EPA's New Tool: AVERT Webinar

Webcast Transcript

March 18, 2014

Contents

Webcast Agenda and Meeting Logistics

Slide 1: Title Slide

Operator: Good afternoon. My name is Vanessa and I will be your conference operator today. At this time, I would like to welcome everyone to EPA's New AVERT Tool conference call. All lines have been placed on mute to prevent any background noise. After the presenters' remarks, there will be a Q&A session via the conference line. I will now like to turn the call over to Ms. Julia Miller. Please, go ahead, Madam.

Julia Miller: Thanks, Vanessa. This is Julia Miller from EPA's State Climate and Energy Program. I want to thank everyone for joining us today to learn about one of our newest resources. It's called AVERT. It stands for the Avoided Emissions and Generation Tool. This tool is designed primarily for state air quality planners. It estimates emission benefits of energy efficiency and renewable energy policies and programs.

So, on today's Webinar, we're going to start with Robyn DeYoung from EPA's State Climate and Energy Program and she's going to give an overview of the tool. Then Jeremy Fisher from Synapse Energy Economics is going to walk us through each AVERT module and he's going to do a live demonstration. After that, we're going to have Niko Dietsch from EPA's State Climate and Energy Program. He's going to present information on some projected energy impacts from a few key state energy efficiency and renewable energy programs. And then, finally, we're going to have Paula Hemmer from the North Carolina Department of Environment and Natural Resources and also Heather Lerch from the Oklahoma Department of Environmental Quality and they're going to talk about some of their experiences using AVERT.

So, I want to thank Robyn and Jeremy and Niko, Paula and Heather for taking the time to join us today.

So, this morning, everyone on the line should've received an e-mail with today's presentation. But if you still don't have the presentations, you can find them by following the link at the bottom of the agenda that's on the screen right now. And there's also a link there to the AVERT tool. Also, we're going to have a recording and transcript of this webinar, and that'll be posted at that website in a couple of week.

We're always looking for new topics related to energy and air quality and climate change that are of interest to state and local governments. So, feel free to submit any suggestions that you have in the box at the right of your screen or in the feedback form at the end of this webinar.

So, with that, now I'm going to hand the webinar over to our facilitator, Lauren Pederson from ICF International, and she's going to cover some of the webinar logistics and get us started.

Slide 2: How to Participate Today

Lauren Pederson: Great. Thanks, Julia. On your screen, you have a screenshot of the GoToMeeting interface, and this will show you how to participate today. The orange arrow in the top left is how you'll open and close your control panels. If you want to see more of the presentation in the left with the control panel, just select his orange arrow.

You're going to be on mute throughout the entire session, so you have a chance to type in your questions in the question panel, enter the question, and then hit Send to submit your question. We'll have a question and answer session at the end and we'll be asking some clarifying questions throughout if anything is unclear.

Lastly, audio is only available through telephone. So, you see that number, a conference ID number on your screen. And if you're experiencing any technical difficulties throughout the course of the webcast, please contact me at lauren.pederson@icfi.com.

And now, we'll move on to our first presentation by Robyn DeYoung. And let me pull up your slides, Robyn.

EPA's New Tool: AVERT Webinar

Slide 1: Title Slide

Robyn DeYoung: Great. Thank you, Lauren.

Hi everybody. My name is Robyn DeYoung and it is my pleasure to be here today to speak with you all about EPA's new tool called AVERT. I'm the project lead for the tool development, and we contracted with ERG to create the look and feel of AVERT and have worked with Synapse Energy Economics to turn the concept of AVERT into reality. Jeremy from Synapse Energy Economics will be speaking with you later on this afternoon and we've worked very closely together to develop AVERT.

We released AVERT on February 18th, 2014 and since the release, over 150 people have downloaded AVERT in just the first month. This really makes me happy, with the tremendous response and interest from various stakeholders and pioneers alike, that really reinforces the fact that AVERT is filling an important analytical gap, it's a free and acceptable tool, and that informs people about the relationship between energy efficiency, renewable energy, emission reductions, and air quality improvement.

Slide 2: Enhancing EPA's Energy Efficiency and Renewable Energy (EE/RE) Resources

The story of AVERT begins in 2009 when we here at EPA began to renew our effort to encourage and remove the barriers to use energy efficiency and renewable energy programs within the Clean Air Act. Our initial effort started in the early 2000's. We issued a number of different guidance documents on this topic, but we didn't really get a lot of uptake. What happened is we had a meeting with our managers and they asked us to find ways to make it easier to include the emission benefits of energy efficiency and renewable energy programs to help states meet their clean air goals. We felt that it was time to send a signal that these are viable and cost-effective emission reduction strategies. So, we looked across all the possible opportunities and we decided to focus our efforts on air quality plans, also known as State Implementation Plans for the National Ambient Air Quality Standards.

Slide 3: Many States Required to Develop State Implementation Plans

Many of you probably already know that many states are required to develop State Implementation Plans. EPA sets the National Ambient Air Quality Standards in order to protect the public health and the environment. What I have here on the right hand side is the 8-hour ozone non-attainment areas for the 2008 Ozone Standards. You can see the number of states that have to develop a SIP. There are thousands of monitors across the U.S. that measure the ambient air concentration and if a monitor is violating the National Ambient Air Quality Standards, also known as the NAAQS, then that state would be designated non-attainment and they'd have to prepare a SIP to show to EPA how they would meet each standard. Other standards include particulate matter, SO_2 standard, carbon monoxide standard, et cetera.

Slide 4: Capturing the AQ Benefits of Energy Efficiency and Renewable Energy (EE/RE)

As states are looking for new ways to reduce emissions and improve air quality, meanwhile we have the public utility commissions and the state energy offices that are advancing proven energy efficiency and renewable energy policies and programs. On the top right hand side, here I show the amount of money that is being spent on energy efficiency over the last number of years, and you can see that the amount continues to grow at an increasing rate.

You also have a map on the right bottom hand corner of energy efficiency resource standards and more than half of the states in the U.S. have those standards. So you have this convergence of the two, which creates an opportunity for states to include the emission benefits in their air quality plans from these energy efficiency programs, and of course there're also renewable energy programs that just as important but aren't listed here.

We capitalized on that opportunity in 2012 when we released the Roadmap for Incorporating Energy Efficiency and Renewable Energy Policies and Programs in SIPs, also called EE/RE SIP Roadmap. We issued that guidance and at the same time we began developing AVERT and the state energy impacts that Niko Dietsch will be talking about later today to continue the assistance and implementation of the ideas and guidance written in the roadmap.

