

Greenhouse Gas Inventory 101
Session 3: State Inventory Tool (SIT) Training Session
December 5, 2007

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Operator: Welcome to the EPA State Inventory Tool Training Session. During the training session the participants will be in a listen only mode. I would like to turn the conference over to Andrea Denny from EPA.

Andrea Denny: Thank you.

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My name is Andrea Denny. I'm with the EPA State and Local Branch. I'd like to welcome you to the third training in the Inventory 101 training series. Today's training is on the State Inventory Tool.

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Just a little background: I am in the Clean Energy Environment Program, which is a portion of EPA. We promote cost-effective clean energy strategies that achieve economic, environmental, energy and public health benefits. We have two main programs: one works with states, the other with local governments; and you can see our URL on the screen. If you access this URL, you will find a lot of information on many clean energy programs for state and local governments.

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Just a few logistics for today's call. Please feel free to send me feedback if you still have questions on today's session or if you have comments on how we can improve these training opportunities.

I also wanted to mention that while we are doing the demonstration of some of the tools, the files are large and uploading into the system may cause a lag in the screen advancing, so you may need to bear with us for a few seconds between slides. I would like to turn the call over to Ms. Lauren Pederson from ICF International.

Lauren has been with ICF since June 2004 in the Energy and Resources Practice. She has worked on projects including: developing U.S. emissions estimates for the U.S. National Inventory on Greenhouse Gas Emissions and developing and updating emission factors for U.S. EPA Climate and Waste Program. She has played an integral role in developing corporate inventories for submission to the Carbon Disclosure Project. She has also worked with the National Parks Service to develop greenhouse gas inventories for several parks. She has been supporting state and local activities through the work she has done on the State Inventory Tool and developing user's guides to accompany those tools.

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Lauren Pederson: Thank you, Andrea. As Andrea mentioned, this is session three of a three part series. This presentation is recommended for state officials as the tool is designed with state level default data. The goal of this training session is to provide an overview of the State Inventory Tool modules, or SIT modules, and to demonstrate how these modules use state-level data to assess greenhouse gas (GHG) emissions by source and sector.

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In today's session I will go over the background of creating state inventories and the lessons learned from creating these inventories. I will give an overview of the State Inventory Tool to include detail about the goals of the tool, the design of the module, and to look at some of the features that are common among these modules. I will demonstrate the modules listed here, and will finish with how to use the Projection Tool.

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The EPA's State and Local Program began in 1990 to help state and local governments build the capacity to create their own inventories. The State Guidance developed by the EPA and revised in 1998 was expanded to follow the format of the Emission Inventory Improvement Program, or EIIP guidance for criteria air pollutants. These documents were created to improve consistency with the U.S. Inventory of Greenhouse Gas Emissions and Sinks; incorporate state level data sources, methods, and emission factors that are replicable; and provide sources for clarity. Grants were given to states to facilitate the development of these inventories.

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The detailed methodology in the EIIP guidance was appreciated by states with the capacity to devote considerable time and resources into developing an inventory. However, for other states, the EIIP guidance was impractical for them to follow by scratch. With this many states performing GHG inventories, there needed to be a transparent method of calculating emissions. With performing these inventories, we learned these listed lessons.

An example for the second point is that if a state uses hydropower for a large portion of their electricity and then there is a dry year or even a drought, the emissions for that particular year will be higher since they will have to use more emissive sources such as coal-fire power plants. For this reason it is important to conduct an inventory annually or biannually to check if the inventory has out-lying data points or is not representative of a particular year.

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EIIP guidance documents were updated in 2003; however, updating these guidelines is difficult since the release of the Intergovernmental Panel on Climate Change (IPCC) guidelines. While the EIIP 2003 guidance is comprehensive, it is out-of-date for methodological guidance. Because updating methodology is difficult, user's guides have included methodology and are updated on an annual basis.

An updated set of user's guides was set up last spring and these user's guides update the EIIP guidance and provide more thorough instructions on how to use the SIT modules. We realized that states needed these tools for many reasons listed here. The EPA recognized the resource constraints for States and developed the SIT.

