in the Commission.

Slide 2: Outline

Sam Watson: I'm just going to… The main focus today, as you know, is on renewable energy certificates or RECs, but I'm going to back up just a little bit to kind of briefly walk through our legislation.

Slide 3: North Carolina Utilities Commission

Sam Watson: I've got the obligatory… Here's the Utilities Commission slide.

Slide 4: Senate Bill 3 (Session Law 2007-397)

Sam Watson: Our legislature adopted a Renewable Portfolio Standard last year, and it was signed into law in August, and the Commission issued a rulemaking proceeding and adopted rules in February of this year. But one of the things that this bill did is establish what we call a Renewable Energy and Energy Efficiency Portfolio Standard because the utilities are allowed to comply with a combination of renewable energy resources and

energy reductions through energy efficiency. Of course, we were the first state in the Southeast to adopt an RPS. I know Florida is looking at it now, but we're still the only ones down here that actually have one.

Slide 5: REPS Requirement

Sam Watson: Our RPS applies to all of the electric power suppliers in North Carolina. There are slightly different standards that apply that depend on whether you're a public utility or a muni/co-op. [Hold music ends.] Oh, that sounds better. But, the RPS requirement is three percent of your retail development in 2012. It goes up to six percent and eventually 10 percent. For the public utilities, it increases to 12.5 percent, and they're allowed to include more energy efficiency. And they can also bank the credits, so that they can carry them forward—any excess credits forward—every year.

Slide 6: Set-asides

Sam Watson: In North Carolina, in our statute, we have three set-asides. We don't have a Tier 1, Tier 2, Tier 3, but we do have set-asides for energy derived from solar power, swine waste, and poultry waste. We have a lot of hog farms and turkey farms, and this was seen as a way to deal with the litter and waste issues from those waste streams.

Slide 7: Definition – Renewable Energy Resource

Sam Watson: So, our definition of our renewable energy resource includes most of what you would think: solar, wind, hydro, biomass. Our biomass includes the animal waste. I read through the summary that you provided, and generally I found that to be interesting and useful. But I haven't yet found a summary that gets it right for North Carolina. And, in fact, I noticed in this one that it said that fuel cells were not eligible in North Carolina. And so I'll just mention that our definition of a renewable energy resource does include hydrogen derived from a renewable energy resource, so, I would think that fuel cells would be a renewable energy resource in North Carolina.

Slide 8: Definition – Renewable Energy Facility

Sam Watson: So, a renewable energy facility in North Carolina is basically a facility that generates electricity or power using one of those renewable energy resources. We have included in North Carolina not only energy efficiency, as I mentioned before, but we also allow combined heat and power and solar thermal to count. So we have, as I mentioned, slightly different rules for the munis and co-ops versus the IOUs. One of those subtleties is whether the facility came online on or after January 1, 2007.

Slide 9: Definition – Renewable Energy Certificate

Sam Watson: A renewable energy certificate is defined in our statute as—sort of what you would expect as we're one of the last/latest ones to have developed this—a tradeable instrument that is equal to one megawatt-hour of electricity or equivalent electricity

(since we allow CHP and solar thermal) supplied by a renewable energy facility, new renewable energy facility, or reduced by implementation of an energy efficiency measure that is used to track and verify compliance with the requirements of this section. We're one of these states that explicitly excludes the other emissions reductions from the definitions of a REC. So, the REC for the purposes of North Carolina does not have to bundled with the greenhouse gas reductions, the carbon reductions. So, if I am a landfill methane operator, I can sell my carbon reduction and still sell my renewable energy certificate to an electric power supplier for compliance with our RPS statute.

Slide 10: REC Tracking System

Sam Watson: I'll just note here in passing that our Commission is in the process of selecting a REC tracking system, and we hope to have one online next year some time. But, we're still in the process of selecting the vendor.

Slide 11: REPS Compliance

Sam Watson: And I just want to go through, for example, the electric utilities—so, in our state, Carolina Progress Energy (formerly Carolina Power and Light), Duke Power, Dominion North Carolina Power. Those are our investor-owned utilities. And so, an electric public utility, which includes those, they have alternatives as to how they can meet the requirements of the RPS, how they can get to that three percent or six percent.

