

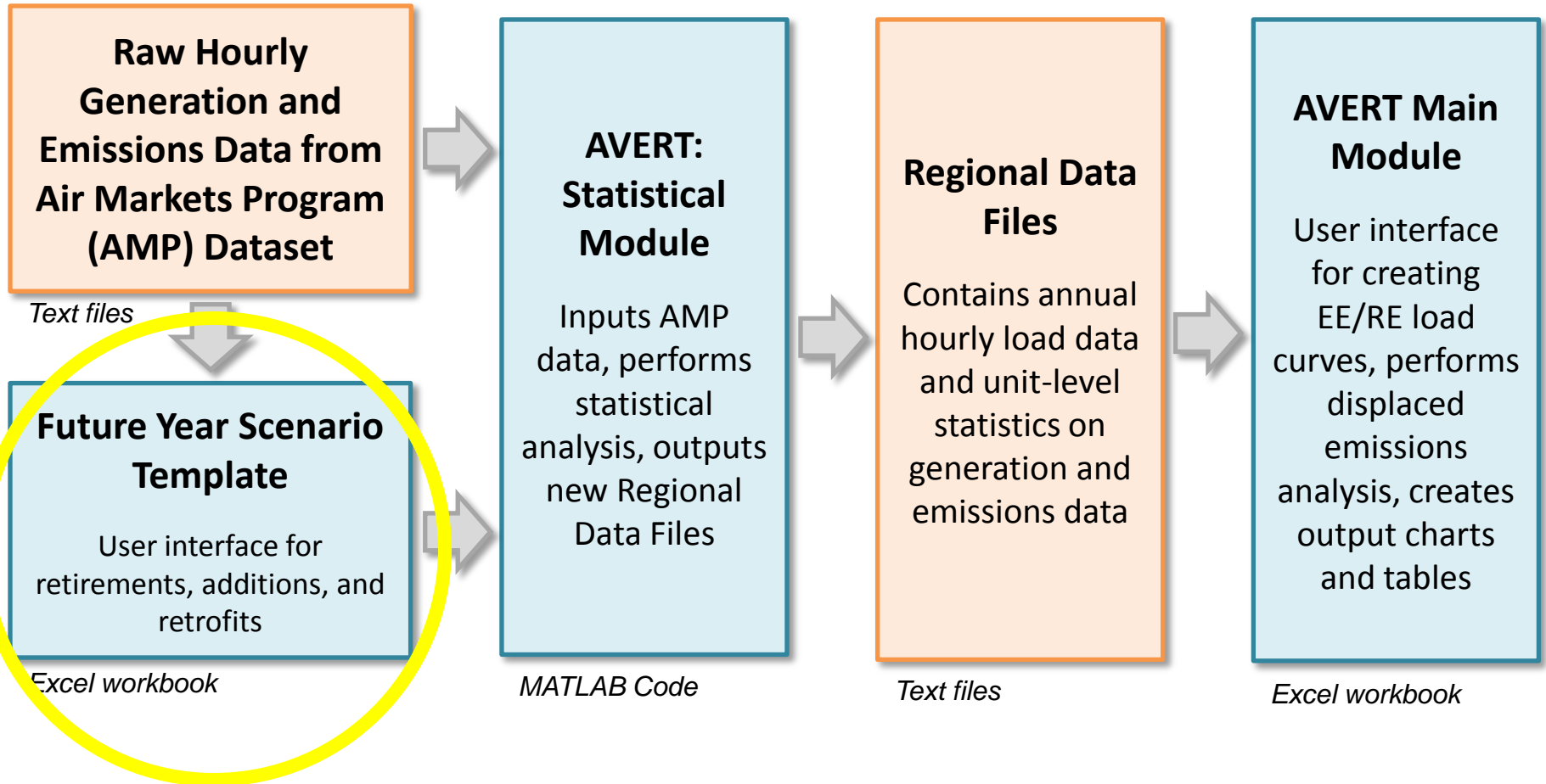
US EPA ARCHIVE DOCUMENT

# AVERT Future Year Scenario Template

US Environmental Protection Agency  
State Climate and Energy Program



# AVERT's Modules and Data Files



Most users will only need to use the Regional Data Files and AVERT Main Module to calculate emissions

