AVERT
AVoided Emissions and geneRation Tool
www.epa.gov/avert

Downloading AVERT Files for Use in SMOKE

U.S. Environmental Protection Agency
State Energy and Environment Program

EPA United States Environmental Protection Agency

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Overview

- The AVERT Main Module can produce output files for the **Sparse Matrix Operator Kernel Emissions (SMOKE)** modeling system, which is designed to create gridded, speciated, hourly emissions for input into air quality models such as CMAQ, REMSAD, CAMX and UAM
- For more information about SMOKE, visit https://www.cmascenter.org/smoke/
- This training refers to the Excel version of the AVERT Main Module

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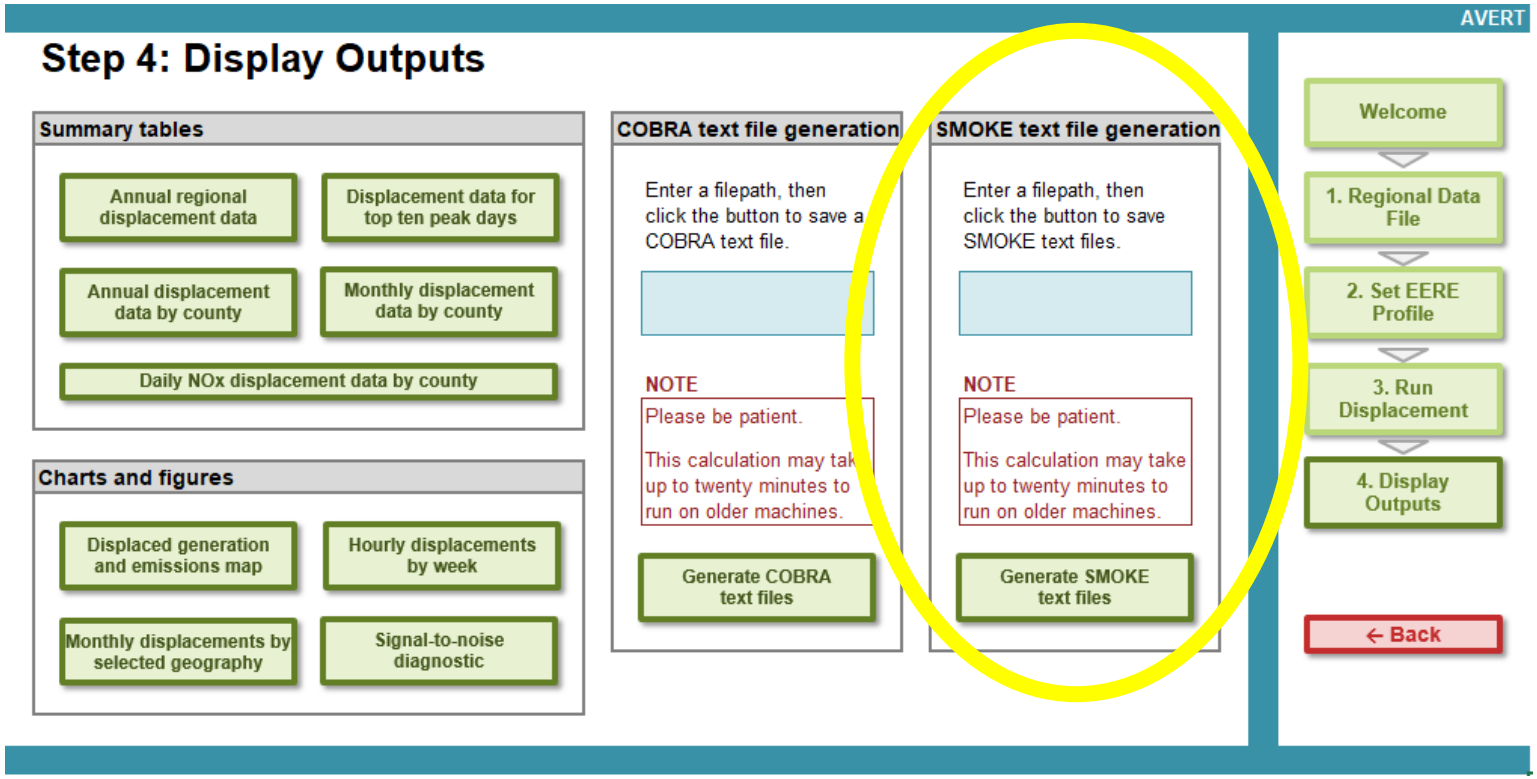
Select a Filepath

- AVERT's SMOKE text file generation can be found in Step 4: Display Outputs
- After running a displacement scenario, double-click the blue box to select the location where you would like to save the files