They can generate electric power at a new renewable energy facility, so they can build their own or operate their own renewable energy facility on or after January 1, 2007 that generates electricity from renewable energy resources. They can also co-fire. They can use a renewable energy resource to generate renewable electricity at an existing plant. They can co-fire wood waste or poultry litter at an existing coal-fired plant. They can also count energy reductions through the implementation of energy efficiency measures. Here they are only allowed to count energy efficiency reductions up to 25 percent of their REPS requirement until you get to 2021 and it bumps up. But, generally, 25 percent. So what that effectively does is put a floor on how much renewable energy they have to either purchase or generate.

Slide 12: REPS Compliance (cont'd)

Sam Watson: They can also, of course, purchase electric power from a new renewable generating facility. So, if somebody comes into the state and puts in a wind plant or wood waste plant, then they can purchase the energy and that would be bundled, then, with the RECs and they would count that towards compliance.

Or they can purchase unbundled renewable energy certificates derived from in-state or out-of-state new renewable energy facilities. And here, when they are purchasing unbundled RECs, there's a limit that no more than 25 percent can come from out-of-state. Now, I want to just kind of pause on this one and say that there's a distinction if you are buying electric power (bundled power and RECs) versus unbundled power and RECs.

Because you will see that our utilities are multi-state utilities, and if they're purchasing a bundled energy and REC, and the energy is delivered to the utility, then that's not part of that out-of-state REC limitation. The limitation on out-of-state RECs is only on unbundled RECs.

And I was asked sort of why we have this limitation, and the only thing I can say is that there is no legislative history in North Carolina. So, out of who knows how many legislators who voted on this law, they might have had various intents in their mind or policy goals in their mind as to why they supported this legislation. So, for example, some of them might have viewed the renewable energy portfolio standard as a climate change bill for carbon reduction. And, in that case, they don't really care where the renewable resource is located. But, other folks might have supported this legislation because of the local environmental or economic impacts. And so, for those folks the location was very important. And, lastly, there were certainly some that were concerned about the cost of implementing such a program, and they might have wanted to allow out-of-state RECs in order to mitigate or potentially offset the more extensive local projects. So—and this was mentioned in the background paper—you know you've got several policy goals all in play here, and we've balanced the local environmental and economic impacts with the global climate change kind of impacts and put a limit on a number, a percentage, of out-of-state RECs that can be used for compliance.

Slide 13: REPS Compliance (cont'd)

Sam Watson: And, finally, the last section simply says that you can bank those unused credits and carry them forward to the next year.

Slide 14: REPS Cost Cap

Sam Watson: In North Carolina, the industrial customers were willing to go along, but they said we don't want to write a blank check. And so, in our legislation there is a cost cap on what's the incremental cost, which is in effect the cost of the REC associated with the renewable energy. The way the cost cap was derived, I think, was sort of from an analysis that La Capra Associates did for us that compared the cost of a renewable portfolio standard with a business-as-usual scenario for the utilities. So, the utilities recovered their costs for complying with this REPS program through an incremental cost rider, through a demand-side management energy efficiency cost rider, and then they're allowed to flow through the avoided cost—the cost of the power that's associated with those RECs—through their annual fuel charge adjustment clause.

Slide 15: Enforcement, Penalties for REPS Noncompliance

Sam Watson: Another question that comes up often in North Carolina is so what happens if they don't? And we don't have an alternative compliance payment in North Carolina in our statute. And the Commission rejected other proposals to define specific penalties for noncompliance because they are not in the statute. So, the Commission in it's rulemaking said that, of course, they are expected to comply with this law just as they

would any other, and that we would exercise any other enforcement or penalty provisions necessary to gain compliance with our statute.

Slide 16: Additional Information

Sam Watson: So, I know that was a very quick run through of the North Carolina RPS, and if there is something that I skipped over too fast, I would be glad to answer questions later.

Questions

Catherine Morris: Thanks a lot, Sam. I wanted to let the participants know that we've also posted the La Capra study that you forwarded about the cost analysis, and we've posted that on the Web site, so they can take a look at that also. We got a question in while you were speaking for Matt, and I wonder if Matt is still with us, and I'll forward that to him first before we get into questions for you. Matt, are you still there? It looks like he had to sign off. The question was about a graph, and what we'll do is we'll try to forward that to him afterwards, and get some feedback directly to the participant with the question about the graph.

So, if there are any questions for Sam, again hit #6 to unmute yourself and just identify yourself before you start your question. Go ahead. Anybody.