Slide 5: Overview of AVERT Development for Energy Efficiency and Renewable Energy (EE/RE) Programs

Now let me tell you a little bit about AVERT and give you an overview. AVERT translates the energy impacts of energy efficiency and renewable energy policies and programs into emission reductions. And we have NOx, SO_2 and CO_2 emissions in the AVERT tool. We have this information from all three pollutants just based on the current available data, that dataset in AVERT. What states have told us is that it wasn't clear the amount of the emission reductions that they could get from energy efficiency and renewable energy. It took so much effort to just do the quantification method itself that it wasn't really worth doing in terms of the appreciable emission reductions.

We feel that AVERT does address a key reason why states haven't implemented the previous EE/RE SIP guidance. Over the last two years of the AVERT development, we did an external and internal peer review process, we benchmarked AVERT against the standard power sector model, and we worked with the states to beta test the tool to make sure that AVERT was built to be user-friendly, transparent, and credible.

Slide 6: Emission Quantification Methods – Basic to Sophisticated

Now, let me give you a sense of the spectrum of sophistication. On the left hand side is the most basic method that most people know about, eGRID regions, non-baseload emission rate. eGRID is a great way to get a back-of-the-envelope calculation on the regional emission reductions from energy efficiency and renewable energy. You simply would, multiply the savings of energy efficiency or the renewable energy generation by the non-baseload emissions rate within an eGRID sub-region to get your information.

But what eGRID doesn't do for states that are looking for emission reduction related to non-attainment areas for their SIP is that it doesn't give you the location of the emissions. And the data in eGRID is sometimes three to four years old and does not help because the state needs current information and/or future information for SIP submittals.

If you go to the right hand side, the most sophisticated method which is energy modeling. Now, you have an energy model that can forecast out into the future, it can look at all of these different parameters and regulations, emission factors, fuel data, et cetera. It can take all that information, process it, and tell you what your future emissions might be.

That helps with the sophistication but a lot of states do not have energy modelers on staff and almost all energy models are proprietary so you have to pay for licensure hundreds of thousands of dollars todo multiple iterations for the SIP process. So, we developed an intermediate method, and it uses the historical hourly emissions rates approach that is described in Appendix I of the EE/RE SIP Roadmap, and AVERT lies within the middle of these methods. It fills an information gaps here. All you need is to have Excel workbook to run the tool, and it gives you the location of emission reductions for the energy efficiency and renewable energy programs.. Jeremy will talk more about how AVERT works very shortly.

Slide 7: Applications for AVERT-Calculated Emissions

Lastly, applications of using AVERT calculated emission benefits. One main reason we developed AVERT is to help states get SIP credit in their National Ambient Air Quality Standard Clean Air Act plan. And of course, with the concurrence of your appropriate EPA regional office, you should definitely talk with them if you're planning on using AVERT in any of your SIPs for the National Ambient Air Quality Standards. You could analyze emission impacts of an EE/RE program portfolio. For example, Jeremy will show you how you can bundle up different types of programs in AVERT to look at the holistic view of how these different programs impact the grid.

If you're interested in understanding emission reductions during high electric demand days, we have an output feature that shows you how much emission reductions you're getting for the top 10 peak days of the year in that region. And that sometimes will correspond with episodic ozone days during hot summer days, where you're turning on that air conditioner using up a lot of electricity when it's super-hot, and it's a time period where air quality regulators are looking to reduce emissions during those days.

If you wanted to identify the location of the emission reductions at the regional, state, or county level, you can use AVERT to look at all the different locational levels.

Finally, it's very important to note, this is not a projection tool. It is not intended for analysis for more than five years from the baseline because we are using historical information to derive the dataset and the information in AVERT which Jeremy will talk about further. Please keep that in mind that this tool is very useful, it's not a forecast tool, but we think that there are many different ways that you can use AVERT as I've listed here, and thank you for listening to me today.

And now, I'll turn it over to any clarifying questions before we move to Jeremy.

Lauren Pederson: Thank you, Robyn.

We didn't receive any clarifying questions. So, we'll move directly into the poll question and then move to Jeremy's presentation.

Poll Question #1

So, for the first poll question, it should be on your screen now. The question is, what emission impacts are you most interested in analyzing with AVERT? And please select one. NOx emissions benefit, SO_2 emissions benefit, CO_2 emissions benefit, or I am equally interested in all three. We'll take a few seconds right now for you to answer that question.

All right. And we have around an 80 percent response rate with that. I'm going to launch the results now.

Julia Miller: It looks like most people answered – 43 percent said I am equally interested in all three, then 35 percent says CO_2, 21 percent said NOx, and 2 percent said SO_2.

Lauren Pederson: Great, thank you. And I'm going to switch over to Jeremy now. He's going to get into the weeds a little bit on the AVERT tool. So, here we go, Jeremy.

EPA's New Tool: AVERT Webinar (Continued)

Slide 8: What is AVERT?

Jeremy Fisher: Thank you very much.

My name is Jeremy Fisher and I'm a consultant from Synapse Energy Economics. Synapse is a research and consulting firm in Cambridge, Massachusetts, and we've been happy to be working with the EPA for the last two years on the development of AVERT and similar types of programs.

So, today, I'm going to be talking specifically about the construction of AVERT and what AVERT actually does. But to get the basic idea behind AVERT, we're trying to figure out, which units would be displaced with reductions in loads due to energy efficiency or renewable energy. And there are several different ways of thinking about this. Robyn characterized this from the very simple to the very sophisticated with AVERT being somewhere in between.

And we know that it's not all generators on the system that would be reduced from these load demand reduction measures. We also even know that it wouldn't necessarily even be fossil units even though those are the ones that are going to necessarily be load responsive. Within fossil units, it's going to be units that are more marginal. And so, AVERT is working to characterize reasons why – or is trying to characterize which units may be the units that are on the margins.

AVERT is relying on a rich dataset from EPA's Clean Air Markets Division. That's an hourly unit-by-unit generation and emissions dataset. It characterizes just every fossil unit in the country greater than 25 megawatts, gathers hourly information on those. And what AVERT does is it gathers statistics on those unit operations under specific load conditions. And then it works to try to figure out how those units would respond under typical load conditions and then changes in those load conditions.

Slide 9: What is AVERT?

Generally speaking, AVERT is looking to simulate hourly changes in generation and air emissions. So, as it's noted before, that's going to be NOx, SO_2, and CO_2 from specific electric generating units resulting from energy efficiency and renewable energy programs.

From your end as a user, it's actually fairly straightforward. The pieces of information that you need are effectively where you are and what types – how many megawatt you'd expect to save from energy efficiency programs and/or wind or solar generation. More specifically, we'd be looking for load shapes because it's looking to get a sense of how those reductions occur over the course of the year on an hourly basis.