# AVERT Future Year Scenario Overview

- Purpose
  - AVERT is not forward-looking: cannot predict EGU retirements, new additions, or emissions modifications.
  - Future Year Scenarios allow users to
    - Remove EGU from analysis.
    - Include additional proxy EGU.
    - Modify emissions characteristics.
- Advanced use of AVERT
  - Excel spreadsheet
  - Read into AVERT Statistical Module
- Each spreadsheet becomes a scenario.
  - Spreadsheet becomes input file for AVERT Statistical Module.
  - Each future year scenario template is specifically designed to match the same historic base year.

# Use AVERT Future Year Scenario in Statistical Module

- Obtain Future Year Scenario Template (slides 5-8).
- Modify Future Year Scenario Template (slides 9-11).
- Save Future Year Scenario Template with a meaningful name.
- Run Statistical Module (slides 13-16).
  - Provide a unique name for the statistical module run (slide 13).
  - Choose saved future year scenario (slide 15).

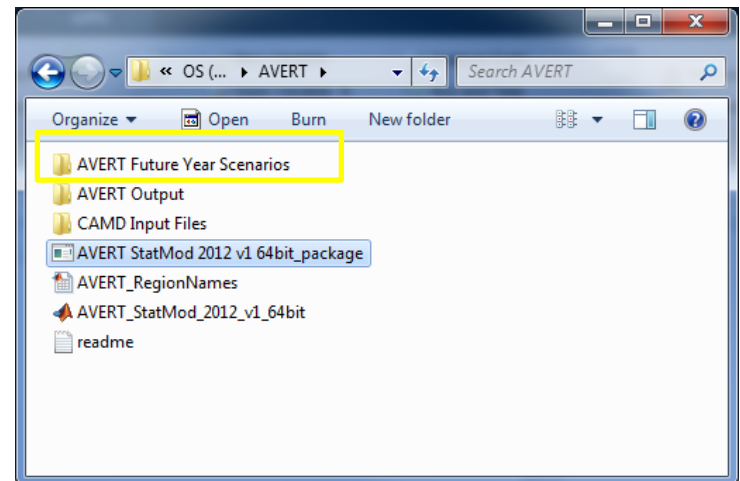
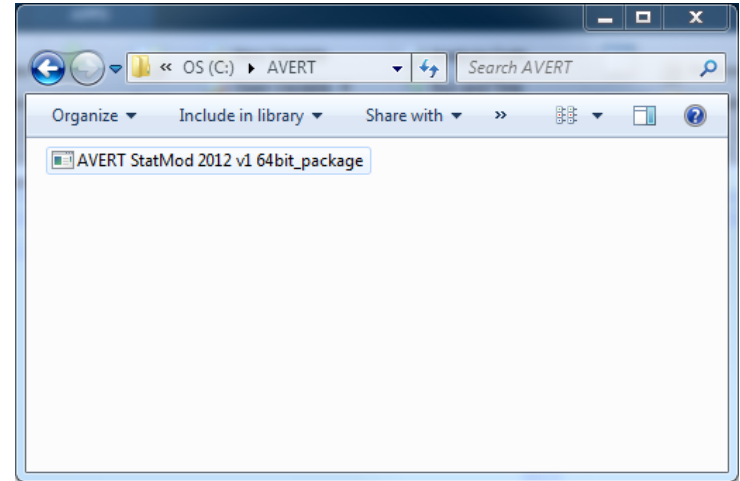
# AVERT Statistical Module

## Obtain Correct Version

- AVERT Statistical Module is sensitive to PC specifications.
- 32-bit and 64-bit operating system versions available.
- Obtain correct version of AVERT Statistical Module.
- Obtain correct version of MCR from Mathworks.
- Determine if your Windows system operates in a 32-bit or 64-bit environment.
  - Find this information in “properties” of “My Computer” in Windows XP, or “Computer” in Windows Vista, Windows 7, or Windows 8.
  - Follow these instructions: <http://windows.microsoft.com/en-us/windows7/find-out-32-or-64-bit>.