Paul Elvis: Okay, This is Paul Elvis from Wisconsin. My question is what is a REC if it doesn't include any of the associated emissions or environmental attributes? You talked about one reason to vote for the bill is the carbon reduction policy, but if carbon isn't part of the REC, how will you get it?

Sam Watson: Sure. What is a REC? A REC is simply the environmental… Well, no, let me back up. A REC is the intangible asset associated with the fact that this energy was generated with a renewable energy resource. So, the only thing that distinguishes it from fossil fuel generation is that some people are willing to pay more if you've generated it through solar, wind, biomass, tidal, whatever it is…that I spent more and they're willing to pay a little extra for it. That's the only thing that a REC is.

Now, I'm also involved in the carbon debate here and I didn't realize that Matt was going to get so much into it. We have a voluntary green pricing program in North Carolina—NC Green Power—that has just recently started offering carbon offsets. But one of the big questions in that whole carbon offset thing is direct versus indirect. So, when I say that somebody who may have been, may have wanted to do something for global climate change… Building wind farms or a wind facility in North Carolina will offset coal generation in North Carolina and will have a net positive impact on carbon reductions, but that wind facility may not have carbon emissions reductions—because they are indirect—that it can then sell on a Chicago Climate Exchange. So, if you narrow it to a recognition that there are lots of markets out there for these various emission reduction credits, and in North Carolina we're willing to let that developer try to go after as many

of those markets as they can for revenue to make their project economic. And so, if they can get money by selling the carbon offsets on a carbon exchange, we didn't want to invalidate their REC because it's still renewable energy and that was the driver for the RPS.

Melissa McCalla: Hi, this is Melissa McCalla down at OAQPS, and I was wondering if we're looking at…you mentioned that facilities were defined as a one megawatt plant or larger. What about, especially if we are trying to advocate more decentralized and more participatory renewable energy, how are we making that possible or feasible or advocating it in North Carolina?

Sam Watson: The one megawatt was talking about the definition of a renewable energy certificate, and there is no size limitation on—no minimum size on—a renewable energy facility in North Carolina. The solar thermal, the waste heat recovery unit—those are going to be small, and they will just only earn fractional RECs or they won't really earn. The one megawatt is more a question of the REC tracking system and when do you actually earn a REC. And I'll just throw out an analogy that you can do payroll deduction at some businesses and earn savings bonds. Well, if a savings bond costs you $250 or $500, but you can only afford $50 a month, then they don't give you one until you've paid in for five months. So, that may be the way that it works. You don't earn a REC until you've gotten a megawatt-hour of generation. But that's different from the capacity size in terms of megawatts, and we do clearly try to make every effort that we can in North Carolina to accommodate the small generation, behind the meter generation, and find a way for them to participate in this market. Our voluntary green power pricing program has a standard offer for RECs for solar and wind under 10 kilowatts.

Catherine Morris: Other questions for Sam?

Leslie: I have a question. My name is Leslie and I'm with the state of California. My question is, in the context of harmonizing these policies, back on one of your earlier slides you talked about the various sources of renewable energy that are included in the RPS and you started talking about fuel cells. In general, fuel cells are the power plant, and I think that should be recognized. Basically, fuel cells take a feedstock—a renewable feedstock, hopefully—that produces electricity and perhaps hydrogen as well. And I've seen in other standards when they're talking about renewables running on hydrogen, and I think the issue is really recognizing the technology for what it is. A fuel cell itself is a facility that generates renewable electricity, and it can use a feedstock that is renewable, so I don't know if that is what you meant, but I wanted to throw it out there.

Sam Watson: Yes, and that is exactly the way that ours is set up is. When I mentioned fuel cells, I was talking about how the entire renewable energy resource includes not only solar, wind, and biomass, but also hydrogen derived from a renewable energy resource.

Leslie: I realize that, but the hydrogen actually requires energy to produce, and fuel cells run on all kinds of gases, not just hydrogen.

Sam Watson: I'm not going to get into a debate with you about what is green. I mean, we had people that think all wood is not the same.

Leslie: Oh no, that wasn't my question. My whole point in that is recognizing that a stationary fuel cell can run on a renewable feedstock other than hydrogen.