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Keeping those lessons learned in mind, SIT modules were created with the listed goals. Note that activity data is the driving force in estimating emissions and can be anything from the number of cattle to the amount of fuel consumed in a state. The tools provide a 1990-2000s timeline and the most recent year will be the most recent year with available data.

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The SIT design is elaborated on here. The Projection Tool uses a combination of circle estimates developed from these modules and future trends to project emissions in the modules.

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This slide presents the ten sector modules used to create emission estimates for the ten sector sources. Again, I will be demonstrating CO₂ from Fossil Fuel Combustion and Natural Gas and Oil Systems modules.

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Completed modules create export files that go into the synthesis module to create a complete picture of the emissions profile in the state.

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There are some common elements among the modules, which when completed will help form the source module. The summary worksheet contains graphs and tables to summarize the emissions for that module. The data from each module can be exported from the control sheet and later combined in the synthesis module. The next series of slide will show the common elements throughout the modules with screenshots of each.

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The module will open up to this control worksheet. You'll select a state from the drop-down list in step 1. There are yellow input cells which are used to populate default data. You also have the option of selecting all the default data to populate these cells. There are also two buttons on this sheet. One is "Consult EIIP Guidance" which opens up the .pdf document which contains EIIP guidance, and the other is the "Reset All" button which resets all the data in the module.

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The yellow button on the calculation worksheet sends you to a page that provides clues and sources where state data may be provided to use for the module. The gray box contains the methodology used for each calculation. There is also a series of buttons to the right. The top is a navigational arrow which is throughout each of the modules and will take you to the control worksheet, other calculation worksheets, or to the summary worksheet. The "Check All Boxes" button will check all the boxes to include default consumption data where available, and will populate all the activity cells with default data. "Clear All Data" will clear all the data entered on that specific worksheet.

For this particular worksheet, the activity data is entered into the orange cells and the emission factors and, in this case, combustion efficiencies data, is pulled from the control worksheet to the calculation worksheet. You can see the step-wise process from consumption through the emission factors converting the data into emissions.

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The summary worksheet presents summaries from the calculation worksheets. Here, you will be able to see the results for each sector within the module, as well as a couple of gray navigational arrows at the top. One of these will take you to a discussion of the uncertainty associated with these results. The graphs at the bottom will help you to identify trends and what your greatest source of emissions is.

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Once you click back to return to the control worksheet, you can export the data by clicking the "Export Data" button at the bottom of the worksheet. The next series of slides will show you screen shots of how summary data is exported for use in the synthesis module. If you click the export data button,

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A window will pop up. You click "OK." Then you have to save the summary file *without* changing the name because the synthesis module has to recognize this specific file.

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If the summary file was saved successfully, you will see this pop-up window.

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We will now go over the CO₂ from Fossil Fuel Combustion module. As Andrea mentioned before, there might be a bit of lag time, so bear with us.

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Here is the control sheet for the CO₂ from Fossil Fuel Combustion module. As you see in step 1 there is a drop-down with a list of the states. For this example, I'm going to use Colorado. You can see the buttons to the right where you can consult the EIIP Guidance or reset all the data entered into the module.

Step 2 is for the combustion efficiencies. If you do not have a state specific combustion efficiency that you would like to use, you can click on "Clear/Select all Defaults." If you have a more specific combustion efficiency that you would like to use, you can overwrite the yellow input cell with your more state specific combustion efficiency. For the sake of time, we are going to go through and select all the defaults on the control worksheet.

The next step is to complete the different sector worksheets within this module. We are going to do the residential worksheet as an example, but all the other worksheets will follow in a similar fashion.

Residential sector sheet

Here is the yellow button where you can see all the possible data sources. Then you can return to the calculation worksheet. You can see the gray box that describes the methodology used here, as well as the navigational arrow, the "Check All Boxes" and the "Clear All Data."

We are going to check all boxes. For this you can see that the default data is populated for each of the orange cells for the entire time series. I'm going to scroll down slowly so you can see the time series.