# AVERT Statistical Module Unpacking and Startup

- Download the AVERT Statistical Module package.
- Run the executable to decompress the package to three files and three subfolders.



To obtain historic base years, visit <http://epa.gov/statelocalclimate/resources/avert-download.html> and obtain both the CAMD input file and the Future Year Scenario Template for that same year.

# AVERT Statistical Module File Structure

- **AVERT Future Year Scenarios**

- Excel-based input files for altering EGU

- **AVERT Output**

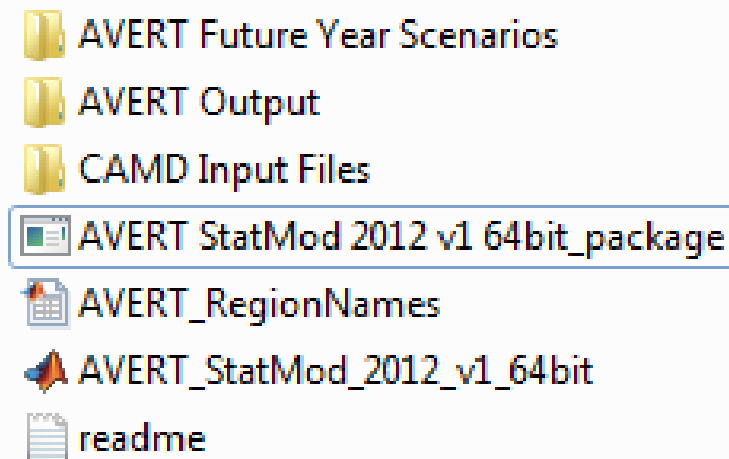
- Statistical Module output files
- These become Main Module input files

- **CAMD Input Files**

- Processed CAMD data files
- New versions expected 2<sup>nd</sup> quarter annually

- **AVERT\_StatMod\_2012\_v1\_64bit**

- Executable



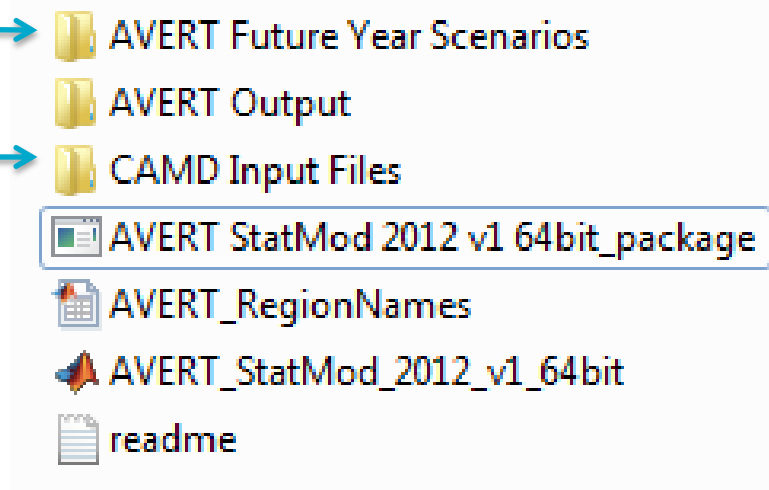


# Obtaining Other Base Years

To obtain additional historic base year data, visit:

<http://epa.gov/statelocalclimate/resources/avert-download.html>.

- Download AVERT Future Year Scenario for the same historic base year.
  - Place the file in “AVERT Future Year Scenarios”
- Download the CAMD input file for the historic base year.
  - Place the file in “CAMD Input Files”