Sam Watson: And I think that our thinking is that folks did not want to give credit to a fuel source that was extracting hydrogen from natural gas, and so a renewable energy facility. In other words, the best way I guess you really ought to look at it backwards but I didn't want to put things up and define them, I really wanted to define them first. But, if you look at it backwards, a utility can comply by buying power generated from a renewable energy facility. A renewable energy facility is a facility that generates electricity from a renewable energy resource. That would be the fuel cell. But you can only earn a REC and you can only count it towards compliance if the facility uses a renewable energy resource, and that would have to be the hydrogen derived from a renewable energy fuel. So, what would count in North Carolina—and let me back up and give my standard disclaimer. I'm only staff and I can't say what the Commission, how the Commission would interpret. But, one way of reading it, I think, is I have a wind turbine that is using its output to separate hydrogen and oxygen from water. And, now that hydrogen can then be transported and used as the feedstock for your fuel cell. That hydrogen is derived from a renewable resource. Whereas the wind turbine is not generating electricity, so there's no MWh, there's no REC associated with the wind turbine there. The REC will be associated with the generation from the hydrogen that was created from the wind turbine.

Paul: This is Paul from the Department of Energy and I had a follow up question just to clarify. What if somebody said, for example, I am separating hydrogen from water by purchasing green power—a voluntary green power option—which would be the wind turbine. But, maybe in that scenario, the wind turbine is probably earning RECs and distributing power onto the grid. And then, if somebody said about buying that green power off of a grid, like hydrogen, it seems to me that's double counting. But, I just wanted to raise the issue.

Sam Watson: Well, that would seem to me to be double counting as well. I had an easier question of double counting: I have a restaurant and put up a wind turbine and then we claim that we are powered by green power. But, they wanted to sell the RECs associated with the wind turbine as well, and I'm trying to explain to them that they can't sell the RECs and claim the RECs at the same time.

Paul: Yeah, we have the same thing happening out here. People put solar on their rooftops who now realize they've got a REC with value, and they want to make those claims.

Sam Watson: Yes, and they can sell it, but they can't claim to be using it either.

Howard Bernstein: This is Howard Bernstein. Can you hear me? I've got a couple of questions on my mind that I haven't heard anything about, so I'll ask them now. The first one is: How do you calculate the electricity equivalent of thermal energy for the purpose of generating a REC?

Sam Watson: We use a standard engineering calculation 34/12, and I forget whether it's kilowatt-hours, Btu per kilowatt-hour, megawatt-hour. If you get the right number of zeros in there, you can convert. We use the electricity calculation for Btus per kilowatt-hour. So, even though you might be offsetting, if you were preheating energy/water that went into a natural gas water heater, you would still get credit. And, if you had to heat that water with electricity before it went into the natural gas water heater.

Howard Bernstein: My other question is…and by the way are their details behind that available at the North Carolina PUC Web site?

Sam Watson: We have our rules online at www.ncuc.net, and you can get to our rules. And our rule for this is R864, but the only thing you'll find in that rule is convert thermal with this 34/12 conversion.

Howard Bernstein: The other question is: If you have provisions for aggregating a number of small PV units (or a collection of small other kinds of units as long as they're all the same) that would facilitate the participation of the small distributed generation?

Sam Watson: Yes, we tried to allow in our rules a place for brokers and aggregators to do that. I have a solar installer in one of our local towns that his business has just been picking up like gangbusters, and I can envision somebody like that acting as an aggregator for the solar facilities that they install and then divvying up the money that gets paid for those RECs. So, we tried to save a spot for brokers and aggregators, recognizing that the utility doesn't want to deal with those 2 kW facilities.

Howard Bernstein: Thank you.

Catherine Morris: Howard, while we have you on the line, I wanted to make sure we save a little bit of time for you to talk briefly about what's happening in Massachusetts. Let me check in first with our next speaker, Michael Li. He is on audio, I believe. Michael, are you there?

Michael Li: Yeah, I'm here.

Catherine Morris: For those of you listening, he's been unable to login to the webinar.

Micheal Li: Let me try again.

Catherine Morris: Okay. You are not showing up. Can you see everybody's presentations?

Michael Li: Yes.

Catherine Morris: Huh. Interesting. You're not showing up, so I can't give you presenter controls. So, I'll take over your presentation when we get there, and then you can take it from there and let me know when to scroll forward. I'll bring that up now.

Summary of What's Happening with Massachusetts RPS

Catherine Morris: I didn't mean to truncate the conversation. Howard, if you wanted to give a brief summary of what's happening in Massachusetts right now with your RPS and how that's affecting the REC market/how you think it might affect the REC market.

