Introduction To GREET1_2011 Graphical User Interface

Jeongwoo Han

Systems Assessment Group

Center for Transportation Research

Argonne National Laboratory

The GREET Training Workshop

Argonne National Laboratory

December 7-8, 2011

Outline

- Purpose of GREET GUI

- Structure of GREET GUI

- Design and Operation of GREET GUI

- Outputs of GREET GUI

- Installation and Compatibility Issues with GREET GUI

- Help with GREET GUI

Outline

- **Purpose of GREET GUI**

- Structure of GREET GUI

- Design and Operation of GREET GUI

- Outputs of GREET GUI

- Installation and Compatibility Issues with GREET GUI
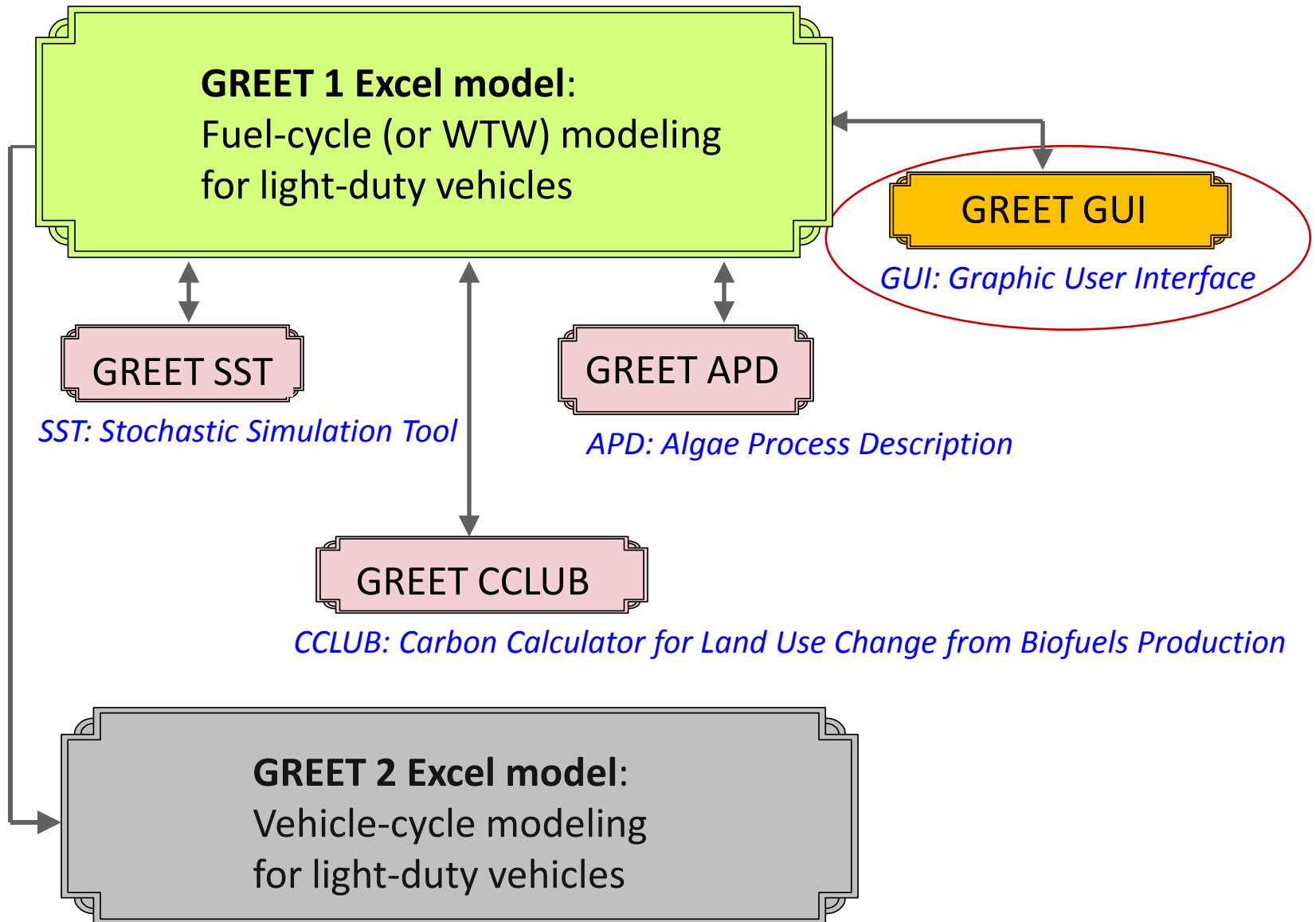
- Help with GREET GUI

