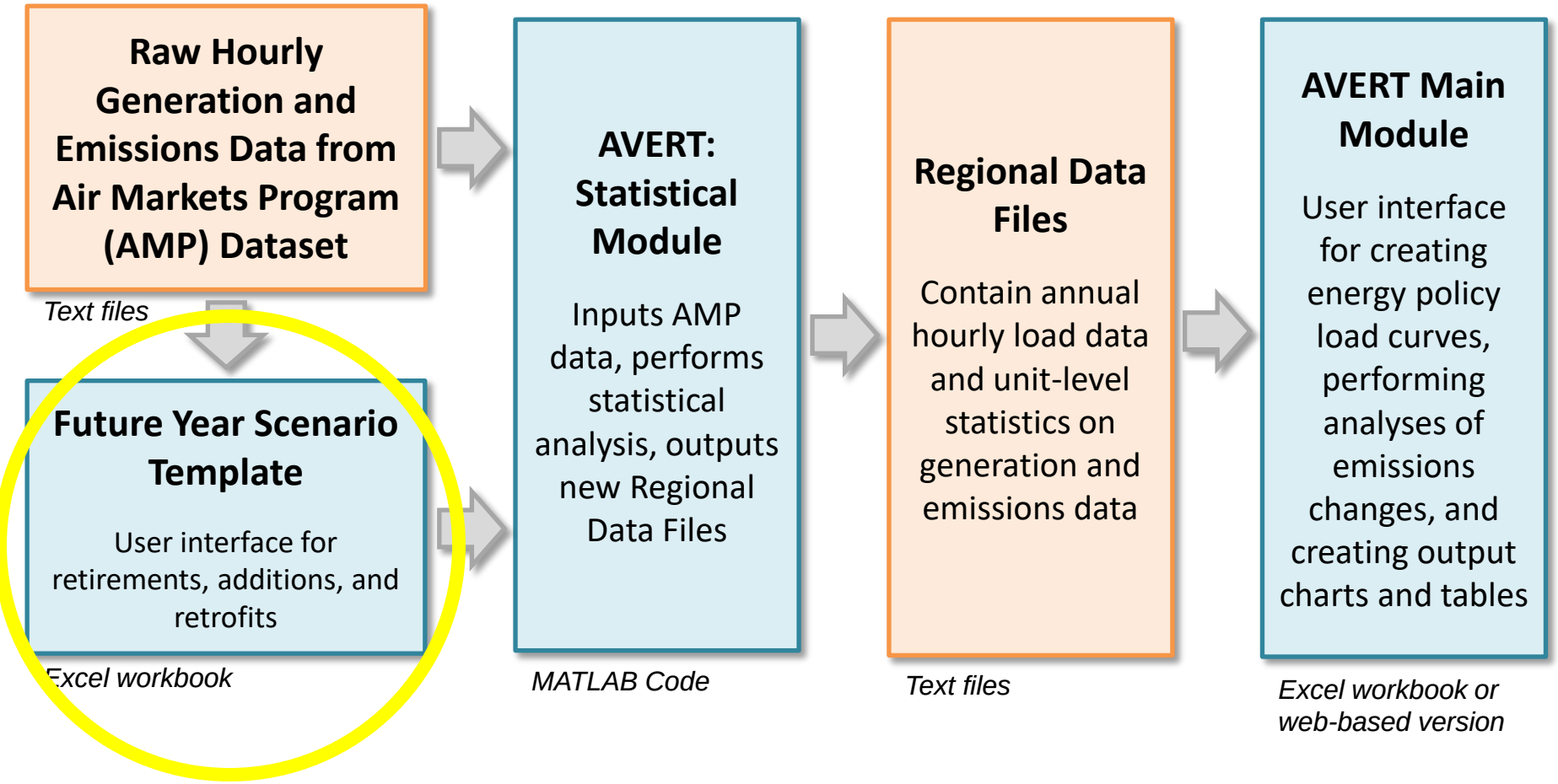
AVERT
AVoided Emissions and geneRation Tool
www.epa.gov/avert

AVERT Future Year Scenario Template

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

EPA United States Environmental Protection Agency

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

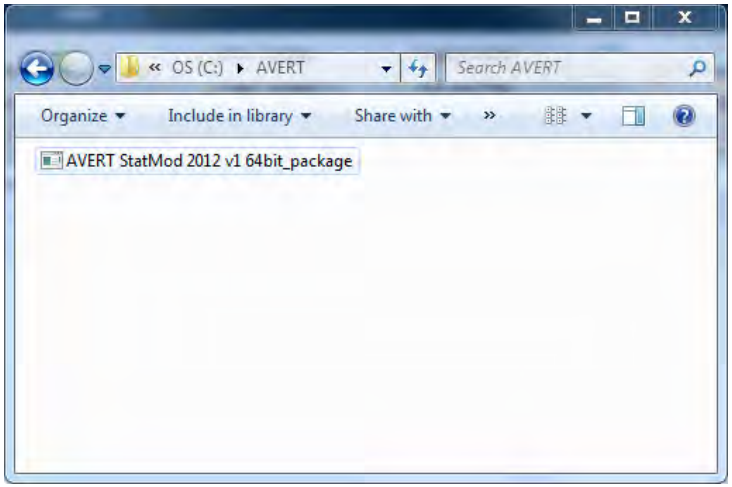
- Obtain Future Year Scenario Template (slides 5-8).
- Modify Future Year Scenario Template (slides 9-11).
- Save Future Year Scenario Template with a meaningful name.
- Run Statistical Module (slides 13-16).
  - Provide a unique name for the statistical module run (slide 13).
  - Choose saved future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