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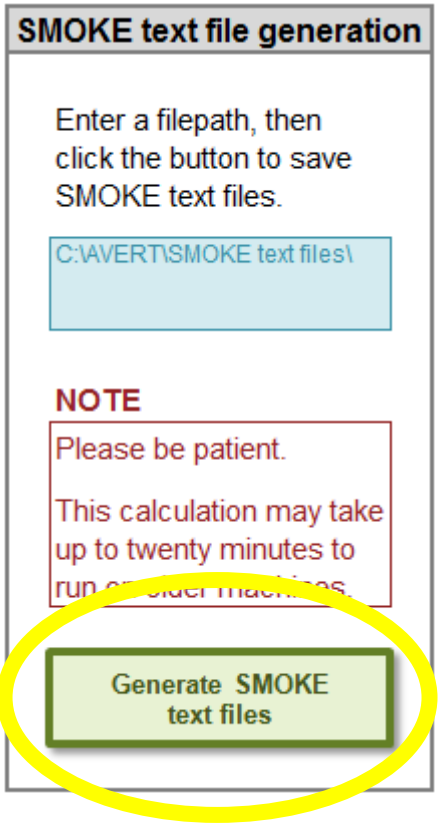
Generate SMOKE Text Files

- After entering a filepath, click the button labeled "Generate SMOKE text files"



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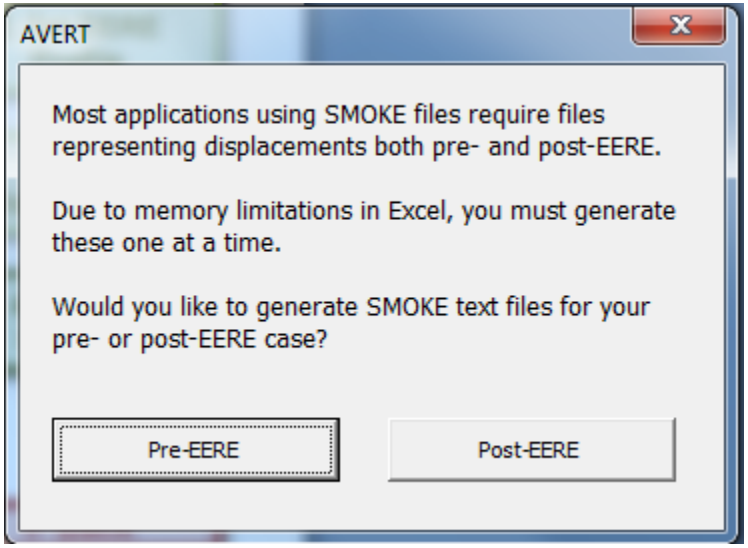
Generate SMOKE Text Files

- A dialog box will appear asking you whether you want to generate SMOKE files for your pre-EERE or post-EERE case



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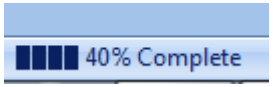
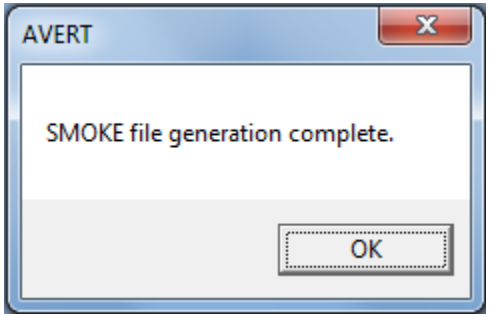
Generate SMOKE Text Files

- After you select either pre-EERE or post-EERE, the file generation process begins, marked by an indicator in the task bar at the lower left-hand corner of the window.



- A dialog box will appear when the process is complete. If you want both pre-EERE and post-EERE files, repeat the process.



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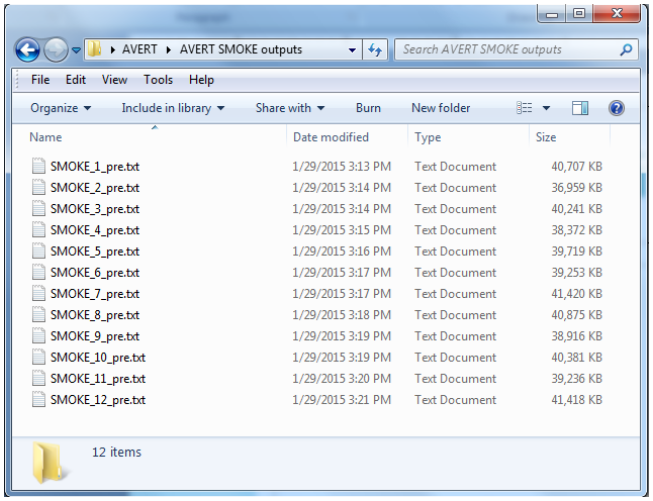
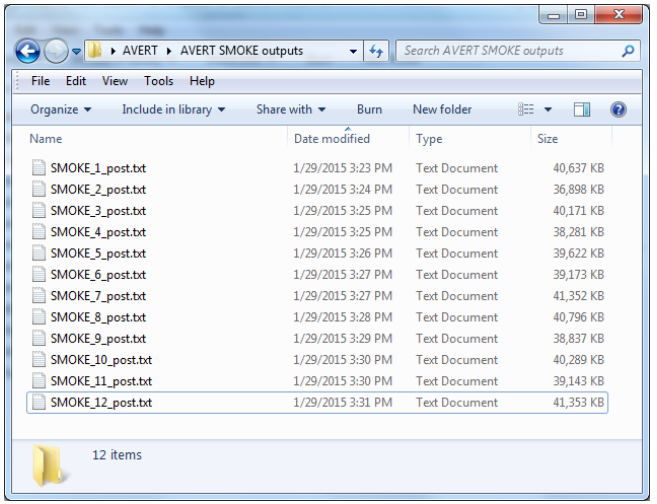
Locate SMOKE Text Files