**Note:** Historic base years must match-up with the Future Year Scenario Template.

# AVERT Future Year Scenario Retires and Modifications



AVERT Future Year Scenario Template v.1.0 (03182013) - Microsoft Excel

G1088 No

Retiring Units / Emission Modifications 6733

Facility Name	ORSP	UnitID	Retire?	Retire (binar)	Revise Emissions Rates?	Revise (binar)	Revised SO2 Rate (lbs/MWh)	Revised NOx Rate (lbs/MWh)	Revised CO2 Rate (Tons/MWh)	Region	capaci	unit ty	CF	State
59 Dolet Hills Power Station	51		No	0	No	0	0.000	0.000	0.000	SC	720 Coal	81%	LA	
76 Holcomb	108	SGU1	No	0	No	0	0.000	0.000	0.000	SC	389 Coal	86%	KS	
112 Grand River Dam Authority	165	1	No	0	No	0	0.000	0.000	0.000	SC	519 Coal	78%	OK	
113 Grand River Dam Authority	165	2	No	0	No	0	0.000	0.000	0.000	SC	557 Coal	77%	OK	
733 Riverton	1239	39	No	0	No	0	0.000	0.000	0.000	SC	27 Coal	36%	KS	
734 Riverton	1239	40	No	0	No	0	0.000	0.000	0.000	SC	58 Coal	39%	KS	
740 La Cygne	1241	1	No	0	Yes	1	1.000	1.000	0.000	SC	815 Coal	62%	KS	
741 La Cygne	1241	2	No	0	Yes	1	1.000	1.000	0.000	SC	717 Coal	71%	KS	
752 Lawrence Energy Center	1250	3	No	0	No	0	0.000	0.000	0.000	SC	57 Coal	70%	KS	
753 Lawrence Energy Center	1250	4	No	0	No	0	0.000	0.000	0.000	SC	125 Coal	68%	KS	
754 Lawrence Energy Center	1250	5	No	0	No	0	0.000	0.000	0.000	SC	383 Coal	82%	KS	
755 Tecumseh Energy Center	1252	9	No	0	No	0	0.000	0.000	0.000	SC	79 Coal	73%	KS	
756 Tecumseh Energy Center	1252	10	No	0	No	0	0.000	0.000	0.000	SC	141 Coal	61%	KS	
759 Quindaro	1295	1	Yes	1	No	0	0.000	0.000	0.000	SC	76 Coal	72%	KS	
760 Quindaro	1295	2	Yes	1	No	0	0.000	0.000	0.000	SC	110 Coal	58%	KS	
1069 Asbury	2076	1	No	0	No	0	0.000	0.000	0.000	SC	208 Coal	70%	MO	
1074 Hawthorn	2079	5A	No	0	No	0	0.000	0.000	0.000	SC	590 Coal	76%	MO	
1075 Montrose	2080	1	No	0	No	0	0.000	0.000	0.000	SC	182 Coal	57%	MO	
1076 Montrose	2080	2	Yes	1	No	0	0.000	0.000	0.000	SC	176 Coal	50%	MO	
1077 Montrose	2080	3	Yes	1	No	0	0.000	0.000	0.000	SC	190 Coal	67%	MO	
1088 Sibley	2094	1	No	0	No	0	0.000	0.000	0.000	SC	50 Coal	68%	MO	
1089 Sibley	2094	2	No	0	No	0	0.000	0.000	0.000	SC	50 Coal	56%	MO	
1090 Sibley	2094	3	No	0	No	0	0.000	0.000	0.000	SC	356 Coal	62%	MO	
1091 Lake Road	2098	6	No	0	No	0	0.000	0.000	0.000	SC	100 Coal	53%	MO	
1117 Blue Valley	2132	3	No	0	No	0	0.000	0.000	0.000	SC	53 Coal	16%	MO	
1118 James River	2161	3	No	0	No	0	0.000	0.000	0.000	SC	46 Coal	45%	MO	
1119 James River	2161	4	No	0	No	0	0.000	0.000	0.000	SC	64 Coal	47%	MO	

Retires Modifications Additions EPA Facilities EPA AMP eGRID PLNT09 CapacityGen

- Find EGU of interest, or filter by state or region.
- To retire, select “Yes” in the “Retire?” column.
- To change emissions rate, select “Yes” in the “Revise Emissions Rates?” column and enter new rate(s) in columns I, J, or K.