We generally recommend that users use information that they know is specific to their region for those energy efficiency and renewable energy reduction measures. However, there are some

options that are built into the tool, and I'll be walking through those in a couple of minutes when I actually demonstrate the tool.

In addition, EPA provides hourly profiles for some states that have on-the-books energy efficiency programs that are not currently built into the Annual Energy Outlook. After I finish my presentation, Niko Dietsch from EPA will be discussing that tool a little bit more thoroughly, but it's directly compatible with AVERT.

In addition, users can retire and change specific units based on their knowledge of how those units are going to change in the future. So, for example, if a unit is going to get an emissions reduction control on it, then that can be modeled here as well as if units are known to be retiring in the near future, or if you know that they are new and they're expected to come online, AVERT can recalibrate its system to deal with those changes.

Slide 10: AVERT's Modules and Data Files

AVERT is structured fairly linearly. The model relies on hourly generation and emissions data from this very rich dataset collected by EPA called the Air Markets Program Dataset. That is a freely accessible public hourly emissions generation data set.

And then, in addition, if so desired, a user can construct a Feature Year Scenario Template. I'll be discussing that later. And both of those uses inputs and modifications to the AVERT Statistical Module. The AVERT Statistical Module is really the powerhouse of AVERT. That's taking the data from the EPA's material and the Feature Year Scenario Template and punching those numbers to figure out what units are likely to be marginal in which hours and how those units respond to changes and loads, and the output of that is regional data files.

For the most part, users will really only be looking at regional data files and specifically the AVERT Main Module. The AVERT Main Module runs within Excel. And it has an interface for looking at those energy efficiency and renewable energy load curves and actually does the displaced emission analysis based on those regional data files.

So, I'll start off, say, talking about the AVERT Main Module and walking through that as the primary tool that most users will use, and then I'll walk backwards and go through the Feature Year Scenario Template and the Statistical Module and how that impact the Main Module.

Slide 11: AVERT's Data Driven Analysis

Slide 12: AVERT Overview – Example: Loading order

Underlying AVERT is a statistical database about how each individual unit operates relative to load condition. And what I'm putting up on the screen right now is a highly simplified schematic of a loading order for a very, very small region that would have the equivalent of 2,000 megawatts worth of demand served by six generators labeled A through F. That happened to have a particularly clean and neat loading order from a very baseload generator at the modem all

the way to a peaking unit F serving peak hours. In this case, we're just looking at units over a 48-hour time period. And again, this is a highly simplified schematic.

But the question that faces avoided emissions reductions, it comes from looking at what happened, again, on the margin. And so what we want to know is if we impinge on this system with an energy efficiency or renewable energy program such as, for example, a solar TV program, which units are likely to reduce? So, one time to think of those is coming off the top of the loading stack and it would impinge on those units which are marginal. However, once those units are exhausted or if there are multiple units that are contributing to the margin, it's going to be more than one unit that potentially reduces in any given hour. And AVERT is designed to estimate how energy efficiency and renewable energy programs we impinge on in any given hour.

Slide 13: AVERT Overview – Example: Loading order

As you can see from the schematics, if we are to have an energy efficiency and renewable energy program impinging during trough periods, at the lowest point of the 24-hour period, they would displace a very different cohort of generators and thus emissions, then when they impinge at the peakest hours.

Slide 14: AVERT Overview – Example: Generation Statistics

I'm going to zoom into a small subsection of this area and just look at our 4 through 15, so, early in the day through the early afternoon. And this is just how AVERT actually gathers statistics or simplifies rendering of how AVERT gathers statistics. What it does is it divides a year into what we call load beam. And those are blocks of demand that are equally sized for the number of hours that they contain. So, roughly, if I were to ask which generators operate on demand between 1,000 to 1,500 megawatts in our system, well, there are three hours in this particular schematic in which there are generators that are actively changing from 1,000 to 1,500 hours of demand and also of course when demand is at that level.

The first of those hours, the lowest generator on this load is operating at 100 percent of the capacity as this generator B, whereas generator C, the purple one, is operating about half the capacity. At second hour, it's a similar story. Generators A through C are now going to full out, whereas generator D is at the corner of the capacity just wrapping up. And at the third hour within this load beam from 1,000 to 1,500 megawatts of demand, generators A through D are full out and generator E is just starting. And so, statistically, within, again, this highly simplified schematic, we should say that from generator A through generator F, we understand approximately how much output each of those generators have.

Now, you can imagine that over the course of an entire year, the dynamics are far more complicated, and so therefore the statistics are far more complicated. But what AVERT will do is it will gather the percentage of hours that a unit is actually online. The output of that unit, assuming that it's online, at any given level of demand, again, a load beam, and then, the emissions associated with that unit's output. And between those pieces of information, we can

predict which units are operating and their emissions at any given level of demand. And then as we change different levels of demands, which units change their operational output.

Slide 15: AVERT Main Module Step-by-Step Overview

There are, again, three components to AVERT. The primary one that most users will be using is the AVERT Main Module, and it has four very basic steps, load up the regional data file that is predefined by EPA as an output of the Statistical Module. We set the energy efficiency and renewable energy targets that we'll use in that module, run the displacement, and look at the output.

Slide 16: AVERT Statistical Module Overview

Behind that is the Statistical Module. The Statistical Module, again, is the basis of the AVERT analysis and uses information from the Clean Air Market Division. This is what we turn that output that gets used directly in the Main Module. The Statistical Module runs in a MATLAB environment. It has been compiled into an executable that is available for users for free use and distribution, but it does require a MATLAB Compiler Runtime which is a separate program available for MathWorks to be installed on top of that.

Slide 17: AVERT Future Year Scenario Overview

And then, finally, there's the Feature Year Scenario which is the reason that you'd end up running the AVERT Statistical Module. The Feature Year Scenario allows users to find changes in EGU structure, which EGUs are online, which EGUs are potentially retired in the future, and the changes to those units' emissions rates somewhere out in the next four years or so, probably not too long beyond that.

Slide 18: AVERT Demonstration

So, with that, I'm going to now walk through a demonstration of the AVERT Main Module, Feature Year Scenario Template, and the Statistical Module.

First, I'm going to go load up the Main Module. And that will occur right there. The Main Module looks like a program but it's running in the Excel 2007 or newer environment. When you load it up, make sure that you enable macros.