You can also overwrite the data that has been pre-loaded into the module as you have more state specific information. For example, if you know that you consumed more coal in a particular year, then you can enter that information and overwrite the default data. Once finished with the calculation worksheet we can return to the control sheet.

Control sheet

Normally, you would go through and complete the other sectors, but for the sake of time we are going to go straight to the summary sheet and do a summary of emissions.

Summary sheet

Since we completed the residential sector sheet, you can see the results from the residential time series here. Here are the charts that present emission estimates by sector for the time series.

There is also the gray navigational arrow that can take you to the discussion of these uncertainties.

Uncertainty sheet

You can see the discussion on the uncertainty associated with the methods of calculation.

Summary sheet

Return to the summary sheet, and then return to the control sheet.

Control sheet

Once you are finished completing the emission estimates for the module, you can export the data.

Click on the “Export Data” button. Click “OK.” We will save the CO2FFC_Summary file and *not* change the name of it. The data were successfully exported. That was an example of the CO₂ from Fossil Fuel Combustion module. Now I will show you the Natural Gas and Oil module.

Control sheet (Nat Gas and Oil) (30:32)

Here is the control sheet for the Natural Gas and Oil Systems module. We will select California for our state in this example to show something. You can see that the control sheet is set up in a similar fashion to the CO₂ from Fossil Fuel Combustion module, with the same default data option and similar navigational arrows. We will check all defaults and go to the natural gas production worksheet.

Production sheet

You can see that this is set up similarly as well with the yellow button and the gray box describing the methodology. We will select “Check All Boxes.” As you can see the activity data has now been populated for the total number of wells; however, the total number of offshore platforms is not populated. This is because the data for California are not available, although we know that California will have some offshore platforms. This is an example of how not all default data may be provided because not all data are available. This is a case where a state would have to search for more state specific information. You can also see that the data for the 1990 through 2005 time series is also provided. Now that we have finished the calculation worksheet we will return to the control sheet.

Control sheet

When you scroll down you can see that there are many steps to this sector as well, but for the interest of time we will go ahead and look at the summary sheet.

Summary sheet

Here you can see the summary of emissions. There is also a yellow box at the top which tells you which sources you did not calculate emissions for.

Uncertainty sheet

There is a discussion of the uncertainty as well.

Control sheet

Now we will switch to the Synthesis Tool so we can see how we import data from the other modules.

Synthesis Tool

You can see that the Synthesis Tool looks a bit different from the source modules. You still have the drop-down list where we will select a state. Step 2 looks different from the other modules because this is where you are going to import your data from the separate source modules. To do that we are going to click on “Get CO₂ from FF Combustion Data,” then we need to locate that file that we previously created. It will notify you when the data is imported successfully. You can see a time stamp of when the summary file that you exported was created, and then you can review the data.

Summary sheet

For this particular one, you can see the residential data estimates that we generated. If we had completed all calculation sheets you would also see data for the other sectors listed by fuel type. Each of these is a summary graph, so the sheet looks similar to the summary sheet in each of the modules.

Control sheet

You can see that I have already imported the summary files from each of the other modules. In step three you can select the units and display the summary sheet, once all of your emission estimates have been imported to the synthesis tool

Summary sheet

We can view this by sector for the time series where estimates were provided. We also have summary graphs. For this summary pie chart you can toggle between the years in order to see how the trend of emissions has changed throughout the years and which sectors emissions have increased or decreased.

Summary by gas sheet

You can also organize the summary by gas. We you can see CO₂, CH₄, N₂O, and HFC, PFC, and SF₆ emissions. Each of those emissions is then broken down by source. There are summary graphs as well on this worksheet and the pie chart where you can toggle between the years. You can also navigate to the summary by intensity worksheet.

Summary by intensity sheet

On this worksheet there are emissions per capita and emissions per gross state product with corresponding graphs.

Control sheet

This wraps up the first three demonstrations. We will have a question and answer session now and then we will go through the projection tool and have a question and answer session for that.