# AVERT Future Year Scenario Additions

AVERT Future Year Scenario Template v.1.0 (03182013) - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View PDF Acrobat

J7 250

Additions													Dropdown builder (fill down this section with e				
#	Region	Fuel Type	Unit Type	Unit	ORSPL	UNIT ID	Description <small>(Note that "0 MW" units did not run in 2011.)</small>	Capacity (MW)	State	County	Lat - County	Lon - County	Region Ref 1	Region Ref 2	Fuel Select Range	Fuel Ref 1	Fuel Ref 2
1	SC	Gas	CC	Redbud Power Plant CT-01	55463	CT-01	This is a 332 MW unit. It is located in Oklahoma County, OK. In 2011, it ran for 1155 GWh at a capacity factor of 40%.	250	OK	Oklahoma	35.510	-97.497	2599	282	Dropdowns\G2 599-G2880	2665	2878
2	SC	Gas	CC	Redbud Power Plant CT-02	55463	CT-02	This is a 328 MW unit. It is located in Oklahoma County, OK. In 2011, it ran for 1267 GWh at a capacity factor of 44%.	250	OK	Oklahoma	35.510	-97.497	2599	282	Dropdowns\G2 599-G2880	2665	2878
3	SC	Gas	CC	Mustang Station 1	55065	1	This is a 243 MW unit. It is located in Yoakum County, TX. In 2011, it ran for 1297 GWh at a capacity factor of 61%.	250	TX	Potter	35.257	-101.842	2599	282	Dropdowns\G2 599-G2880	2665	2878
4	SC	Gas	CT	John Twitty Energy Center CT2A	6195	CT2A	This is a 28 MW unit. It is located in Greene County, MO. In 2011, it ran for 1 GWh at a capacity factor of 0%.	35	OK	Tulsa	36.125	-95.939	2599	282	Dropdowns\G2 599-G2880	2665	2878
5	SC	Gas	CT	John Twitty Energy Center CT1B	6195	CT1B	This is a 24 MW unit. It is located in Greene County, MO. In 2011, it ran for 1 GWh at a capacity factor of 0%.	35	OK	Tulsa	36.125	-95.939	2599	282	Dropdowns\G2 599-G2880	2665	2878
6	SC	Gas	CT	West Gardner Generating Station 1	7929	1	This is a 81 MW unit. It is located in Johnson County, KS. In 2011, it ran for 15 GWh at a capacity factor of 2%.	75	KS	Labette	37.216	-95.259	2599	282	Dropdowns\G2 599-G2880	2665	2878
7	SC	Gas	CT	West Gardner Generating Station 2	7929	2	This is a 71 MW unit. It is located in Johnson County, KS. In 2011, it ran for 14 GWh at a capacity factor of 2%.	75	KS	Labette	37.216	-95.259	2599	282	Dropdowns\G2 599-G2880	2665	2878
8					0	#N/A	#N/A				#N/A	#N/A	#N/A	0	#N/A	#N/A	#N/A

Retires\_Modifications Additions EPA\_Facilities EPA\_AMP eGRID PLNT09 CapacityGen

Ready 85%

## In order

1. Select region
2. Select fuel type
3. Select generator type

4. Select specific EGU (unit)

Description will appear about EGU type automatically.

# AVERT Future Year Scenario Additions

AVERT Future Year Scenario Template v.1.0 (03182013) - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View PDF Acrobat