On the first flash page, it gives you the opportunity to put in information about the run that you're completing just to track what you're actually doing. I click on the green button to begin, and I choose the region that I want to do my analysis in. AVERT has fairly hard boundaries. It looks at each of these regions as a contiguous electricity trading regions but does not look at trading between these electricity trading regions. And this generally represents approximately the size of NERC subregions, RTOs, or electricity market modules within the Annual Energy Outlook from EIA.

I've chosen Northeast in this case, and now I'm going to select over here by double clicking it to choose where my AVERT information comes from. I'm looking for the regional data file, in this case, I'm hitting 2013, and I'm going to load the Northeast regional data files from 2013. I click the green button to load the regional data file. And this process, depending on the speed of computer, can take anywhere from just a couple of seconds all the way up to a couple of minutes as it imports the file. In this case, it will take approximately 28 seconds.

Once this is complete, we'll be moving on to then putting in an energy efficiency and renewable energy profile on top of this regional data file, and then we'll be running it afterwards. This flash screen tells me that I specifically loaded the Northeast region with the states that are incorporated there and that there're 348 fossil units that are in our analysis.

We now move on to where we can actually put in our energy efficiency and renewable energy program into AVERT. We have the opportunity to either add data manually, as you can see up here, and I'll go through that in just a moment, or we can use proxy load shapes that are preloaded into AVERT. The first one allows us to choose the percentage of hours that we'd like an energy efficiency program to apply. And this is percentage of hours of the year starting from the top and working down. So, if I choose 100 percent, it's all hours of the year and I want to choose a reduction that will occur during those hours. And so, say, I think that'll have 2 percent energy efficiency reduction.

And, well, in this case, what it's showing me is an energy efficiency reduction of 2 percent of fossil load in Northeast because AVERT is working within the fossil load world. It shows me this load profile off to the right. And so, that approximately is 2,366 gigawatt hours overall.

If I want to, I could target just peak hours, say, the top 10 percent of peak hours. In which case, it would just look at the top 10 percent of those hours, and again, a 2 percent reduction in those hours.

I can also call for a flat low reduction to occur, asking for, in this case, say, approximately 250 megawatts per hour. In this case, I just see a blue line that appears at negative 250, it's a flat low reduction across all hours.

Similarly, I could ask for a certain amount of wind capacity with capacity factors from modeled turbines in this region, and say, I ask for 250 megawatts of wind capacity, it gives me a wind profile. I could also start on top of that a PV profile, and I can go back and also include on top of that a flat profile and compound that with an energy efficiency reduction program for all one hundred hours with a 1 percent reduction, and have a compiled profile that I've just created for expected energy efficiency and renewable energy types of programs through this proxy.

However, let's say that I have information that already knows that I'd like to put into this. I can drag that in directly through this manual data input that brings me to this new page. And now I'm going to want to fill in this column which has 8,760 hours worth of information that it's asking for.

In this case, I'm going to preview some data that will be discussed by Niko in just a couple of moments. And this is energy efficiency load impact shape provided by EPA. These are for energy efficiency programs that are not currently in the Annual Energy Outlook program. And because we're working in New England, I'm just going to select Massachusetts for a moment. And again, Niko will discuss this in more depth, but this shows us different load impact shapes for different years, and I'm going to select 2018. And it'll show me 8,760 hours worth of saving.

Note, however, that these are in gigawatts, so we need to multiple by 1,000 for their worth in megawatt hours. So, simply multiple by 1,000 and then take this column worth of information that I now have and port it back – and port it back into AVERT. So, I now have those 8,760 built in. I go back over here and it shows me the load profile that I've just imported into AVERT. I hit Next, and now I'm going to calculate the displaced generation and emission.

Again, this can take a couple of minutes. This is a faster computer, but for large reasons, these outputs might take longer than just a couple of moments. In this case, it also happens to be a smaller region and it runs fairly fast. Once this is complete, it'll flash a screen for me to indicate that this is complete. And upon completion, I'll be able to go over and look at the various outputs. I'll briefly walk you through these outputs and then we'll move over to looking at the Statistical Module and the Feature Year Template.

This flash screen tells me that it's complete. And I can go ahead and hit Next to now look at my outputs. Outputs are divided into summary tables and charts and figures, and then the section over here called smoke test generation. Smoke would be for outputs use for air modeling. It produces information that's available for commonly used air modeling programs. I will not be going through this right now.

Amongst the table information are annual information, just overview displacement for those top 10 peak days for your high electric demand days, displacement data by county, even monthly displacement data by county. Those are fairly detailed. I'll not be going through these right now.

And then charts and figures that include a map and hourly information and even a displacement by geography and then the diagnostic to allow you to figure out just how good your fit was for this particular run.

I'm going to go ahead and look at the annual. And so this tells me for the approximately 5 million megawatt hours worth of reductions that are requested, I also received 5.2 million megawatt hours worth of reductions. And I'm just going to stick to SO_2 for a moment here and it shows me that I've reduced approximately 5 million pounds worth of SO_2 from that. If you're to look at the CO_2 emissions reductions here, it basically indicates that we're getting slightly over a 0.55 ton per megawatt hour emissions reductions rate. So, we're primarily displacing gas in this specific region.

So, say this is a good run, but I'm going to be interested in a moment in finding out what I can do to otherwise change the SO_2 number. So then, a lot of that is coming from existing coal units in

New England, some of which may not exist in a few years. So, bear in mind that 5 million pounds of reduction from SO_2, we'll be coming back to that in a couple of minutes.

As Robyn was indicating, I acknowledge to look at my high electric demand days and the days with the top fossil fuel generation and usually top emissions as well.

And then we also have a mapping capability where we can look at which units have been displaced in a spatial context. So, I'll go back to annual change in generation, and this is which units have actually changed their generation, and it's showing us the units that have changed their generation in New England based on the energy efficiency profile that we've asked for. If we characterize that by SO_2, we now see which units have primarily reduced their SO_2 emissions due to the energy efficiency and renewable energy programs that we've put in place.

Finally, I'm going to show, well, two other pieces, monthly displacement by selected geography. I can look at how my emissions have changed in a particular state. So, even though I'm operating Massachusetts, I want to know how my emissions reductions, how it happened in the state of Connecticut. And so, by selecting those, I can look at changes within Connecticut. Or I can even go look at individual kinds of changes. And so, say I want to understand what's happening in the Hartford County in Connecticut. This gives me a sense of which units were displaced during particular months within Hartford on these particular days on this particular run.

Going over to the hourly displacement by week, I can look at changes in, say, generation again. And I want to look in the middle of the summer, for example. So, I'll select the date that I want to start my run. And it's actually going to show me hourly displaced units where each of these blocks that represents this total bar graph represents a block of unit displacement. And my hourly displacement is represented in total by the TLO line. Units are shaded based on their capacity factor from baseload units to peak units. And we can see that our primary reductions have occurred during our primary peak period. We can also change this from looking generation to looking at changes in, for example, SO_2. Again, we refresh that chart. And now we see where our primary SO_2 reductions have actually occurred due to our energy efficiency program in a timing basis.