GREET GUI Development

- GREET model was originally developed in MS Excel; number of pathway options has grown significantly

- User may be interested in simulating a few of these options and in modifying only the key assumptions associated with these options

- GREET GUI allows the user to simulate specific pathways of interest by prompting for inputs and presenting results only relevant to those pathways

- New options developed in GREET Excel are usually rolled into GREETGUI the next release

- A new architecture is being considered to combine GREET Excel and GREETGUI into one package

The Suite of GREET Models

GREET 1 Excel model:
Fuel-cycle (or WTW) modeling
for light-duty vehicles

GREET GUI

GUI: Graphic User Interface

GREET SST

SST: Stochastic Simulation Tool

GREET APD

APD: Algae Process Description

GREET CCLUB

CCLUB: Carbon Calculator for Land Use Change from Biofuels Production

GREET 2 Excel model:
Vehicle-cycle modeling
for light-duty vehicles

GREET GUI Logical Structure

GREETGUI, developed using Microsoft® Visual Basic 6.0, works as follows:

1. **Receives** inputs from the user through option buttons, check boxes, and input text boxes

2. **Communicates** the inputs to an underlying Excel spreadsheet model (GREET)

3. **Runs** the GREET model in the background

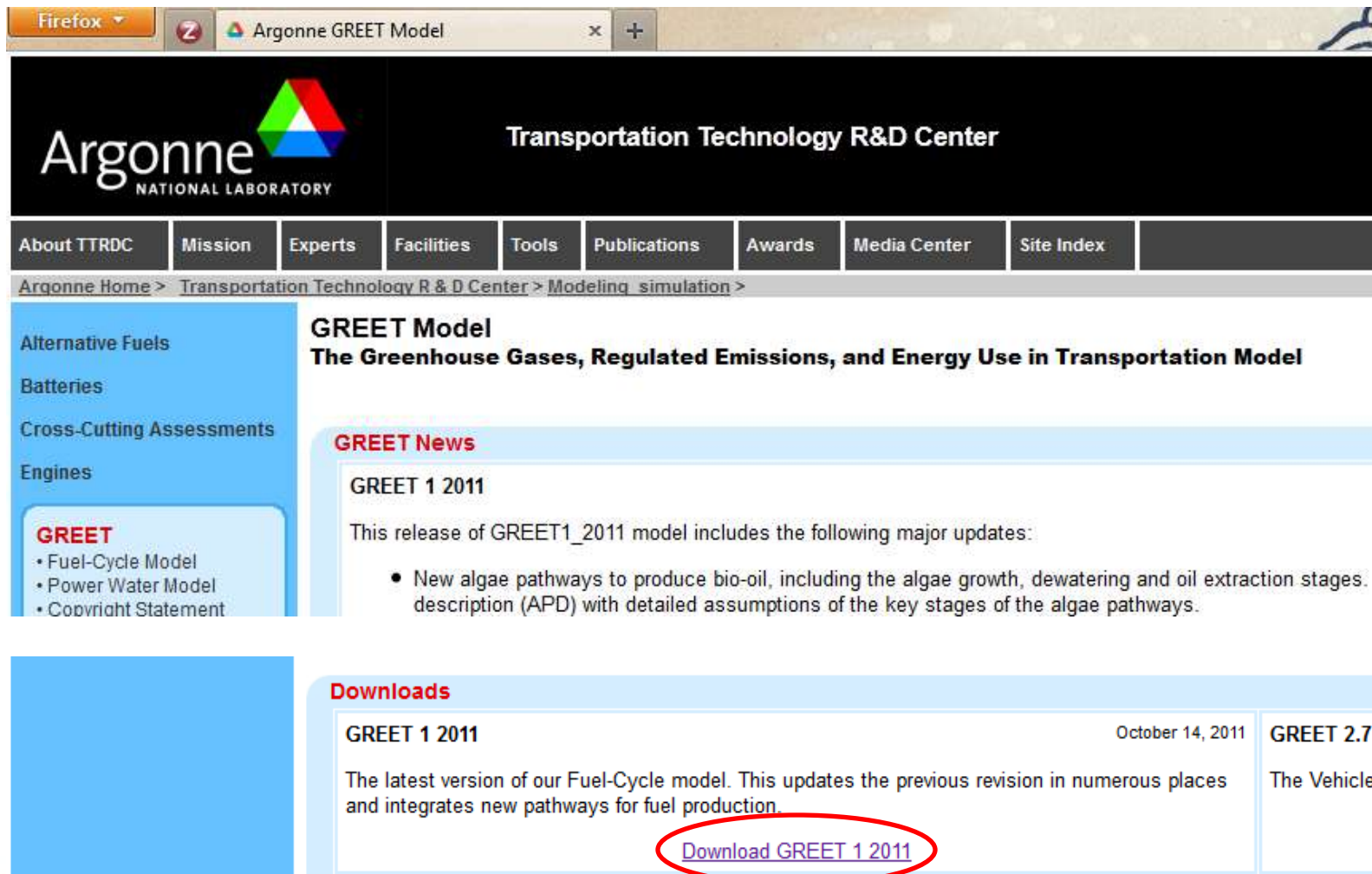4. **Displays** results in the form of tables in another Excel output file