Question and Answer Session

Adam Brundage: Thanks for that demonstration Lauren. Our first question is: do EPA's graphic representations/trend tools assign a quantified value for uncertainty? Or is uncertainty talked about just qualitatively?

Andrea Denny: At the moment, the discussion on uncertainty in the tool is purely qualitative. We have adapted our methods from the U.S. Inventory of GHGs which does provide a quantitative analysis of uncertainty, but uncertainty was not necessarily consistent across all states. Some states use their own data and others default data, and even the default data is not necessarily consistent across all states, so it would be very difficult to establish a quantitative uncertainty that would be applicable in all cases. We've provided information on where uncertainty comes in and recommend people consult the U.S. Inventory of GHGs as well for more explanation of uncertainty.

Adam Brundage: People have been using the Oil and Gas module and they feel there are some improvements that could and should be made. Will the module be improved upon in the future and to whom should concerns be directed?

Andrea Denny: That is a great question. We do an annual update of the tools, so I would definitely encourage you to contact us. The easiest way would be to contact me. My email address is provided in the slides. We definitely like to hear from people who are

using the tools. They are a work-in-progress and we update them every year for methodological reasons.

The Oil and Gas module is simplified from the national inventory's methods because a lot of the data was not available in a lot of the cases, but for some states, who are big oil and gas producers, more data is likely to be available. This is certainly an area where we would like to work with states to improve.

Adam Brundage: As for timing of the SIT, how much time goes into creating and maintaining a state greenhouse gas inventory?

Andrea Denny: It does depend mostly on how intently the state wants to use refined data. If you wanted to take the inventory tool and use it only with default; not supplementing any of the data or searching for any more data, which would result in an inventory that was missing some categories, but would be somewhere to start from; it could be completed in a day. If you want to refine the data, it really depends on what data is available, what data you have access to, and how long it would take to obtain that data. It also depends on how many people you have devoted to it. Some states just have one person working on this as a small portion of their other duties, so it would take months to come up with an inventory. If you have a more intensive amount of people working on it, someone who is working on it full time, or if you are able to bring in contractor support you may be able to get it done more quickly. It is hard to answer that question definitively because it just depends. If you really want to go in and refine it, it could take anywhere from six months to a year.

Adam Brundage: Thank you, Andrea. More technically now, where do the default activity data come from?

Andrea Denny: The default activity data come mostly from a variety of federal databases. To name a few, the energy consumption data for fossil fuel comes from the Department of Energy Energy Information Administration's State Energy Data Reports. A lot of the agricultural data comes from the USDA's National Agricultural Statistical Survey. The transportation data we get from the Federal Highway Administration. There are a number of different databases like them that we get our data from. We also work with some of the different programs in the industrial sector. We have worked with some of the voluntary programs at EPA, which work with those industries to get information about emissions from different industries. If you go into the user's guide in the modules it will tell you where that default data is from.

Adam Brundage: Are there examples of states that are using the SIT to create their inventories and how do states compare with other states using this tool?

Andrea Denny: There are a number of states that are using the State Inventory Tool. I would say that in the last year or so I have been contacted by about twenty to twenty-five states. There are definitely different levels of activity that the states are doing. A few people who I have talked to recently, who have used the tool are Oregon, Florida, and

Hawaii. That is just off the top of my head, but there are quite a few states' inventories that have been published on the web too. We can provide information on how to access that. We are working on compiling summaries of the inventories that have been completed recently. They will be added to the U.S. EPA Climate Change website within the next few months. In terms of comparison to other states, if you have inventory data for your state, one place to go is the web to look for other states that have published inventories. Increasingly, as states publish greenhouse gas inventories, they publish the results online, so you can compare yourself. We maintain a database on the EPA website of CO₂ emissions from fossil fuels for the states. The data is from 1990 through 2004, so that is another place you can go to look at some comparisons. Finally, the World Resources Institute has a tool called the Climate Analysis Indicators Tool (CAIT) that has data based on the SIT. It is not a complete inventory for each state because it relies on the default data, but it is a place you can go to do some comparison.