So, as I was noting moments ago, some of the SO_2 reductions that we're looking at are based on plans that currently exist today and are currently scheduled for retirement. So, say, I wanted to walk through this same analysis but excluding those units that are already scheduled for retirement, I would need to use what we call a Feature Year Scenario Template. So, I'm going to take this AVERT run back to the welcome screen and I'm going to actually drop out of AVERT for half a moment and bring up a different screen.

So, back at the same time that I loaded up my AVERT Statistical Module, when I downloaded that, I also received this Feature Year Scenario Template which are labeled as Feature Year Scenario Templates, and I've created and modified one specifically for New England looking at retirements within New England.

I'm going to load that up briefly. And what you see on here is a screen that shows you expected – the potential to retire units or revise emissions rates for all units that are within the AVERT

universe. In this case, this is filtered into units that are specifically within New England. But for any one of these, I can select whether I want it to be retired and I can select whether I want to change emissions rates per unit, and then I can change the emissions rates accordingly. Anything that's left at zero or no is otherwise unchanged, within this “yes for retire” means that a unit will be excluded from the analysis altogether.

I will not be saving these changes, so I'll leave that in place. Under addition – at the moment, however, sorry, we've pre-selected for a number of units that have announced that they'll be retiring in New England in the next couple of years. Primarily all units, and I'll be selecting those units be retired out of the system. And aggregate in the year 2013, those units added up to a total capacity, some of them didn't actually operate in 2013, but those that did operate added up to a capacity of 2,200 megawatts. So, once you add approximately that same amount of megawatt, and the way we do that is to this additions tab in which we can actually select the region that we're working in, and it will go through the database of which units actually exist within the AVERT universe and allow you to select proxy units.

A proxy unit is a unit that will share statistical similarities with the unit that already exist that can be customized to your specifications. So, in this case, I would like to add, for example, on to my system, a combustion turbine. And once that's selected, that was going to be in the Northeast and gas in, I get a list of all of the available units that are in the Northeast region that I can select.

So, I'll choose one randomly, and it shows me that this is a 17-megawatt unit in Kings County, New York. It had a capacity factor of 4 percent. So, if I wanted to replicate, say, a new 30-megawatt unit, I could just type in 30 over here and then I could also input information over here and through there it should exist for the purposes of emission reporting.

A moment, I'm going to delete this unit. We've put in a number of other units that are proxy units that're based around New England. That total also adds up to 2,200 megawatts. So, this is a complete Feature Year Scenario Template ready to run to the Statistical Module, and I'm going to close this out.

And when I run the Statistical Module, I will be loading up that particular Feature Year Scenario Template. So, I go back to my Statistical Module, and again, this is the powerhouse behind AVERT, but it looks fairly innocuous on the front. And this run as a standalone executable.

The user guide describes in detail what it means to have different numbers probably around here and the other factors that go behind the AVERT Statistical Module. It suffices to say that for the purpose of this, I'll call this – I name this run our public demo. I'm going to tell it to run. I want the information from the Clean Air Market dataset from 2013 as a basis for the statistics. I'm going to load that information in. And I also want to use the workbook that we are just working with called Feature Year Scenario dealing with retirements, the modifications that we just made. I'll allow it to load that in as well.

And in just a couple of moments, after it's loaded in those various workbooks, it will allow me to select the region. And so, in this case, I would want to select the Northeast region, and then if we are up sort of waiting quite a while, I would hit the OK button and allow it to run a much

more detailed analysis requirement. That run takes, on this computer, at least about two hours, on slower computer, up to about four hours. And if you're selecting all of the regions, it can take well over a day or two days to run all of those regions. So, one wants to foresee the precaution when you actually do this. So, I'll cancel out of this process and we'll show you what the final actually looks like.

So, going back to AVERT, I can now select a new file, and this is the output file that we've created from our Statistical Module. And that Statistical Module output is right over here, well, over RDF (Regional Data Files) known retirements. And I click here to load that file. That would blank out all of the existing information that I already have. And after this loads up, I'll just go back over to the annual regional displacement output and we can compare SO_2 pounds.

Previously, in our last run, when we had those coals units still existing, we had approximately 5 million pounds of SO_2 that were avoided from our energy efficiency and renewable energy program. But now that those units have been retired, in our next version, we would expect to have a little bit of a different number. So, again, I need to go back to my manual data entry. I'm going to, again, copy my load impact shape. We use the very same one that we used before. And again, I will run that through AVERT's Main Module. And this will take just a couple of moments to run through. And once this is complete, we'll have our final piece and we should be able to see how our Statistical Module operates.

After we see that, I will take clarifying questions.

As you know it does take a couple of moments to run on most computers. It does – sometimes it looks like it is spelt out, but the bar on the bottom tells you that it's still in operation. It's running within a macro environment. So, fine, we go back to our annual regional displacement data and we can see that now it still displaced the same amount of generation as we had before, but our SO_2 pounds, instead of having displaced 5 million pounds, we've not displaced 3.8 million pounds and we've changed our dynamics of the system considerably.

I'm going to leave it there and move on to clarifying questions. Thank you so much.

Lauren Pederson: Great. Thanks, Jeremy, for that walkthrough. We had one clarifying question and it's been asked, if you could define EGU, and you used that acronym a few times in your presentation.

Jeremy Fisher: Certainly. An EGU is just an electric generating unit. And in this case, in the context of AVERT, it will refer to fossil fired electric generating unit that are greater than 25 megawatts for the most part.

Lauren Pederson: Great, thank you.

Poll Question #2

Lauren Pederson: We'll now move on to our second poll question. I'm going to launch it right now. You just see it on your screen. The question is, what emissions impact details are of interest to you? Annual state and regional data, annual county level data, monthly state and county data, or unit level data for air quality monitors. We'll give you a couple of seconds to read the question and respond.

All right, we're about 70 percent. Let me close the poll and I'll launch the responses.

Julia Miller: Thanks, Lauren. This is Julia. It looks like most people responded with annual state and regional data, that was 43 percent, 24 percent is unit level data for air quality modeling, 19 percent for monthly state and county data, and then 14 percent for annual county level data.

Lauren Pederson: Great, thank you. And now, we'll turn to Niko Dietsch from EPA for his presentation.