J7 250

Additions													Dropdown builder (fill down this section with e				
#	Region	Fuel Type	Unit Type	Unit	ORSPL	UNIT ID	Description <small>(Note that "0 MW" units did not run in 2011.)</small>	Capacity (MW)	State	County	Lat - County	Lon - County	Region Ref 1	Region Ref 2	Fuel Select Range	Fuel Ref 1	Fuel Ref 2
1	SC	Gas	CC	Redbud Power Plant CT-01	55463	CT-01	This is a 332 MW unit. It is located in Oklahoma County, OK. In 2011, it ran for 1155 GWh at a capacity factor of 40%.	250	OK	Oklahoma	35.510	-97.497	2599	282	Dropdowns\G2 599-G2880	2665	2878
2	SC	Gas	CC	Redbud Power Plant CT-02	55463	CT-02	This is a 328 MW unit. It is located in Oklahoma County, OK. In 2011, it ran for 1267 GWh at a capacity factor of 44%.	250	OK	Oklahoma	35.510	-97.497	2599	282	Dropdowns\G2 599-G2880	2665	2878
3	SC	Gas	CC	Mustang Station 1	55065	1	This is a 243 MW unit. It is located in Yoakum County, TX. In 2011, it ran for 1297 GWh at a capacity factor of 61%.	250	TX	Potter	35.257	-101.842	2599	282	Dropdowns\G2 599-G2880	2665	2878
4	SC	Gas	CT	John Twitty Energy Center CT2A	6195	CT2A	This is a 28 MW unit. It is located in Greene County, MO. In 2011, it ran for 1 GWh at a capacity factor of 0%.	35	OK	Tulsa	36.125	-95.939	2599	282	Dropdowns\G2 599-G2880	2665	2878
5	SC	Gas	CT	John Twitty Energy Center CT1B	6195	CT1B	This is a 24 MW unit. It is located in Greene County, MO. In 2011, it ran for 1 GWh at a capacity factor of 0%.	35	OK	Tulsa	36.125	-95.939	2599	282	Dropdowns\G2 599-G2880	2665	2878
6	SC	Gas	CT	West Gardner Generating Station 1	7929	1	This is a 81 MW unit. It is located in Johnson County, KS. In 2011, it ran for 15 GWh at a capacity factor of 2%.	75	KS	Labette	37.216	-95.259	2599	282	Dropdowns\G2 599-G2880	2665	2878
7	SC	Gas	CT	West Gardner Generating Station 2	7929	2	This is a 71 MW unit. It is located in Johnson County, KS. In 2011, it ran for 14 GWh at a capacity factor of 2%.	75	KS	Labette	37.216	-95.259	2599	282	Dropdowns\G2 599-G2880	2665	2878
8					0	#N/A	#N/A				#N/A	#N/A	#N/A	0	#N/A	#N/A	#N/A

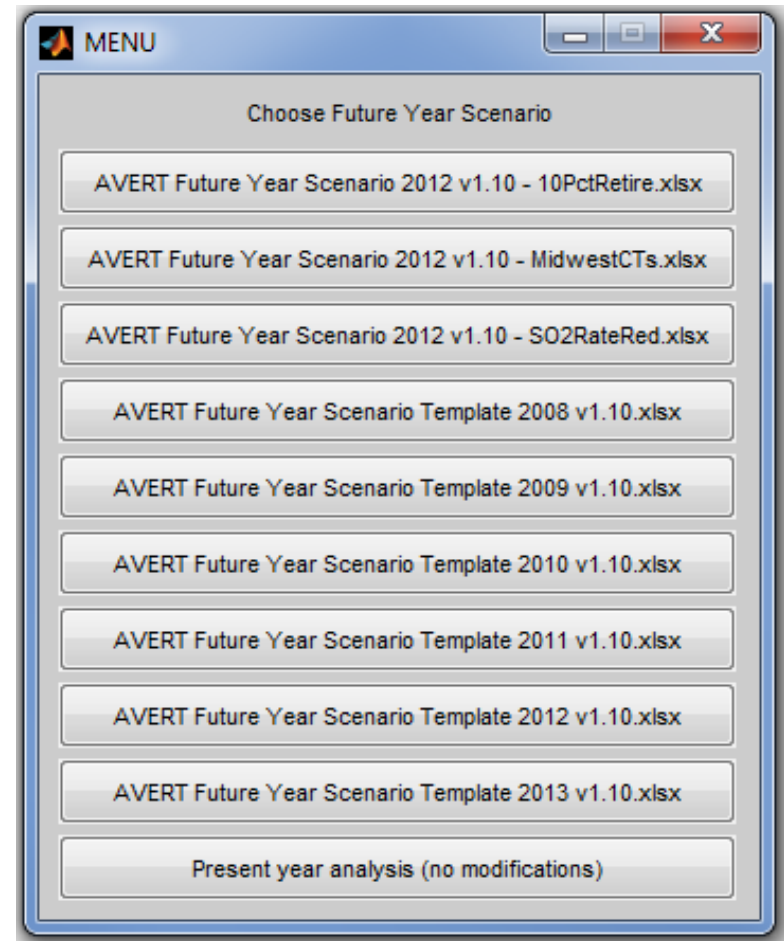
Retires\_Modifications Additions EPA\_Facilities EPA\_AMP eGRID PLNT09 CapacityGen