Howard Bernstein: Courtney, are you on the phone? Okay. The person who's coordinating our rulemaking process doesn't seem to be available on the call, but she was earlier. Anyway, the Green Communities Act of the past state legislature in July mandated for the first time since the original and had some changes in how we do RPS. The major ones are: What we now have as an RPS is going to become Class 1, and that's for new renewables. And a new class will be added for pre-1998 renewables, that being the cutoff for new versus pre-existing. So, there will be new and pre-existing, or old. And there will be something else called the Alternative Energy Portfolio Standard with some interesting, but not renewable, technologies that the legislators thought should be promoted, but I won't go into those.

The RPS in addition would change in several significant ways. The one we have now, which would be Class 1, will automatically go up by one percent a year after 2009 by statute, whereas originally it was up to our agency to decide whether it should go up after 2009. Small hydropower has been added to the RPS, both Class 1 and Class 2. And distributed generation, including behind the meter anywhere in the ISO-New England control area/the New England grid, and all of that will be eligible, whereas before it was only in Massachusetts. So, that opens up a fair bit of potential and is meant, of course, to promote distributed generation. What else? In Class 2, the pre-existing, that will include waste energy, as well as hydro and all of the other things that have been in the RPS. Another important feature of Class 1 is we have the mandate to have a small, in-state, on-site, carve out of our choice. That could be used, for example, as a PV or small PV carve out. We haven't decided yet what exactly to do with it.

And finally, perhaps the biggest thing that I should mention, and the decision on this is coming very soon in a separate section of the law. Our agency is mandated to decide no later than November 1, which is not too far away from now—about ten days, whether or not a couple of restrictions on imported power from outside of ISO-New England, whether those restrictions are feasible to implement. And if they are feasible to implement, then we have to propose regulations for doing so. And this is very important because a large and growing percentage of our RECs are actually coming from power imported from New York and the Maritime provinces of Canada—adjacent control areas. From New York, landfill methane and wind, and from the Maritime provinces and Quebec, just wind, and there's a lot of it up there. And, if we were to impose restrictions, that would obviously have an impact on what will be available. There's also the question of the timing of the implementation of that. But, that covers most of it.

Catherine Morris: Thanks a lot, Howard.

Howard Bernstein: And, there is a brief on the Web site attached to the Massachusetts Department of Energy Resources Web site that you can go to for more detail and to see comments that are coming in on these things. And, this all goes into affect January 1, so we have very little time. Okay.

Maryland Renewable Portfolio Standard

Catherine Morris: Thanks, Howard. I'm going to hold questions for Howard until after Micheal Li has had a chance to talk about the Maryland Portfolio Standard. In both Maryland and Massachusetts, they've been involved in discussions on harmonizing state RPSs so that RECs can flow more freely, and so we really wanted Michael to talk about what Maryland is doing because they have made recent changes to that effect. Michael, just tell me when you'd like for me to forward your slides.

Slide 1: Maryland Renewable Portfolio Standard

Micheal Li: Okay. Sounds good. Well, if you can put up the next slide. It basically gives a quick overview of what the requirements are for the Maryland Renewable Portfolio Standard. So, that should be Slide 2, but I'm still looking at Slide 1. As long as you move it on yours, then we should be good.

Slide 2: Renewable Energy Portfolio

Michael Li: So, it's a 20 percent requirement by 2022 and 2 percent from solar. (Okay. It moved on mine.) And that 2 percent from solar, in Maryland today, is equal to about 1500 megawatts. And that's where it is today, but that's not where it originally started. And we've actually gone through two rounds of revisions to get where we are today. If you could go to the next slide…

Slide 3: Maryland Goals

Michael Li: And so, the next slide lists some of the goals that we have for the Maryland RPS. And the goals were new renewable generation in-state, new renewable generation in the region, and new wind and solar, and of course the big caveat with all of this that we wanted this to all come at a low cost to ratepayers. So, as you can imagine, balancing all of those goals in an RPS in a state like Maryland that does not have a lot of renewable resources available to it is highly complicated.

Slide 4: Before and After

Michael Li: So, if you go to the next slide, I do a comparison about where the RPS started originally and where it is today. And, we'll do a little comparison as I walk through why we made the changes, and hopefully what the changes will do. So, the original RPS was only a 9.5 percent requirement, which is significant. The eligible geographic area in which the electricity could be generated was within PJM, which is the regional transmission organization that Maryland fits in. But it was also PJM and adjacent states, so essentially anything that's renewable that you could use to generate renewable electricity, and that would have qualified for the Maryland RPS, which created some problems for us. The last thing I'll highlight is that our Alternative Compliance Payment was only $20 per megawatt-hour, which in contrast to other states in the region was very low.