EPA's Analysis on Projected Energy Impacts of Existing State EE/RE Policies

Slide 1: Title Slide

Niko Dietsch: Hey, thanks, Lauren. Go ahead and pull up the slides, Lauren, thanks.

Lauren Pederson: Here we go.

Slide 2: Projected Energy Impacts of State EE/RE Policies - DRAFT

Niko Dietsch: OK. We'll jump in here. OK, thanks, Jeremy, and thanks, Robyn. I'm going to be talking about the projected energy impacts of state EE/RE policies which is a new initiative, a new project that is currently in draft form and it's out for comments. And you know we'd appreciate your input, and I'm going to tell you during the course of the presentation how to do that.

The starting point with our analysis is that states are increasingly looking at the role of EE/RE policies in their NAAQS SIPs. Lauren, if you want to move the slide, I'd appreciate it. Thank you.

So, again, the starting point, states are increasingly looking at the role of EE/RE policies in their NAAQS SIPs. However, in order to estimate emission changes from these policies, states need reliable projections of their EE/RE policy impacts over the compliance period. And to help states with the required modification, we have a project we'd like to tell you about. The first step we're taking is updating projected energy impacts of the state EE/RE policies now already included in the AEO 2013 electricity sales forecast, which for many states is a key input to emissions modeling.

I note here that we previously completed that similar analysis in 2011, and the link for that information is presented here. It's the same link for our new draft information. So, I'd appreciate if particularly, if state officials could go to this Web site, look at what we've done, and again we'd encourage your comment. Secondly, we're issuing a methodology document describing our approach and the data sources we're using here.

Now, in terms of how state air agencies can use this information, they can develop a revised baseline electricity forecast that reflects EE/RE policies and use this revised baseline to quantify results in emission reduction. Then these reductions can be included in SIPs submittals both for ozone and other criteria pollutants. And in jurisdictions not currently preparing a SIP, these resources can be used to identify whether EE/RE policies can help them stand attainment.

Slide 3: EE/RE Policies In/Out of AEO2013

, This slide shows our assessment of the EE/RE policies in and out of AEO 2013 which is an important step in our analysis. The key point here being that by identifying what state policies

are not included in AEO, we can quantify their impact and generate a revised electricity sales forecast reflecting the key EE/RE policies in action that states are taking. And as mentioned, this revised baseline can then be used by states to estimate emissions impacts.

The first spot here, the EE/RE policies explicitly included in AEO 2013 include federal appliance standards. This is inclusive of new important lighting standards, state building codes, those deemed most current by DOE, as well as direct federal spending on efficiency, things like the state energy program, dollars, local block grants or incentives as well as RPS policies. 29 states and DC as of November 2012 are incorporated into AEO 2013. So, it's not a comprehensive list but it's a list that covers the areas most likely for double counting with our analysis.

Our focus here is the EE/RE policies and the second thoughts not explicitly included or that are additional to AEO 2013. These are the energy efficiency resource standards, 25 states, also other EE program funding in those states without EE/RE policies. So, we've counted five. Here we're talking about public benefit funds, allowance option revenues from the Regional Greenhouse Gas Initiative or RGGI, as well as forward capacity market revenues in ISO New England and PJM. The last policy not explicitly included in AEO 2013 is RPS policies, two states between December 2012 and June of 2013.

Slide 4: State EE Policy Effects on the AEO2013 National Forecast

This slide addresses the state EE policy effects on AEO 2013 national forecast. Again, these are draft results. It is – the chart shows cumulative impact for state EE policies in 2025 relative to the AEO 2013 baseline forecast which is shown in the solid purple line. The important data here is the lower most line representing a revised national sales forecast accounts for EE policies listed in the previous slide. The incremental impacts are 2.3 percent of electricity sales in 2025. And the top line here, the green dotted line represents a hypothetical forecast excluding what we call embedded savings, essentially, a forecast without state EE policies.

And I'd like to mention here that our methodology accounts for the EE policies embedded in the AEO, a recognition of the fact that you know programs have been ramping up for the last decade and there are lot of savings already baked in the system here. So, we're looking both the incremental and embedded policies within the context of the AEO analysis.

Slide 5: Review Questions

We'd appreciate your input on this draft analysis that we've completed to date. There are several questions we'd like you to look at. Five of them are listed here. I'll run through them briefly.

The first is, is your state policy accurately described? That is, if you get the details correct and we'd appreciate your input. We've done the best we could to analyze each state's policies. You have a better sense, however, than we do of what's actually on the books. So, state officials in particular, we'd appreciate it if you could look at our draft analysis and provide us a comment.

Second is, does the overall approach to projecting the impacts make sense? This is open ended. We'd appreciate your comment on the overall analysis and the approach that we have taken.

And then, next, are there uncertainties or issues not addressed? In our methodology document, we talked about several of these. We'd appreciate your comment on whether on not we accurately handled the uncertainty and we recognize there is plenty of it with this analysis.

And then fourth, are the results presented in a clear and understandable way? We want to make sure that our analysis is intelligible to both folks that work on the energy efficiency side of this issue, as well as on the air quality side, and therefore we'd like to make sure that our analysis is presented clearly and then any other comments not addressed here, please let us know. Comments are due by April 1st. If you go to the URL presented on the second slide, that's where you can access all of this information and provide the e-mail address to issues and send your comments.

So, that is all I have. Thank you very much and welcome any questions.

Lauren Pederson: Thank you, Niko. We didn't have any clarifying questions at this time but we might have some questions come in for the Q&A session at the end.

Poll Question #3

We're going to turn to another poll question and I'm going to launch this right now. You should see this on your screen.

And so this poll question, what type of energy efficiency impact data is available to you? Annual energy impacts of EE program in megawatt hours, hourly energy impact or load profile of energy efficiency programs, I don't have it but know who to ask for energy efficiency data, or lastly, I don't know where to get energy efficiency data. So, if you could please take a few seconds and respond to this poll question.

All right, and I'll launch the results of the poll.

Julia Miller: Thanks, Lauren. It looks like most people said that they don't know where to get the EE data, that was 43 percent of respondents, 29 percent said annual energy impacts of EE program, 22 percent said I don't have it but I know who to ask for the EE data, and 6 percent said hourly energy impact or load profile of EE programs.

Lauren Pederson: Great. Thanks, Julia.

And next, we're going to turn to a state user experience, Paula Hemmer is going to present on her experience and she's from the Department of Environmental and Natural Resources for North Carolina. Paula, I'll turn the floor over to you.

And, Paula, are you there? You might be on mute.

OK, maybe she was disconnected. Heather, are you there? Maybe you can give your state user experience first.

Heather Lerch: I'm here. Can you hear me?