Outline

- Purpose of GREET GUI

- **Structure of GREET GUI**

- Design and Operation of GREET GUI

- Outputs of GREET GUI

- Installation and Compatibility Issues with GREET GUI

- Help with GREET GUI

GREET GUI Is Developed in Three Levels of Interactions

- **Market Share** Specification (e.g., % of H2 from NG, coal, etc.)

- **Technological Options** Selections and Inputs (e.g., H2 production with steam export or electricity export)

- **Key Assumptions** Review and Modification

  - **Key Assumptions** are 1st tier assumptions affecting WTW results (e.g., H2 production energy efficiency)

  - 2nd tier assumptions are not presented by GUI but can be modified in the underlying GREET Excel model (e.g., emission factors associated with process fuel combustion)

Steps of a Typical GREET GUI Session

Copyright and information screens

↓

Load GREET Model
(in the background)

↓

User selects simulation year(s), fuel types, vehicle type and other key options

↓

User selects/specifies feedstock, production and fuel market shares

↓

User selects/specifies fuel pathways and vehicle technologies

→

User selects/specifies fuel blending options

↓

User reviews/modifies key assumptions for fuel production, fuel transportation and distribution, and vehicle operation

↓

Run GREET Model
(in the background)

↓

Generate output file for energy use and emission rates and input log file for a record of inputs made during the concluded session

Outline

- Purpose of GREET GUI

- Structure of GREET GUI

- **Design and Operation of GREET GUI**

- Outputs of GREET GUI

- Installation and Compatibility Issues with GREET GUI

- Help with GREET GUI

The Logic to Determine the Base Year

- If the user selects more than one simulation year, GREET GUI will select a specific simulation year as its "base year", for which default estimates are presented to the user.

- Specifically, GREETGUI selects the simulation year closest to 2010 as its "base" year because key assumptions, especially those with distribution functions, are made for year 2010.

- If the user modifies technology estimates for the base year, GREET GUI will make proportionate adjustments to the corresponding estimates of all subsequent simulation years.

- For example, if the share of coal-generated electricity in the U.S. average mix is modified from 46.4% to 45% for the year 2010, GREETGUI will adjust the coal-generated electricity share estimates for all simulation years subsequent to 2010 by the same percentage, which is -3.1% in this case.

Outline

- Purpose of GREET GUI

- Structure of GREET GUI

- Design and Operation of GREET GUI

- **Outputs of GREET GUI**

- Installation and Compatibility Issues with GREET GUI

- Help with GREET GUI

Output Files of GREET GUI

- Results Output File

  - **Well-to-Pump (WTP)** Energy Use and Emissions

  - **Well-to-Wheels (WTW)** Energy Use and Emissions

- Input Log File (recording inputs for the simulated pathways)