And so we decided after a couple of years of letting it play out that the RPS as it was originally promulgated does not actually deliver on the goals that we had originally intended for it to deliver. And so, we touched on an example, a REC for Maryland compliance was trading at $1 to $2. Whereas by contrast, if you looked at a New Jersey REC a couple years ago, they were trading at closer to $15 or $20 per REC. So there was a huge discrepancy in terms of REC prices. So, one of the things that we wanted to do was figure out how do we move Maryland's RPS so that we create a more differentiated regional REC market.

And one of the things that came out of this when we read the compliance report was that, because the eligible geographic area for the Maryland RPS was so large, it was capturing a lot of renewable energy facilities that didn't qualify for compliance in other states in PJM. So, for example, a lot of electricity facilities or retail electricity suppliers were using black liquor generated in Virginia to comply with the RPS. Now, I won't go into the "issue" about black liquor as a renewable resource, but the long and short of it is that that resource did not qualify for any other RPS at the time. And so, it was so cheap to sell to Maryland because it was essentially I guess what you would call profit to that operator, and so it was very cheap.

So, what that led to what that Maryland's original RPS wasn't actually leading to new renewable generation in the state or in the region. And, so, what we wanted to do was… How do we move our RPS policy to something that would demonstrate the demand that we wanted it to demonstrate and that would ultimately result in new generation in the state or region? So, over the course of two legislative sessions—the Maryland legislature meets twice a year for 90 days—we changed it pretty significantly and what we have today is a 20 percent requirement by 2022, so that demonstrates the long term demand and commitment that Maryland has for renewable energy, and hopefully that will spur new projects and development in the region like other states in the mid-Atlantic. And that 2 percent requirement from solar.

One of the most significant things that we did was that we shrunk the eligible geographic area down to just PJM, which is more in line with where Delaware is and where New Jersey is. So, we have a lot more coordinated RPS policy, which hopefully will lead to a regional REC market. And going along with that, we also increased out Alternative Compliance Payment to something that was more in line with what was going on in the region. So, hopefully all of these changes will make for a more dynamic REC market and will lead to an RPS policy in the state of Maryland that is more in line with other states in the mid-Atlantic. And, ideally, we're hoping that it's going to spur the development of new renewable resources.

Now, that being said, you know, one of the things that we've really learned in Maryland is that we created the RPS policy because it was going to do certain things. After looking at it and evaluating it, we've figured out that it wasn't doing what we intended for it to do, so we changed it. And, I anticipate that over the years between now and 2022, if we're really serious about the goals that we made originally, we'll probably have to

revisit the RPS over and over again. So, we're always willing to learn lessons about what it takes to actually get there because, you know, as you can imagine, nobody can predict what is going to happen.

Slide 5: The Experience So Far

Michael Li: So, on the last slide, the next slide, I've made a couple of comments about where we are now that we've changed the RPS to the 20 percent by 2022 and changed some of the other components of the RPS. Which is that we still don't have any utility scale projects within the state of Maryland. You know, we have a few landfill gas generation projects, but that's pretty much it. And so, we're still working in trying to figure out how we tweak the RPS or maybe some other policy so that we can get large—you know, 40 MW, 50 MW, 100 MW—wind projects in the state, and that is something that we are continuing to look at.

But, you know, on the plus side, solar is thriving as we've seen in other states with a solar carve out. It's definitely creating demand. We're at one year in which solar has been part of the RPS and there's been a huge increase in installations anywhere from the residential side to the commercial side, and that's been exciting. It's creating a whole new industry where contractors are thriving; people are adding jobs and businesses. It feels like, you know we all talk about the economic development potential of renewable energy and clean energy and so on, but we're definitely witnessing that in the state of Maryland.

With that being said, we also recognize that the RPS might not bee the exact right tool that we want if we want to generate renewable electricity in Maryland. So, one of the other things that we initiated and we're in the process of doing is using the electricity consumption by state governments, by university systems, and by county and municipal governments to enter into long-term power purchase agreements for in-state renewable energy generation. So, we're looking at potentially adding anywhere from 50 MW to 200 MW. I realize that's not a large project in some of the larger states, but in Maryland that's a pretty sizeable amount of electricity. And, so I guess, the story on that is that the RPS is a sound policy, but we also know that we're going to have to do other things if we are going to achieve the policy goals throughout the state.