Ready 85%

- Choose proxy unit capacity (will scale all other factors)
- Choose state (within region)
- Choose county (within region)
- Save file

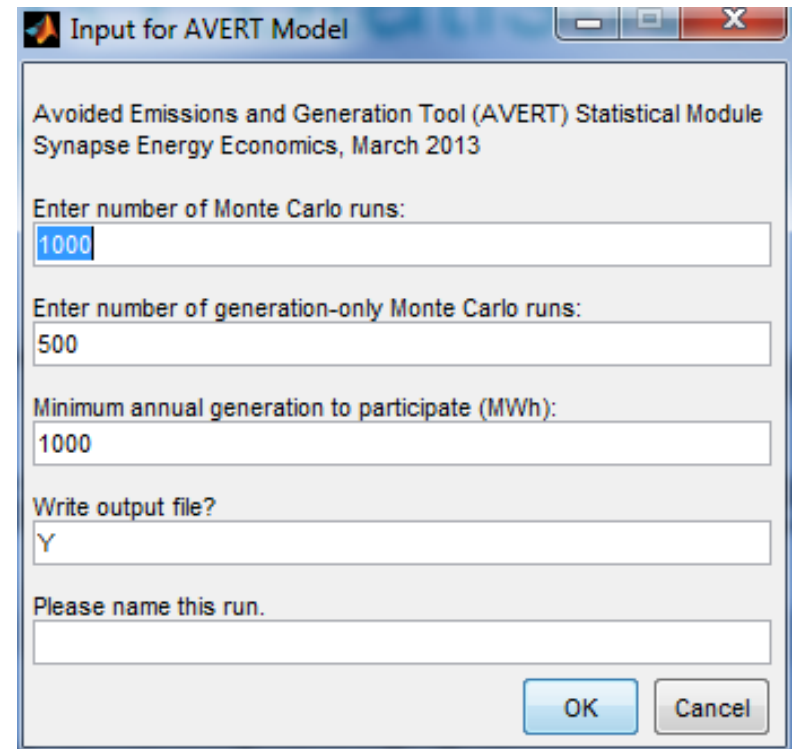
# Use AVERT Future Year Scenario in Statistical Module

- Run Statistical Module (slides 13-16).
- Provide a unique name for the statistical module run (slide 13).
- Choose saved future year scenario (slide 15).



# AVERT Statistical Module Input Parameters

- Higher number of Monte Carlo (MC) runs reduces noise.
  - For test runs, use a low number of MC runs (10) and generation-only MC runs (5).
  - For final runs, use a high number of MC runs (1,000) and generation-only MC runs (500).
- Select “Y” to write output and save runs.



Input for AVERT Model

Avoided Emissions and Generation Tool (AVERT) Statistical Module  
Synapse Energy Economics, March 2013

Enter number of Monte Carlo runs:  
1000

Enter number of generation-only Monte Carlo runs:  
500

Minimum annual generation to participate (MWh):  
1000

Write output file?  
Y

Please name this run.  
[Empty text box]