Adam Brundage: Can this tool also work accurately and easily at the municipal level? If not, does EPA provide support at this application level?

Andrea Denny: For the most part, this tool is really only applicable at the state government level. Unfortunately, most of the databases that we use to get the default data are only available at the state level. There are a few cases, primarily for agriculture, where the data goes down to the county level, and some counties have used that data to supplement other emissions inventories that they are conducting. Another complication of using this tool at the municipal has to do with boundaries. This is more based on the source of the emissions rather than relating to the end-use associated with the emissions. For example, we assign emissions to the power plant, rather than the end-use of the electricity. For a municipal government that may not have a power plant within its boundaries, the tool would return zero emissions associated with electricity. Municipalities want to look at the end-use to find out the emissions they are responsible for. The Clean Air Climate Protection Software (CACCP) which we supported through ICLEI as well as the NACA which is available for local governments would speak to end-use emissions. You can contact me if you are a local government looking to access to that tool. For 2008, we are also looking at ways we may be able to scale down some of the state level data to a smaller level. It may not be down to the city level, but it may be down to the air quality management district, a council of governments-type of level, or regional planning association level. So we are investigating what we can do to make a tool at that level easier to do.

Adam Brundage: This is the last question we have time for before we move on to the projection tool training. Where can one go to download these SIT modules?

Andrea Denny: Right now because we do update the tools regularly and they are still considered drafts, we do not have them up online for anyone to download them. We ask that you contact me at the EPA, and then I will give you access to it, because then I will have your name and information, so when we do updates and correction you will be informed and have the most recent version.

We are going to move on to a demonstration of the projection tool, but we will have Q & A at the end of the call. We have a number of questions that came in that we don't have time to answer right now...

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...but we will try to get to them after this next demonstration. Now I am going to turn it back over to Lauren.

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Lauren Pederson: You can see the overview of how the Projection Tool works here.

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Now as an example, we will go through the CO₂ from fossil fuels projections to look at what they are based upon. These projections are based on the Energy Information Administration's Energy Outlook's regional energy consumption data through 2020. The regional projected data is disaggregated by state based on historic proportions of energy consumption within each region.

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I will now switch over and demonstrate the projection tool.

Projection tool control sheet

As you see, there is the drop-down list where you select your state, and the "reset tool" button where you can erase all the inputs you have entered. This tool uses completely different color-coding. Orange cells are where states will enter their activity data based on their calculation sheets. Yellow cells are historical emissions data used in calculating projections. Gray cells are projected emissions and white cells are data or calculation cells that cannot be changed.

Now we will go to the consumption sheet by clicking on the gray navigational arrow.

Consumption sheet

In this sheet we can enter projected fuel consumption for the state. You can see we have all the sectors from the CO₂ from fossil fuel combustion module by fuel type. We can click to use the default data which populates the orange cells. You can overwrite these if you have more state specific data available. You can also clear all, but we will use the default for this example.

Also on this sheet is a yellow button that will take you to a discussion of the projection methodology.

Methodology sheet

Here you can see the methodology outline for fossil fuel combustion. We will go back to the consumption sheet, and then back to the control sheet.

Control sheet

We also have sheets where you can enter population data which is used throughout the projection tool, as well as a livestock sheet. These three sheets contain the main data used for projection estimates. Now we will go to the CO₂ from fossil fuel combustion worksheet that converts consumption estimates into emissions estimates.

CO₂ FFC worksheet

Once you get to the projection worksheet you will be prompted to select a year; the year through which the SIT calculated emissions. For this we will say 2003, so the projection tool will begin calculating emissions for 2004. When you click submit you will see the 2001 through 2003 have cross-hatches through them, showing that the tool will begin calculations for 2004. We click for default emission projections. These projections were calculated from the consumption projections we just entered on the fuel consumption worksheet.

We can clear the projections and we can also change the projection year. Projections are available for residential, commercial, industrial, transportation, and electric power sectors by fuel type.

