USER'S GUIDE FOR STATES USING THE GREENHOUSE GAS SYNTHESIS TOOL

OCTOBER 2017

This section of the User's Guide provides instruction on using the Synthesis Tool module of the State Inventory Tool (SIT).

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1.1 GETTING STARTED

The Synthesis Tool was developed using Microsoft® Excel 2000. While the module will operate with older versions of Excel, it functions best with Excel 2000 or later. Some of the Excel basics are outlined in the steps below. Before you use the Synthesis Tool, make sure your computer meets the system requirements. In order to install and run the Synthesis Tool, you must have:

- IBM-PC compatible computer with the Windows 95 operating system or later;

- Microsoft® Excel 1997 or later, with calculation set to automatic and macros enabled;

- Hard drive with at least 20MB free; and

- Monitor display setting of 800 x 600 or greater.

Microsoft Excel Settings

Excel 2003 and Earlier: For the SIT modules to function properly, Excel must be set to automatic calculation. To check this setting, launch Microsoft Excel before opening the Synthesis module. Go to the Tools menu and select "Options..." Click on the "Calculations" tab and make sure that the radio button next to "Automatic" is selected, and then click on "OK" to close the window. The security settings (discussed next) can also be adjusted at this time.

Excel 2007: For the SIT modules to function properly, Excel must be set to automatic calculation. Go to the Formulas ribbon and select "Calculation Options." Make sure that the box next to the "Automatic" option is checked from the pop-up menu.

Microsoft Excel Security

Excel 2003 and Earlier: Since the SIT employs macros, you must have Excel security set to medium (recommended) or low (not recommended). To change this setting, launch Microsoft Excel before opening the Synthesis module. Once in Excel, go to the Tools menu, click on the Macro sub-menu, and then select "Security" (see Figure 1). The Security pop-up box will appear. Click on the "Security Level" tab and select medium. When set to high, macros are automatically disabled; when set to medium, Excel will give you the choice to enable macros; when set to low, macros are always enabled.

When Excel security is set to medium, users are asked upon opening the module whether to enable macros. Macros must be enabled in order for the Synthesis module to work. Once they are enabled, the module will open to the control worksheet. A message box will appear welcoming the user to the module. Clicking on the "x" in the upper-right-hand corner of the message box will close it.

Excel 2007: If Excel's security settings are set at the default level a Security Warning appears above the formula box in Excel when the Synthesis module is initially opened. The Security Warning lets the user know that some active content from the spreadsheet has been disabled, meaning that Excel has prevented the macros in the spreadsheet from functioning. Since SIT needs macros in order to function properly, the user must click the "Options" button in the security message and then select, "Enable this content" in the pop-up box. Enabling the macro content for the SIT in this way only enables macros temporarily in Excel but does not change the macro security settings. Once macros are enabled, a

message box will appear welcoming the user to module. Click on the "x" in the upper right-hand corner to close the message box.

If the Security Warning does not appear when the module is first opened, it may be necessary to change the security settings for macros. To change the setting, first exit out of the Synthesis module and re-launch Microsoft Excel before opening the Synthesis module. Next, click on the Microsoft Excel icon in the top left of the screen. Scroll to the bottom of the menu and select the "Excel Options" button to the right of the main menu. When the Excel Options box appears, select "Trust Center" in left hand menu of the box. Next, click the grey "Trust Center Settings" button. When the Trust Center options box appears, click "Macro Settings" in the left hand menu and select "Disable all macros with notification." Once the security level has been adjusted, open the Synthesis module and enable macros in the manner described in the preceding paragraph.

Viewing and Printing Data and Results

The Synthesis Tool contains some features to allow users to adjust the screen view and the appearance of the worksheets when they are printed. Once the tool has been opened, you can adjust the zoom by going to the Module Options Menu, and either typing in a zoom percentage or selecting one from the drop down menu. In addition, data may not all appear on a single screen within each worksheet; if not, you may need to scroll up or down to view additional information.