Outline

- Purpose of GREET GUI

- Structure of GREET GUI

- Design and Operation of GREET GUI

- Outputs of GREET GUI

- **Installation and Compatibility Issues with GREET GUI**

- Help with GREET GUI

Installing GREET

- To download the latest GREET version:
  - Go to http://greet.es.anl.gov/

Installing GREET

Installation Instructions
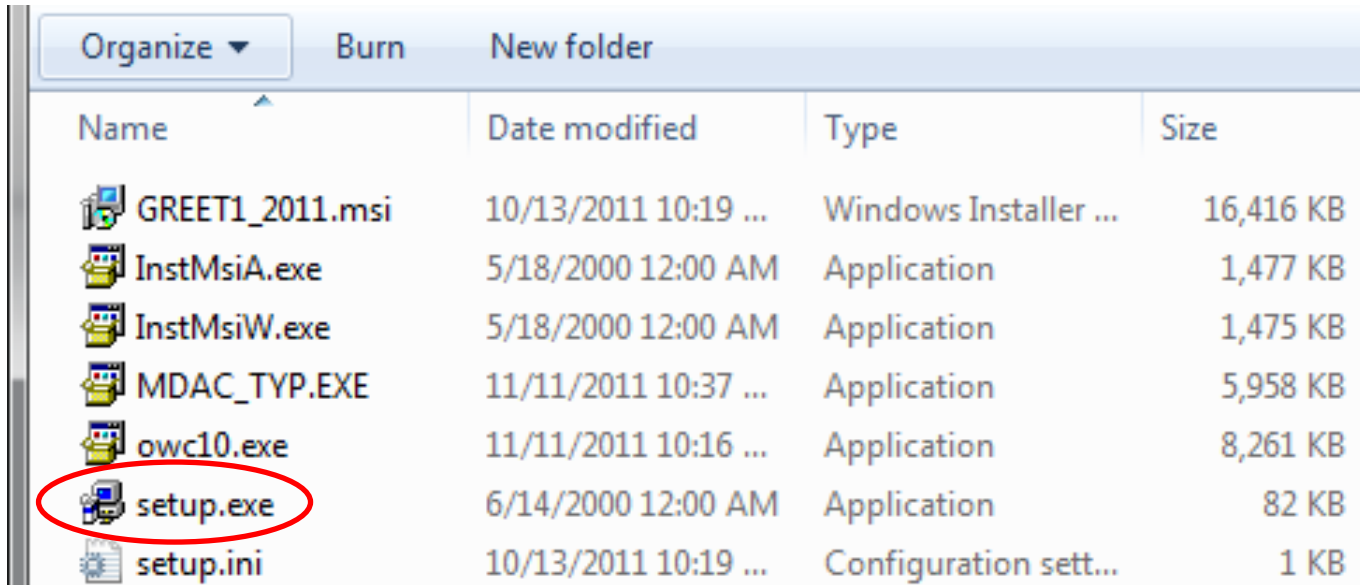
Step by step instructions

If you wish to run GREET 1 version in MS Excel, you can find it in the GREET folder on your PC (C:\Program Files\GREET1) which is the default specified by the GREET installation program.

1. **Before installation**, make sure that a Microsoft Office XP Web Component 10 is installed on your computer:
   a. Go to Windows website (below) to download the file "owc10.exe": http://www.microsoft.com/downloads /details.aspx?FamilyID=982b0359-0a86-4fb2-a7ee-5f3a499515dd&displaylang=en.
   b. When the download is complete, double-click on the file icon and follow the on-screen installation instructions.
2. **Before installation**, make sure that a Microsoft Data Access Component version 2.5 or higher is installed on your computer:
   a. In Windows, go to *Start, Find, Files or Folders*, and search for "mdac_typ.exe."
   b. If you find the file, right-click on it and view its properties by clicking the Version tab.
   c. If the version is earlier than 2.5 OR if you can't find this file, then click here to save the "mdac.zip" file to your hard drive.
   d. When the download is complete, unzip the file by double-clicking on it in the folder where you saved it. Then double-click on the file icon and follow the on-screen installation instructions.
3. **To download GREET:**
   a. Click here and save the file GREET 1 2011.zip to your hard drive. For MAC users, use this file GREET 1 2011 MAC.zip
   b. When the download is complete, unzip the file by double clicking on it in the folder whre you saved it.
   c. When the file is unzipped, double click on the executable file "setup.exe" and follow the onscreen instructions.
   d. Note that if your computer has Microsoft Excel 2010, you will need to follow these instructions for GREET to operate properly Excel 2010 Memo.
   e. Note that some versions of Windows operating systems may not permit the installation program to update some of the system files. In such case, click OK to continue and the installation will still be successful.
   f. Note that for compatibility with Windows Vista, the GREET1 version generates the output files in a special folder named "GREET1" under the "MY Documents" folder.
4. **To uninstall GREET:**
   a. Click on the Start button, go to *Settings*, click on *Control Panel*.
   b. Double-click on "*Add/Remove Programs*."
   c. Scroll down to "GREET1_2011" on the list of installed programs.
   d. Click "Add/Remove" and follow the onscreen instructions.

Installing GREET GUI

- To install GREET GUI:
  - Double-click the "**setup.exe**" application file in the GREET GUI installation package.

  - Follow the on-screen instructions.
  - If prompted to do so, restart the computer to allow the installation process to fully complete.
- The installation program creates a shortcut to the GREETGUI program on the desktop.