Lauren Pederson: Great. Yes, they can hear you.

Heather Lerch – Oklahoma Department of Environmental Quality

Heather Lerch: Hi, I'm Heather Lerch with the Oklahoma Department of Environmental Quality. We were a beta tester for EPA's AVERT program. It was a good experience for our staff and we can tell by the final project that EPA took a lot of our feedback into consideration.

So, some of the opportunities that we see going forward with this program, we see that as a good opportunity to do basic screening before selecting a variety of policy options we might be considering. We are also looking at the possibility of using it for NAAQS SIPs. Our main issue in Oklahoma is ozone. So, that would probably be our first opportunity to use it possibly as a baseline or weight of evidence pathway.

We also have some partnerships with some education entities, some universities and high schools. We do presentations for them educating them about the environmental impacts of environmental policies and air quality. And this tool looks like it would be – especially the basic Main Module would be a good way to give them a hands-on learning opportunity and some visual output to see directly how these policies impact their environment.

I'm also a member of the Oklahoma Renewable Energy Council that does outreach and networking and education for renewable energy within the state. And they are looking at using it and have actually already listed it as a resource on their website to show people the impacts of installation of renewable energy such as a new wind facility that might be built. So, those are the main opportunities that we are looking at and looking forward to using AVERT in the future.

Lauren Pederson: Great. Thank you, Heather, for your input.

And Paula is back on now, her phone just signed out. So, we're going to turn to Paula and she's going to give her state user experience.

Paula Hemmer – North Carolina Department of Environment and Natural Resources

Paula Hemmer: Hi. That was a pretty good timing there.

So, we are currently looking at using energy efficiency to offset some emissions in a non-interference SIP demonstration. We want to list the summertime Reid Vapor Pressure Standard for the gasoline and the Charlotte non-attainment area. So, we need, a control measure to match the Reid Vapor Pressure Standard reductions.

So, we have been working with EPA for a couple of years now on understanding this issue and using the tools they have available. And EPA has been extremely helpful. We had workshop with them in the fall of 2012 and that started the process. And we've been – the beta testing for AVERT and we're just – now that it's been issued, we're just starting to examine the tool for use in the SIP. And they've been extremely helpful and responsive, very quick response to our questions. So, that's been great.

We do have a renewable portfolio standard on the books which is that reduction of 12.5 percent by 2020. And 40 percent of it can be met with energy efficiency. So, that's pretty high. And so we feel like this tool is going to really help us understand how it's going to change generation in North Carolina.

And I think an important thing to understand is that this is kind of a step-wise learning process. You're not going to understand all of these at once. Like I said, we've been working with them for over a year now and just starting to understand how this is going to impact us in North Carolina. So, I just wanted to encourage everybody to start learning even if you don't have a specific SIP or specific use for the tool right now.

Lauren Pederson: Great. Thank you, Paula.

Poll question #4

We have one last poll question that we're going to do before we launch into the Q&A session. So, let me launch the poll question right now. You should see them on your screen. The question is, how do you plan to use AVERT? To promote the emission benefits of current energy efficiency and renewable energy program, to help with regulatory compliance such as the National Ambient Air Quality Standards that makes the case for creating new energy efficiency or renewable energy programs, or to compare the emission impacts of different energy efficiency or renewable energy programs. Please take a moment and reply to the poll.

OK, let me show the results now.

Julia Miller: OK, Lauren, it looks like 36 percent of people said they plan to use it to compare emission impacts of different EE/RE programs, 34 percent said to help with regulatory compliance, 16 percent said to promote the emission benefits of current EE/RE programs, and 14 percent said to make the case for creating new EE/RE programs.

Lauren Pederson: Great, thank you.

Questions and Answers

And we're now going to switch to the Q&A session. We received a lot of great questions during the course of the webcast today. Let me go through a few of them and starting with Robyn, we received some questions for you. Are there any reasons to use AVERT that don't have to do with State Implementation Plan?

Robyn DeYoung: Yes. Thank you, Lauren.. And I think that Heather did a really good job talking about some of the ways that she's using AVERT, and so I'll just capitalize on that or reemphasize what Heather said. AVERT can be used for for something that's not SIP related. AVERT shows the emission impacts at the state, regional, and county levels, and it could be used as an education tool to show how energy efficiency or renewable energy is reducing emissions.

It could also help make the case if you're looking for developing new energy efficiency or renewable energy programs, this is a tool that could help show the magnitude and where those emission benefits could be. For example, state agencies looking at cost test that are trying to show that the energy efficiency that they're doing is cost-effective, looking at the benefits of energy efficiency on the emission side helps balance out that equation and it possibly could get more cost-effective energy efficiency when considering the benefit of the emission reduction from those programs. AVERT can give you those answers.

So, I think AVERT can be used for many different ways and those are just a few.

Lauren Pederson: Great. Thank you, Robyn. And then another question about this tool. How about particulate matter, is this included in AVERT or if it was excluded, was there a reason for that?

Robyn DeYoung: Yes. Particulate matter, it looks like we had a number of questions related to particulate matter. And AVERT does not have particulate matter as an emissions output. The main reason is because the emissions that we have in AVERT and in eGRID are based on the available datasets. As Jeremy mentioned, the emissions that we have is currently reported to EPA through our Acid Rain Program. It's a requirement under 40 CFR Part 75. And particulate matter is not one of the required pollutants that are reported to us. So, we don't have that data available.

Also, for particulate matter, it's not very easy to use simple emission rates based on the fuel usage. So, that's another reason why we don't have particulate matter emissions in AVERT. Having said that, given the interest, I do plan to look into how to possibly include particulate matter in another version of AVERT. We will look at that and look at possible solutions because I know, obviously, there are a number of PM2.5 SIPs that are out there and we would like this tool to be useful in many different ways as possible.

Lauren Pederson: Great. Thank you, Robyn. And then one more question about the scope of the model, does the model account for photochemical reactions?

Robyn DeYoung: No. AVERT itself does not account for photochemical reactions. Basically, what you can do, which I think Jeremy eloquently showed, is that there is an output available from AVERT that gives you the reduction in emission for NOx and SO_2 the pollutants most relevant here. Those outputs can be put into a SMOKE processor that then can be input into an air quality model like a CMAQ model.

So, AVERT is the first step to getting the emission reductions from the electric generating units. Then the user would have to go through two more steps. They could use the outputs from AVERT as inputs into an air quality model which then would process the photochemical reaction of the emissions with the other parameters and constituents. So, that's how you can use AVERT to get to photochemical reactions.

Lauren Pederson: Great, thank you. And then we have two questions related to more geographic scope. Is Alaska included in the model?