If you want a complete time series, you can also import historic emissions from the CO₂ from Fossil Fuel Combustion module. Click on “import historic emissions” and we will locate the same CO2FFC_Summary file we created earlier and import it. The data was imported successfully and you can see these data mirror what we finished earlier for the residential sector. There are graphs provided on each of the projection worksheets as well. When you are finished, return to the control worksheet and then you can scroll down and go to each of the worksheets in order to calculate projections.

Something I did not mention before with the other modules is that you have the option to add notes, so you can keep track of who has completed the worksheets or who has worked on each of the modules.

Notes sheet

If you click on “Module Options” and click on “Add Notes” it will take you to the Notes and Comments worksheet, which is just a blank worksheet in which you can capture this information. When you click “return” it will take you back to whichever worksheet you were working in.

Control sheet

Once you have completed all the worksheets you can view summary worksheets by gas, by sector, or by intensity. If we click on “summary by gas”

Summary by gas sheet

We can see the summary of emissions for each type of emission and its source. Graphs for these are also provided.

Summary by sector sheet

Next we will go to Summary by Sector where you can see each of the sectors: energy, industrial processes, agriculture, and waste; and the emissions from each of these sources. Data and graphs are presented from 1990 through 2020.

Summary by intensity sheet

On the Summary by Intensity sheet you can see the emissions per capita and emissions per gross state product. From here you can go back to the Summary by Sector, Summary by Gas, or Control worksheets.

Control tab

That wraps up the Projection Tool demonstration. We will now take questions on the Projection Tool.

Question and Answer Session

Adam Brundage: Thanks, Lauren. We still have some lingering questions about the SIT modules, but we will address questions on the Projection Tool first. Firstly, can the projection tool project beyond 2020?

Andrea Denny: Currently, we have projections only through 2020, but we are hoping to extend the projection years beyond 2020 this year. When we started this tool several years ago, the limit to the energy projection data was 2020, but as time has passed, we feel we will be able to update it some time later this year and put out a version that does extend beyond 2020.

Adam Brundage: In the Projection Tool, will the graphs print out separately from the data lines?

Andrea Denny: It is possible. The tool is based in excel, so you would be able to manipulate it the same way you would manipulate an excel spreadsheet to print out how you would like. You can copy and paste them into a separate excel spreadsheet to resize

them the way you want. We also provide some guidance on printing in the user's guide that accompanies the tool.

We will take a look at a few more slides on the Projection Tool before going back and answering question on the SIT.

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We wanted to point out that there are some additional resources that may be helpful. Some of these URLs may be helpful for comparisons. We've included the link to the national inventory, which has deeper discussion on uncertainty and methodology, from which the SIT methodology is based.

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Again, this is just my contact information. Please contact me if you have any questions or comments on the tool or if you would like to get a copy of the tool. Now we will open discussion back up to the remaining questions.

Adam Brundage: In terms of the projection tool, the EIA seems to be very unrealistic based on future oil prices as 2030 is below current prices. Are there other sources of data that you might recommend?

Andrea Denny: This is one of the things that we are definitely going to be investigating. The EIA data from the Energy Outlook through 2020 is several years old, so there are definitely improvements that we can make. I don't have an answer for you today on other resources, but it is one of the things we are planning to investigate. We should have something within the next few months that should be more up-to-date. Some states have started to do their own projections with their own energy modeling, so they could be incorporated somehow into the tool.

Adam Brundage: Back to the SIT, why do emissions end at 2005? How current is the EIA data and when will it be updated next?

Andrea Denny: Currently the tool goes through 2005 because we set up this tool's infrastructure several years ago when 2000 or 2001 was the most recent data and we built a few empty years into the tool so we would not have to do a complete overhaul. Currently, 2004 and 2005 data is becoming available and within the next few months we expect to get 2006 data in some categories, so one of the tasks we will be completing this year will be to expand the tool beyond 2005. Currently EIA data is available through 2004, which is the energy data, which is the bulk of emissions for most states, and the EIA is scheduled to release the 2005 data in February 2008, so when that is available we will begin to incorporate that, but currently 2004 is the most recent year.