Slide 6: Contact Information

Micheal Li: With that, I'll conclude, and feel free to ask any questions.

Questions and Answers

Catherine Morris: Any questions for Michael? Michael, I know you've been involved in the Clean Energy States Alliance discussions about harmonization, and I'd ask for your thoughts on the discussion and what's going on from states to the national level. Can you just give—I don't know if you've been involved more in the recent meetings that have happened—but I'm wondering if you can give us an idea of what progress so far or how you think that discussion is going forward.

Michael Li: I mean, I think it's going well. I think that, you know, what the Clean Energy States Alliance is doing in order to bring all of the states together is vitally important, but especially as we talk about how we would structure a national RPS. One of the things that—people will probably realize I'm speaking narrowly about North Carolina—each state has somewhat different policy goals that they are trying to achieve with the RPS. They have different resources that are eligible for the RPS and a whole host of other differences that they've had amongst each other. And so, there's a lot of differences, but I think at the root of all of it there's a lot of commonality in terms of what we're trying to achieve at a meta-level. And, I think that what CESA is doing really is helping states realize where there is common ground and where we can move forward with that.

And, so I'm guessing that's going to be a good question about if you have a national RPS how is it going to be designed, and are we going to give states the freedom to choose what's eligible in your state. And, then if we set a national standard, if states are going to be allowed to have a level that is higher than whatever that national RPS is. So, it's an interesting ongoing discussion that hopefully will give us an opportunity as the group of states to present it to Congress in what we would ideally like to see in somewhat of a unified way, although I don't think we'll be able to come to an agreement on every single aspect of the RPS, but hopefully a large majority.

Catherine Morris: I wonder if any of our speakers would like to comment on a question we got earlier, which was about this issue that has been taken up by North Carolina about unbundling the attributes in a REC. And, it seems to be particularly relevant to Massachusetts and Maryland because you have a carbon cap and trade policy in the midst of being implemented. So, has there been discussion in your states or other states on the phone on this issue of how to handle particularly the carbon portion of a REC—if it can get sold separately in other markets?

Micheal Li: Well, I think, sort of, for Maryland where we are right now is that you cannot use a REC for both purposes. And so, if you use a REC for compliance with the RPS, you cannot sell the carbon allowances. If use of that electricity has to comply with RGGI, you can't use that REC to offset carbon emissions. However, if they don't want to use it to comply with the RPS, they can bundle the RECs and use it to comply with the Regional Greenhouse Gas Initiative and the allowances are being used for that. I think we were discussing this in one of the previous conference calls that we had is that in Maryland were it stands now, we have—now this is not a final regulation—but what we're telling you is an electricity supplier is going to need something along the lines of 1,500 RECs to

receive one CO_2 allowance from Maryland. And so, from an economic perspective, there's no real economic incentive for somebody to get RECs and bundle 1,500 of them to get one single CO_2 allowance just because of the REC price and the CO_2 price. You know, a REC price in Maryland is in most cases $3, whereas the CO_2 allowance price is $3 whereas—let's say the REC is essentially worth anywhere from $10 to $20.

Catherine Morris: Howard, did you have any comments on this?

Howard Bernstein: No, I'm afraid I don't. I don't yet see the overlap up here, since it's two different currencies and a lot of units. But a lot of the units that create or earn RECs with their generation do not receive CO_2, do not receive the… Well, they… How do I put this? They are not units that… I'd rather… I feel like I'm going to trip over myself trying to respond as we think about this this, so I'd rather just stop right there. But, what he said sounds very sensible.

Catherine Morris: It sounds like we've had somebody else who's put us on hold again.

Sam Watson: Well, obviously it's Michigan this time.

Cathering Morris: Yes, so we can identify the culprit.

Sam Watson: And I will mention that—this is Sam Watson in North Carolina—that we also have the swine waste and the hog lagoons out here that the methane emissions from the hog lagoon. There's a lot of movement toward covering the lagoons and capturing the methane for the carbon reduction, so you would flare that methane and get the carbon reduction. Why not use that to generate electricity, rather than flare that methane? So, you would still be able to subsidize the project in part through the sale of carbon reductions, and then additionally through meeting the RPS requirement by selling the RECs—selling the power bundled with the RECs—to a utility in North Carolina that has an RPS obligation.