You may also adjust the print margins of the worksheets to ensure that desired portions of the Synthesis Tool are printed. To do so, go to the File menu, and then select "Print Preview." Click on "Page Break Preview" and drag the blue lines to the desired positions (see Figure 2). To print this view, go to the File menu, and click "Print." To return to the normal view, go to the File menu, click "Print Preview," and then click "Normal View."
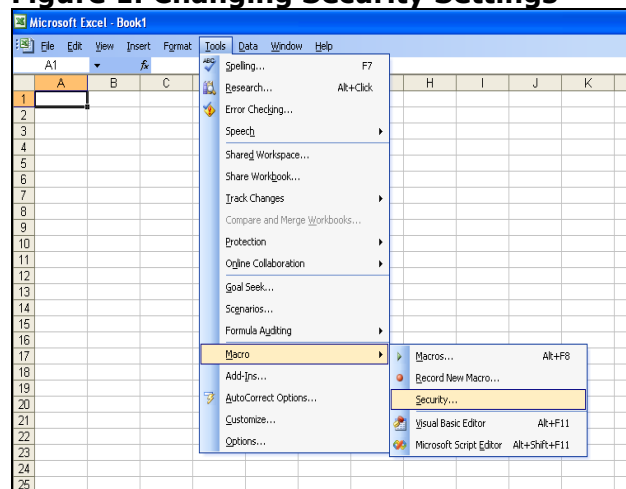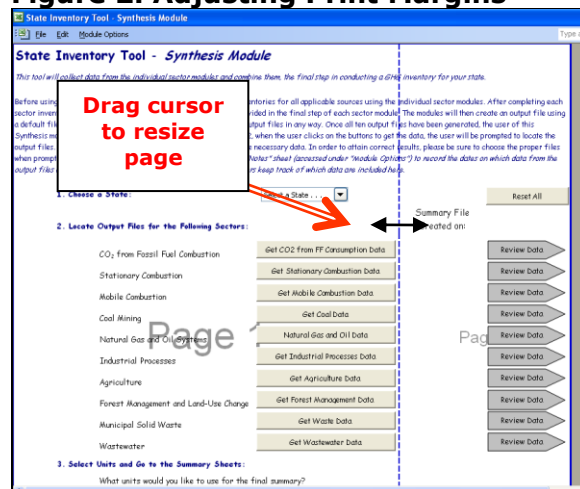
Figure 1. Changing Security Settings

Figure 2. Adjusting Print Margins

1.2 SYNTHESIS TOOL OVERVIEW

The Synthesis Tool was designed as a companion to EPA's State Inventory Tool (SIT), which estimates state-level emissions for 1990-2020. Users who have completed the historical

emission estimation process using the SIT modules can import the historical emissions into the Synthesis Tool to compile the time series for all modules from 1990 through 2020.

1.2.1 Data Requirements

Before using this module, the user should conduct greenhouse gas inventories for all applicable sources using the individual sector modules. The individual sector modules include the following: CO_2 from Fossil Fuel Combustion, Electricity Consumption, Stationary Combustion, Mobile Combustion, Coal Mining, Natural Gas and Oil Systems, Industrial Processes, Agriculture, Land Use, Land-Use Change and Forestry, Municipal Solid Waste, and Wastewater.

After completing each sector inventory, the user should export the data using the "Export Data" button provided in the final step of each sector module. The modules will then create an output file using a default file name. Please do not change the file names or alter the output files in any way. Once the output files have been generated, the Synthesis module can then be used.

1.2.2 Tool Layout

Since there are multiple steps to complete within the Synthesis Tool, it is important to have an understanding of the Tool's overall design. The layout of the Synthesis Tool is presented in Figure 3.

Figure 3. Flow of Information in the Synthesis Tool
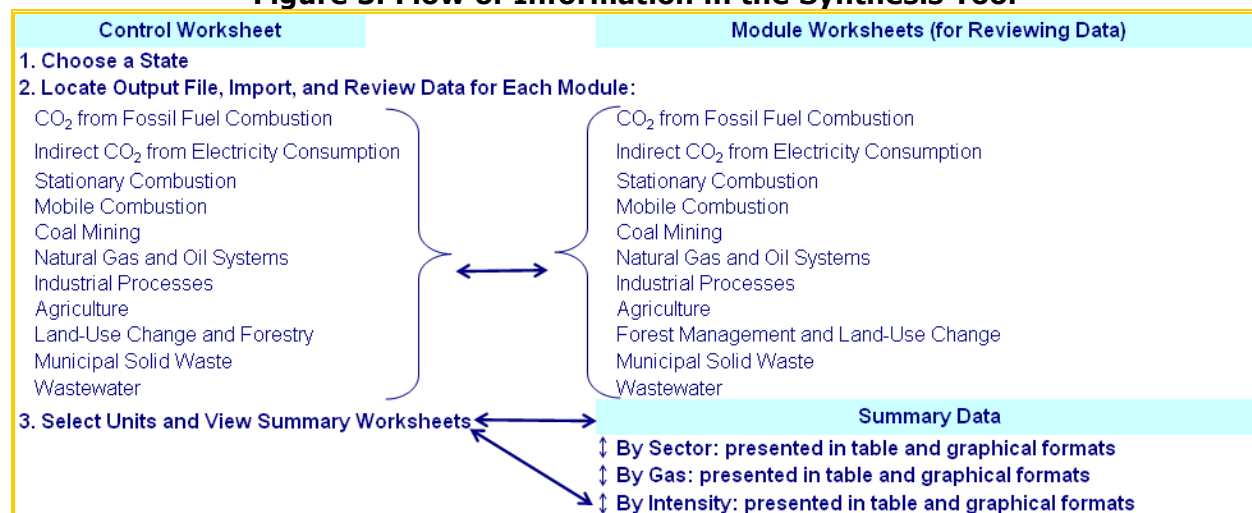
1.3 METHODOLOGY

This section provides a guide to using the Synthesis Tool to import emission estimates from completed modules of the SIT. The following three steps describe how to import and view the estimates provided by the eleven SIT modules: (1) select a state on the control worksheet; (2) locate output file, import, and review data for each module; (3) select units and view summary information.