Robyn DeYoung: No. Alaska is not included in the model. It only includes the 48 continuous states, so Alaska and Hawaii are both not included in AVERT.

Lauren Pederson: OK. And then the last question for you, Robyn, if your state policy is in two regions, would you need the data for both regions?

Robyn DeYoung: The answer is, yes. If there is someone out there that is specifically working on AVERT and trying to figure this out, feel free to e-mail the avert@epa.gov e-mail address, those emails basically go to me. And I can help you with that question specifically. Generally, what you would need to do is find the energy saving within the utility service area of that utility and split out the savings for the two two regions in which the state lies. I do admit, this is a limitation of the tool because the regions are autonomous. And so, you would have to do the analysis for two different regions if you're split in between.

Lauren Pederson: Great. Thank you, Robyn.

We'll now move on to Jeremy. We had a few questions for you on the nitty-gritty of the inner workings of AVERT. So, the first question, Jeremy, what is the snapshot year of the grid within AVERT? And can you just put in new major transmission lines not currently represented within the model?

Jeremy Fisher: All right. Sure, thanks. So, we have several snapshot years available for AVERT today. We've loaded up to the EPA's website 2007 through 2013 data with each year being individually available there. The versions of AVERT, we intend to release with the most recently available data. So, you should expect to see it with data that's pretty much up to date which is usually about a quarter after that data has actually been made available to EPA.

And then in terms of transmission lines, AVERT is not currently able to handle changes in transmission or additional transmission lines.

Lauren Pederson: Great, thank you. And we have follow-up questions related to CAMD data. Will AVERT follow the latest CAMD data or does the user need to download so it's going to be quarterly? And how does AVERT account for generators that do not report CAMD?

Jeremy Fisher: Sure. So, with in regards to the first, we're updating the data for AVERT on an annual basis, approximately again a quarter after the end of the year. So, we just made 2013 available around the time that this tool was released to the public, and we expect that to be the same case in the future.

There is a step in between the raw data coming in from CAMD and the way that it gets ingested by AVERT so users are not currently able to ingest that data directly without that intermediate step. And that will be done by default to create a database that's available every year for the raw data.

I'm sorry, please remind me of the second question.

Lauren Pederson: How does AVERT account for generators that's not reported to CAMD such as smaller fossil power producers?

Jeremy Fisher: At this point, AVERT essentially does not see units that do not report to it. So, that includes all units both behind the meter and that are smaller than the reporting threshold.

Lauren Pederson: OK, thank you. Robyn, we did have one question just come in for you. That would be great if you can answer, can AVERT be used for state 111(d) plan?

Robyn DeYoung: Thanks for the question. And right now, we're in the middle of writing a proposed rule for carbon pollution standards, also known as 111(d) for existing power plants. And it is uncertain right now whether energy efficiency or renewable energy will be a part of that rule. So, given that, it's uncertain how AVERT would be used. I think come June, when we do propose the rule, we can reevaluate how AVERT could possibly be used for 111(d), but for now, we're really focused on helping states who are looking at their National Ambient Air Quality SIPs and making sure that this works for their SIPs in the near term.

Lauren Pederson: Great, thank you. And then, Jeremy, we'll switch back to you. We had a couple of questions on renewable energy and how we handled in AVERT. For renewable energy resources, what does AVERT assume for the capacity factor?

Jeremy Fisher: So, for renewable energy resources, we've preloaded and modeled renewables in each region in representative good locations for each of those resources. So, it varies by region. But generally speaking, for the wind projects that are in there, it's representing 2.5 megawatt turbines at 100-meter hub height, again, modeled data that goes into that. Generally, we recommend that if you have better local data that represents the actual projects in your region or potential projects in your region, then that should be used preferentially to the information that's preloaded into AVERT.

Lauren Pederson: OK. And then rather than input the capacity factor, capacity for renewables, is it possible to enter the known annual production?

Jeremy Fisher: Absolutely, except you need to enter that known annual production as an – either an hourly, so you can enter an hourly profile or you can enter an annual capacity or a nameplate capacity. And then in the chart that showed what the profile was, off to the right of the energy efficiency and renewable energy selection, it actually indicates what the total aggregate number is of the total energy production of that unit. So, if you knew that your wind turbine was supposed to produce X number of gigawatt hours over the course of the year and you weren't sure what capacity that can be ported to, you can use that value in the figure to reverse calculate what capacity you should be going for or, again, use a load profile that's more familiar to you to get a better sense of that capacity factor.

Lauren Pederson: OK, thank you. And then also related to renewable energy, does AVERT consider renewable energy as zero emission, but there's no operations and maintenance emission from solar or wind.

Jeremy Fisher: I think I heard potentially two questions in there. But at the moment, AVERT uses reported emissions from existing generally fossil units that report to the Clean Air Market Division. There are some units I believe that use multiple fuels that report to that database and it's on a case-by-case basis as to what they do for the reporting to the Clean Air Market Division in terms of how AVERT actually treats them.

In terms of the renewable energy resources that are utilized for displacement, yes, effectively it's assuming that any efficiency or renewable energy projects that are used for displacement does not count towards your total emissions.

Lauren Pederson: Great, thank you. We'll switch gears quickly to Niko. We had a question come in for you. Why are some states missing from the data? Is it because there are no programs currently on the book?

Niko Dietsch: Thanks, Lauren.

So, everybody knows for the third slide that I showed, we looked at a set of EE/RE policies not explicitly included or is additional to the AEO 2013. So, in our accounting, this includes EERS policies. So, states that have those, we counted 25 of these policies are in our analysis. And then for those states that do not have EERS policies but do have a program funding, we counted five states, and the sources of budgeting for this program funding we've looked at are public benefit funds, RGGI or Regional Greenhouse Gas Initiative, allowance auction funds that go to EE programs as well as revenues from the four capacity markets and PJM and ISO New England that fund EE programs.

So, that's the scope of what we looked at. You know we'd be interested in hearing from you if you have policies that fall within those categories and we missed it. That's certainly possible. We'd like your feedback. Thank you.

Lauren Pederson: All right. Thank you, Niko, and thank you everyone for submitting questions today and participating in the webcast. If we did not get to your question, we will try out best to follow up with you after the webcast ends. As you leave from the webcast, there will be an exit questionnaire, and we're just looking for feedback on the webcast and if there are any topics that you would like to hear in the future from the EPA State and Local Branch.

So, thank you to all of our presenters today. Julia, Robyn, Jeremy, Niko, Paula, and Heather. And we look forward to hearing from you about the AVERT tool and your user experiences. Thank you very much.

Julia Miller: Thank you.

END