- The SMOKE output files will appear in the folder that you selected on slide 3 (Step 4: Display Outputs)
- Files are now ready for use in SMOKE





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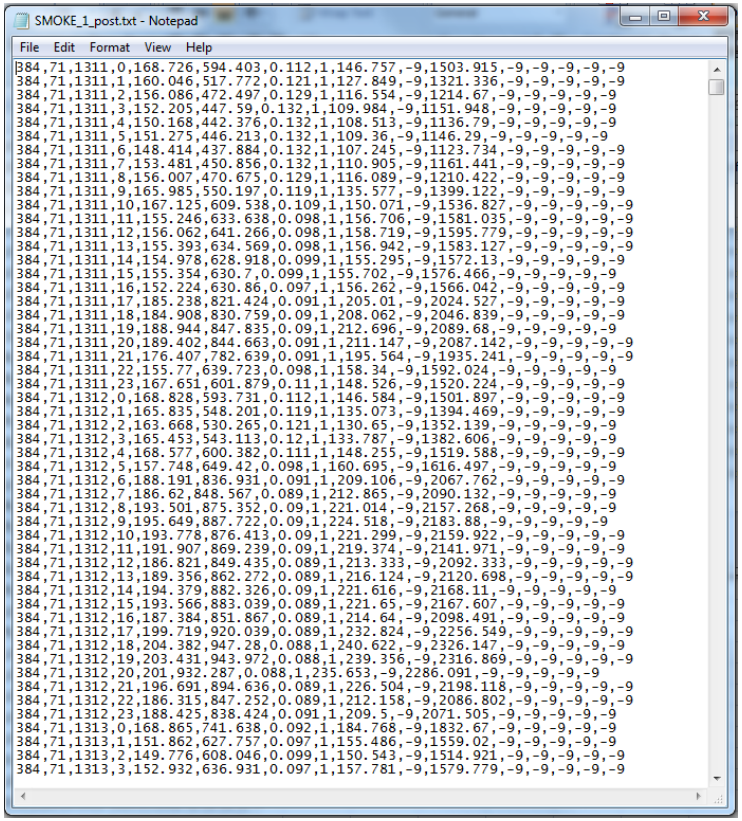
About File Format

- Files are generated in Continuous Emissions Modeling (CEM) format—a format recognized by SMOKE
- Files have a .txt extension and can be viewed in a text editor such as Notepad
- Each row represents a single hour of data
- Values are comma-separated



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About File Format

Comma-separated fields in CEM format:

Position	Name	Type	Description
A	ORISID	Char (6)	DOE Plant Identification Code (required) (should match the same field in the PTINV file in ORL format)
B	BLRID	Char (6)	Boiler Identification Code (required) (should match the same field in the PTINV file in ORL format)
C	YYMMDD	Int	Date of data in YYMMDD format (required)
D	HOUR	Integer	Hour value from 0 to 23
E	NOXMASS	Real	Nitrogen oxide emissions (lbs/hr) (required)
F	SO2MASS	Real	Sulfur dioxide emissions (lbs/hr) (required)
G	NOXRATE	Real	Nitrogen oxide emissions rate (lbs/MMBtu) (not used by SMOKE)
H	OPTIME	Real	Fraction of hour unit was operating (optional)
I	GLOAD	Real	Gross load (MW) (optional)
J	SLOAD	Real	Steam load (1,000 lbs/hr) (optional)
K	HTINPUT	Real	Heat input (mmBtu) (required)
L	HTINPUTMEASURE	Character(2)	Code number indicating measured or substituted, not used by SMOKE
M	SO2MEASURE	Character(2)	Code number indicating measured or substituted, not used by SMOKE
N	NOXMMEASURE	Character(2)	Code number indicating measured or substituted, not used by SMOKE
O	NOXRMEASURE	Character(2)	Code number indicating measured or substituted, not used by SMOKE
P	UNITFLOW	Real	Flow rate (ft^3/sec) for the Boiler Unit (optional; must be present for all records or not any records – not yet used by SMOKE)
Q	PM25MASS	Real	$PM_{2.5}$ emissions (lbs/hr) (optional)

Excerpted from the SMOKE User's Manual, found at www.cmascenter.org/smoke

More Information

- AVERT User Manual, found at www.epa.gov/avert
- SMOKE User's Manual, found at www.cmascenter.org/smoke