Step (1): Select a State on the Control Worksheet

To begin, select the state you are interested in evaluating. By selecting a state, the rest of the tool will automatically reset to reflect the appropriate state default data and assumptions for use in subsequent steps of the tool.

Step (2): Locate Output File, Import, and Review Data for Each Module

This step involves importing the output files containing emission estimates from the individual modules. While the CO_2 from Fossil Fuel Combustion (CO_2FFC) module will be used as an example of how to import and review data, the importing process is identical across for all eleven SIT modules.

On the control worksheet, select the "Get CO_2 from Fossil Fuel Combustion Data" button. Once this button is selected, you will be prompted to locate the summary file exported from the CO_2FFC module (called "CO2FFC_Summary") as shown in Figure 4.

Figure 4. Example of Importing Data in the Synthesis Tool
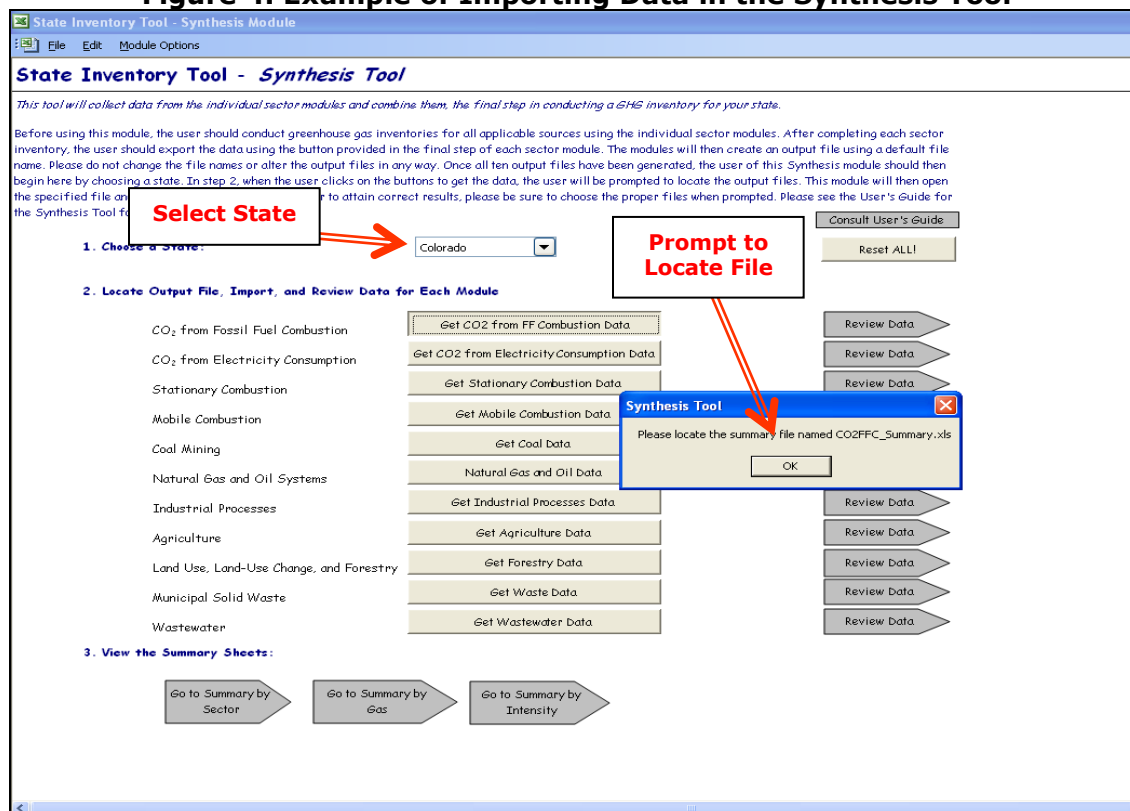
If the file is imported successfully, the current date and time will appear in the column titled "Summary File Imported on". This timestamp is useful to have if you are completing an inventory on an annual basis and would like to know the last time data was imported into the Synthesis Tool.

To review the data that was imported for a given module, click on the gray navigational arrow to the right of the module you would like to review. The summary data worksheet by sector for the CO_2 from Fossil Fuel Combustion is shown in Figure 5. To return to the control worksheet, click on the gray navigational arrow.

Figure 5. Example of CO2FFC Summary Worksheet

Step (3): View Summary Information

Once the data from all of the modules has been imported, you can view estimates in MMTCO$_2$E on the final summary worksheet. A summary of the modules by sector, gas, or intensity (per capita and by gross state product) is provided within the Synthesis module. An example of the sector summary worksheet is shown in Figure 6. In addition, the results are displayed in graphical format at the bottom of the summary worksheets.

Figure 6. Example of Summary Worksheet by Sector

1.4 CONCLUSION

Once the results of all eleven modules are imported into the Synthesis Tool, you will have a complete inventory for your state. These results may be used to create an inventory document, if you so desire. In addition, you may use these historical estimates as the basis for emission projections in EPA's Projection Tool. For instructions on using the Projection Tool, please consult the Projection Tool User's Guide.