After Installing GREET

- GREET Installation Folder
  - 32 Bit System: C:\Program Files\GREET1_2011
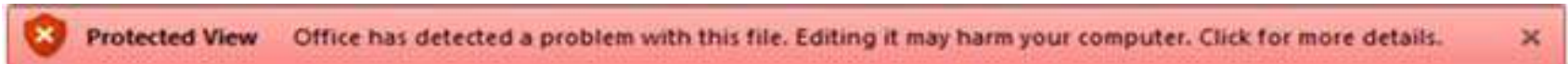 - 64 Bit System: C:\Program Files (x86)\GREET1_2011
- GREET installation folder includes
  - Algae Process Description
  - Carbon Calculator for Land Use Change from Biofuels (CCLUB) Tool
  - GREET GUI
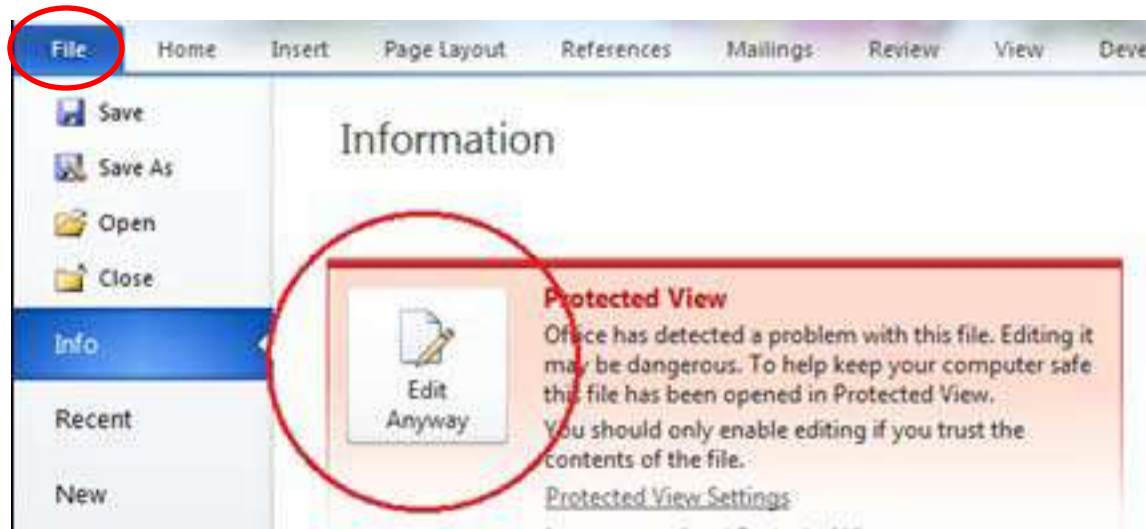 - GREET Excel
  - Stochastic Simulation Toolkit

Name

- AlgaeProcessDescription_v0.0.xls
- club_for_GREET1_2011.xls
- COPYRIGHT.rtf
- GREET Readme.doc
- GREET1.avi
- GREET1_2011.exe
- GREET1_2011.xls
- GREETHelp.chm
- GREETHelp.hhc
- MDAC.MSM
- riched32.dll
- STOCHASTIC.xla

Instructions for GREET GUI running with Excel 2010

- http://greet.es.anl.gov/files/instructions_excel_2010
- Open the GREET Excel file (GREET1_2011.xls) in the installation folder
- Locate the red "Protected View" Message Bar

Protected View   Office has detected a problem with this file. Editing it may harm your computer. Click for more details.   ✕

- Click the **File** tab, and then click "Edit Anyway" in Backstage view (shown below)

- Close the GREET Excel file (no need to save) and run the GUI

Compatibility of GREET GUI

- **Operating Systems:**
  - Windows XP
  - Windows Vista
  - Windows 7
  - NOT compatible with MAC OS

- **MS OFFICE EXCEL Versions:**
  - EXCEL XP
  - EXCEL 2003
  - EXCEL 2007
  - EXCEL 2010
  - NOT compatible with Excel 2000

- Very slow with the combination of Windows Vista and Excel 2007

Outline

- Purpose of GREET GUI

- Structure of GREET GUI

- Design and Operation of GREET GUI

- Outputs of GREET GUI

- Installation and Compatibility Issues with GREET GUI

- **Help with GREET GUI**

Help with GREET GUI- User Guide and Publications

- Download User Guide from the GREET web site:

  http://greet.es.anl.gov/publications

THANK YOU!