Adam Brundage: It appears that the SIT considers 1990 as a baseline. Can you speak a little bit about this?

Andrea Denny: We chose 1990 as a baseline year based on history, convention and data availability. We certainly don't mandate that states go back to 1990. That is just the year the furthest back with widely available data for all the categories and we wanted to incorporate as much of that data as possible. When you go before 1990, data becomes difficult to get across all the categories, so we did not feel comfortable go back earlier than 1990. Right now all of these inventories are voluntary, so the state does not have to go back to 1990. Having the tool go back to 1990 doesn't necessarily mean that the baseline is 1990, you could certainly choose another year as a baseline but have that earlier data as just past historical information.

Adam Brundage: In terms of specific sources, does the SIT include emissions associated with biofuels?

Andrea Denny: One of the IPCC conventions, which we use in the national inventory and the SIT, is that biofuels are grown in a sustainable fashion. They are taking in as much carbon as they are releasing when they are burned, so they are not considered to be part of the anthropogenic emissions. The emissions associated with the production of biofuels would be accounted for in the industrial or energy consumption emissions that are accounted for in the tool, however.

Adam Brundage: The SIT uses default emission factors depending on the state that is doing the inventory. How will EPA provide expertise on non-default emission factors proposed for use by a particular state?

Andrea Denny: As I mentioned, this is all voluntary, so there is no requirement that state's use EPA default data. We've found that most states prefer to use those defaults because there is a certain amount of credibility and research that has gone into them and it gives them a certain amount of comparability with other states that are using the same default emission factors. We are certainly happy to talk to states that want to make changes to the default emission factors. Sometimes we have national averages, and some states may be able to come up with a more locally-specific emission factor. For example, California has some very unique gasoline blends, so they have done work on coming up with different emission factors for gasoline than are used in other states. We cannot do all the work for you, given our limited resources here to come up with alternates in all cases, but we would be happy to talk to you about them; about where you might want to concentrate your efforts on improving emission factors because we recognize places where they can be improved. We do review emission inventories if you do want to submit them to us. We would note if a state has used a dramatically different emission factor. We would not change their emissions numbers, but we would note the difference. This is a developing process, so we are open to the fact that states can sometimes come up with better numbers than we can.

Adam Brundage: Is there are rule-of-thumb to help guide states as to the amount of time they should be spending on their inventory because as we were noting before, this

compiling activity could go on indefinitely? When does that reach the law of diminishing return so to speak?

Andrea Denny: The idea that you can expend twenty percent of the effort and get eighty percent of the results is definitely in play. If you are trying to get some basic idea of what is going on in the state, using the default with a couple key improvements where there are no defaults of readily available data is probably a good enough approach. We are starting to hear of states using the results from their inventories for regulatory purposes. In that case, I think you would need to put in a lot more effort to refining the results. On principal, we have focused our efforts on the sectors that are the largest sectors, so we feel that those have the best and most complete data. It is difficult to answer this, and I know I keep saying this, but it does really vary from state to state. For example, a state that does a lot of oil and gas production would probably want to refine that data, whereas a state that doesn't probably wouldn't want to concentrate there. Agriculture is another sector that varies widely in importance from state to state. We are happy to discuss on a case-by-case basis with the states on where they might want to spend their efforts refining data and where they might want to stick with the defaults. There really is no rule-of-thumb, but we will be happy to discuss that with you.

Adam Brundage: Does EPA recommend defaults or sources for information on kerosene-based jet fuel? Currently the tool says it is variable by year.

Andrea Denny: That does raise a valuable question. Some of you may have noticed when Lauren was going through some of the screen shots that some of the emission factors were labeled as variable by year. Basically what that means is that we do have emission factors built into the tool for those fuel types. It is just that the makeup of those fuels varies from year to year, so we do not provide one number that is then used for fifteen different years; we provide fifteen different numbers. We just didn't have room on the control sheet to list them all. There is a data table in the tool that does break out the emission factors for each year. Within the calculation worksheets that are broken out by year, for each year it will pull the correct emission factor for that year.