Chip Boronow: This is Chip Boronow. So, the distinction that you're saying is that the carbon offset comes from destroying the methane, but the REC value is made through electricity—that's were it comes from.

Sam Watson: Absolutely. And there are some renewable technologies that are renewable that don't directly destroy or reduce carbon emissions. So, if I've got solar panels on my roof, then there's an *indirect* carbon reduction associated with that because it's going to—most likely—reduce carbon emissions from the coal plant that you would have used to get that electricity, but there's no *direct* carbon offset that that generator can claim and be able to sell. But there are other technologies that have both—landfill methane, sewer gas capture, hog waste being captured. What's been a discussion in the carbon offset community is do you give that wind turbine effective carbon offsets that they can sell because they have indirectly offset those carbon emission. And I know at least in North Carolina we seem to be leaning towards not giving that end generator a direct carbon offset they can sell. If the utility is going to in effect see it through their—if they are just

balancing energy, so would generate less if somebody else is generating renewable energy—they would realize overall a reduction in carbon when they looked at what their total generation was because they would have generated less electricity using coal.

Questioner: On the other side of that, what we've got in Oregon is that our RPS is essentially going to be that all new growth will probably be from renewable sources. But the old fossil fired sources aren't going away. They're serving the old, existing load. So, the carbon offset is to reduce the emissions of output. I didn't read all the background materials, so I'm probably not as far along as y'all.

Sam Watson: No, you're right. If you look, for example, at the La Capra study that was done for us, they compared business-as-usual to the new paradigm with an RPS in place, and whether or not the increase in renewables met the increase in load, it can still offset conventional generation that would have had to have been built in order to meet the forecasted load growth.

Catherine Morris: [Caller's hold recording continues.] Well, this is frustrating. Julia, have you had any luck trying to mute the line?

Julia Miller: I'm trying to call them actually on a separate phone, so I'll keep trying.

Catherine Morris: Well, unfortunately, we only have the option to mute everybody or get the operator to mute individual lines, so we don't have much choice. For those of you who aren't too frustrated by this, we will try to talk over this if we have any other questions. We have one asking when the next CHP webinar is going to be, and I would just direct everybody to the CHP Partnership Web site.

[Caller's hold recording continues.] It seems like its getting louder.

Sam Watson: It could be worse. We could be doing a fundraiser.

Julia Miller: I do have an operator on the line that, I think, it's taking a second.

Catherine Morris: Are their any other questions for any of our other speakers? We only have about five minutes left. I think I can hear someone vaguely in the background, but you've got to speak up.

Justin Barnes: This is Justin Barnes from North Carolina. I had a question for Mike in Maryland. I wonder if you could clarify a bit the geographic eligibility for solar energy systems because it's different—if I'm not mistaken—from other renewable energy systems.

Catherine Morris: Mike actually just left. He just signed out.

Justin Barnes: Nevermind then.

Catherine Morris: You'll have his information on the slides. With our speakers, generally we ask them if they're willing to take on all of the questions after the call, and so hopefully you can give them a call. Well, I think they are going to close down the Michigan advertising system and just invite everyone to join us for our next call, which will be November 13. And, if you're not already on the mailing list, we will get your email from the registration list and make sure that you get information on future calls. You can also contact Julia Miller at EPA and ask her to add you to the list.

Sam Watson: What is the subject on November 13?

Catherine Morris: It's on Monitoring & Verification. We'll have a background document. There's a recent guidebook that EPA has pulled together, and we haven't identified our speakers yet, but hopefully we'll have two or three different states talking. So, thanks everybody.

Julia Miller: This is Julia. I just wanted to say that we're going to try to figure out a way to avoid the whole hold music thing in the future. So, we'll be working on that.

Catherine Morris: I think we'll need to override that possibility, but thanks everybody for joining us.

Howard Bernstein: Perhaps after that Clean States Alliance summit in Chicago in early November, I wonder if we'll be able to find some players that will be able to report out on that or provide Web links to any materials that come out of that conference.

Catherine Morris: Good suggestion. We'll try to make sure that we do get some of that information up on the Web site, so you can go back and look at it.

Howard Bernstein: Thank you. Have a good day.

Catherine Morris: Thanks, everyone. We'll talk to you in a month.