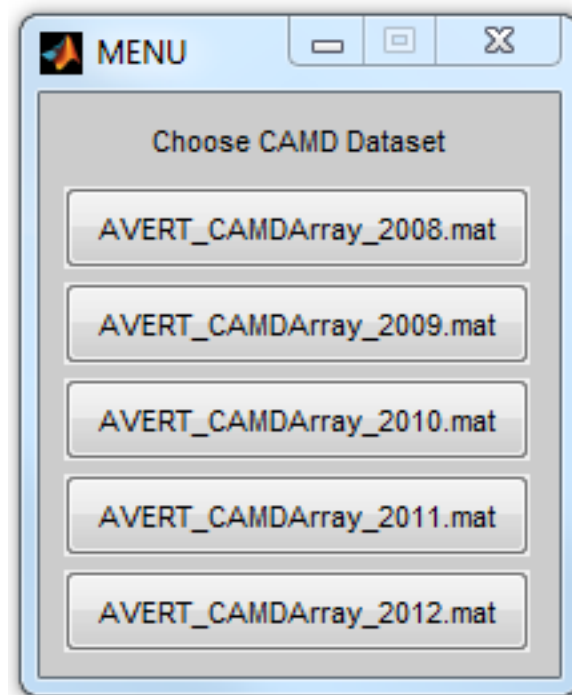
OK Cancel

*Use letters and numbers only.  
No special characters and no spaces.*

# AVERT Statistical Module

## Choose Data File

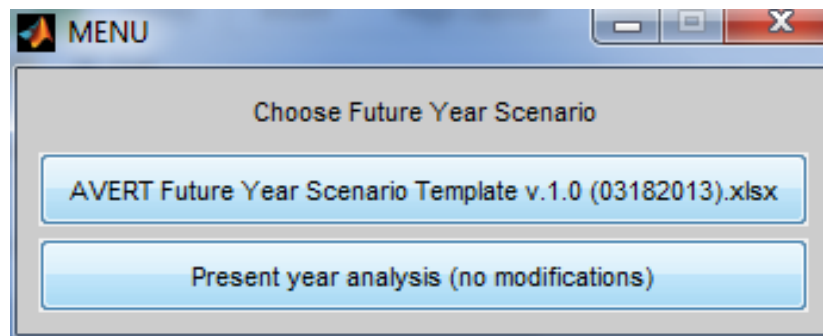
- Choose base year for analysis.
  - Data from 2007 through 2013 are available.
  - New data will be ready by the second quarter of the next year.
    - Requires data to be vetted by EPA and post-processed.



# AVERT Statistical Module

## Choose Future Year Scenario

- Select either
  - Saved future year scenario
  - Present year analysis



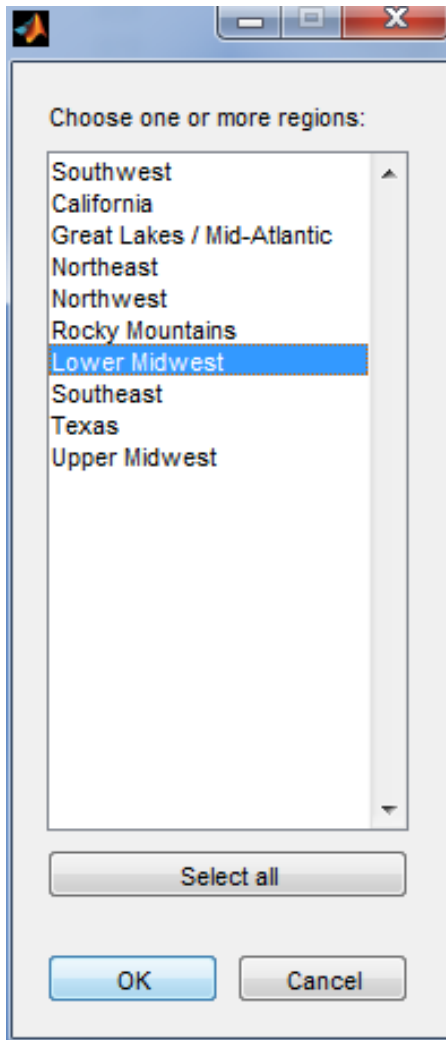
Present year analysis makes no modifications to the AVERT dataset.

- Uses EGU that exist in data year
- No changes in emissions rates



# AVERT Statistical Module

## Choose Region(s) of Interest



- Choose region (or multiple regions) of interest.
- Same regions as in AVERT Main Module
- Once you hit “OK”, the program will run uninterrupted until completion.
  - Program returns updated run status on a regular basis.
  - Output graphic and file indicate successful completion.