Adam Brundage: For clarification, the tools use the end-use or consumption based approach for GHGs versus a broader life-cycle based approach, which includes carbon impacts both up and downstream. Is this accurate?

Andrea Denny: That is one way of looking at it. This is really a big picture tool. It is looking at all the emissions in the state. It is not able to get down to a project level or look at what impact upstream or downstream an activity may have. It is focused at the actual source of the emissions. For example, we look at how much fossil fuel is burned at a power plant and that is assigned to the electricity sector or we look at fuel sales of gasoline within the state, but where people are driving is not going to impact your CO₂ emissions from gasoline in this report. There are other types of modeling and analysis that get down more into details of upstream and downstream, but this is a big picture tool to help identify major sources of emissions to find out where you could want to look at life cycle analysis for and where you would want to spend your time focusing.

Adam Brundage: A follow up question to that would be there are a number of greenhouse gas inventory tools that are available. Are there reasons why EPA's tool would be a preferred tool?

Andrea Denny: There are definitely quite a few different tools or methods available and many have slightly different focuses. To my knowledge, the SIT is the only tool that addresses all sources that are in the national inventory, which is based on the Intergovernmental Panel on Climate Change recommendations; has data on all these sources, and is a broad comprehensive planning tool. Depending on what you want to do, it can be very helpful. We understand that some states may want to supplement some of the results with information from other models and tools. We certainly encourage that. It is really important to take the right tool for the data needs that you have. For example, the Clean Air Climate Protection Software can also be useful to states who want to look at some of the more end-use applications for electricity or who want to look at specific projects and find out the impacts for those specific projects. The two tools can work very well together and compliment each other. We have done some earlier webcasts that are available online that you can listen to that touch on some of these issues of what you need when you are doing your inventory and deciding what the most appropriate choice is.

Adam Brundage: What types of information are generated from the selection of a particular state using the SIT? In what manner do the calculations differ based on the state that is selected?

Andrea Denny: The obvious and biggest implication of choosing different states is the activity data; that is the tons of fossil fuel that is consumed; the number of cows, chickens, and goats in your state and those types of numbers are different to each state. In some cases the emission factors do vary. Some of them are national averages; some are state-specific; some are regional. Also, whether or not a source exists in your state is determined when you pick that state. For example, the emissions associated with rice cultivation are only applicable to a handful of states that grow rice. If you pick a state that grows rice you will be prompted to fill in that data, whereas if you pick one that does not, you will be allowed to skip over that section. Those are the basic differences, but it also means that all your charts and graphs are labeled correctly; and for the greenhouse gas intensity calculations, it chooses the right population and gross state product numbers.

Adam Brundage: One final lingering question: can county-level data or municipal-level data be derived from the calculations made in the SIT?

Andrea Denny: We touched on this earlier, but it probably bears repeating. Currently the state tool is driven by state-level emissions because the databases we use are only available at the state level and we don't have good county level data for all of those different categories. What we have found is that there are a few counties across the U.S. that have complimented what inventories they have done, through ICLEI or the CACP software, with agricultural data from the SIT. There is good agricultural data available at the county level that is consistent with the state level data used in the SIT. If a county

wants to look at their agricultural emissions, they could take the agricultural tool, select their state, and replace all the state level data with all their county-level specific data and generate estimates that way. There is no built in county level data. We are beginning to explore some ways in which we may be able to scale down some state level data to a smaller level. We are just beginning that work however, and we are not sure how well it will work. It will probably be a year or so before we'll be able to answer whether or how well these data can be scaled down.

We are nearing the end of the time for the call, so I just want to re-iterate that we are very happy to answer any additional questions that you may have thought of or may think of after the call. If you want to have a more extensive discussion about something particular to your state, I am very happy to do that. You can reach me by phone or by email. If you have specific suggestions about improvements to the tool, I would recommend that you submit them in an email so I can have them in writing and forward them to our experts for the different sections. You can always call first to talk through it before writing a manifesto. With that, thank you to everyone for being on the call.