AVERT Statistical Module Obtain Correct Version

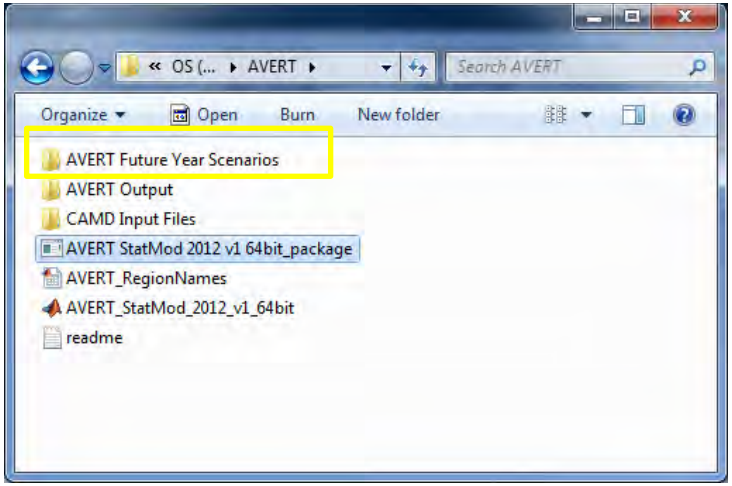
- AVERT Statistical Module is sensitive to PC specifications.
- Requires 64-bit operating system.
- Obtain correct version of MCR from Mathworks: **R2012b (8.0).**
  - **Use the exact version noted on the AVERT website and in the user guide. An older or newer version will give you an error when you try to run the analysis.**
- 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.



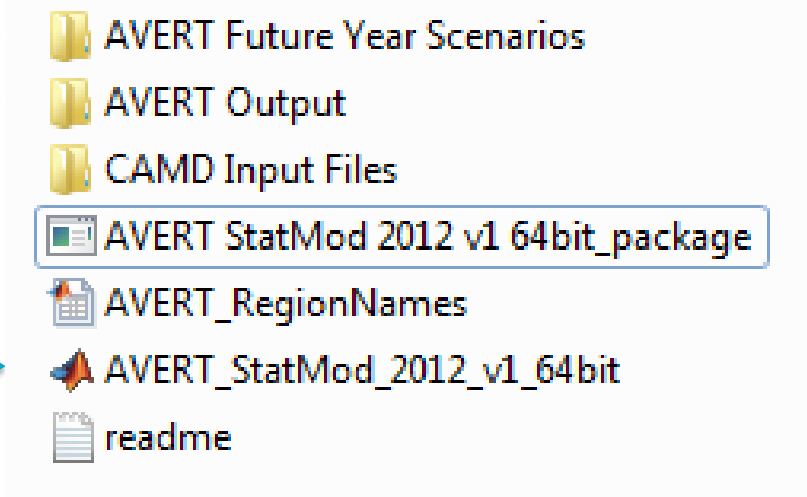
- Run the executable to decompress the package to three files and three subfolders.



To obtain historical base years, visit https://www.epa.gov/avert/download-avert 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 (Excel version)
- **CAMD Input Files**
  - Processed CAMD data files
  - New versions expected 2nd quarter annually
- **AVERT_StatMod_ 2012_v1_64bit**
  - Executable



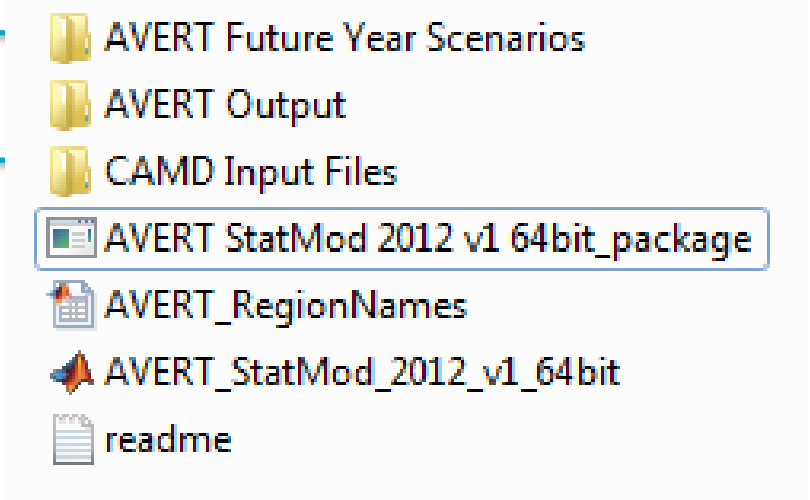
Obtaining Other Base Years

To obtain additional historical base year data, visit: https://www.epa.gov/avert/download-avert

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: Historical base years must match up with the Future Year Scenario Template.

AVERT Future Year Scenario Retires and Modifications

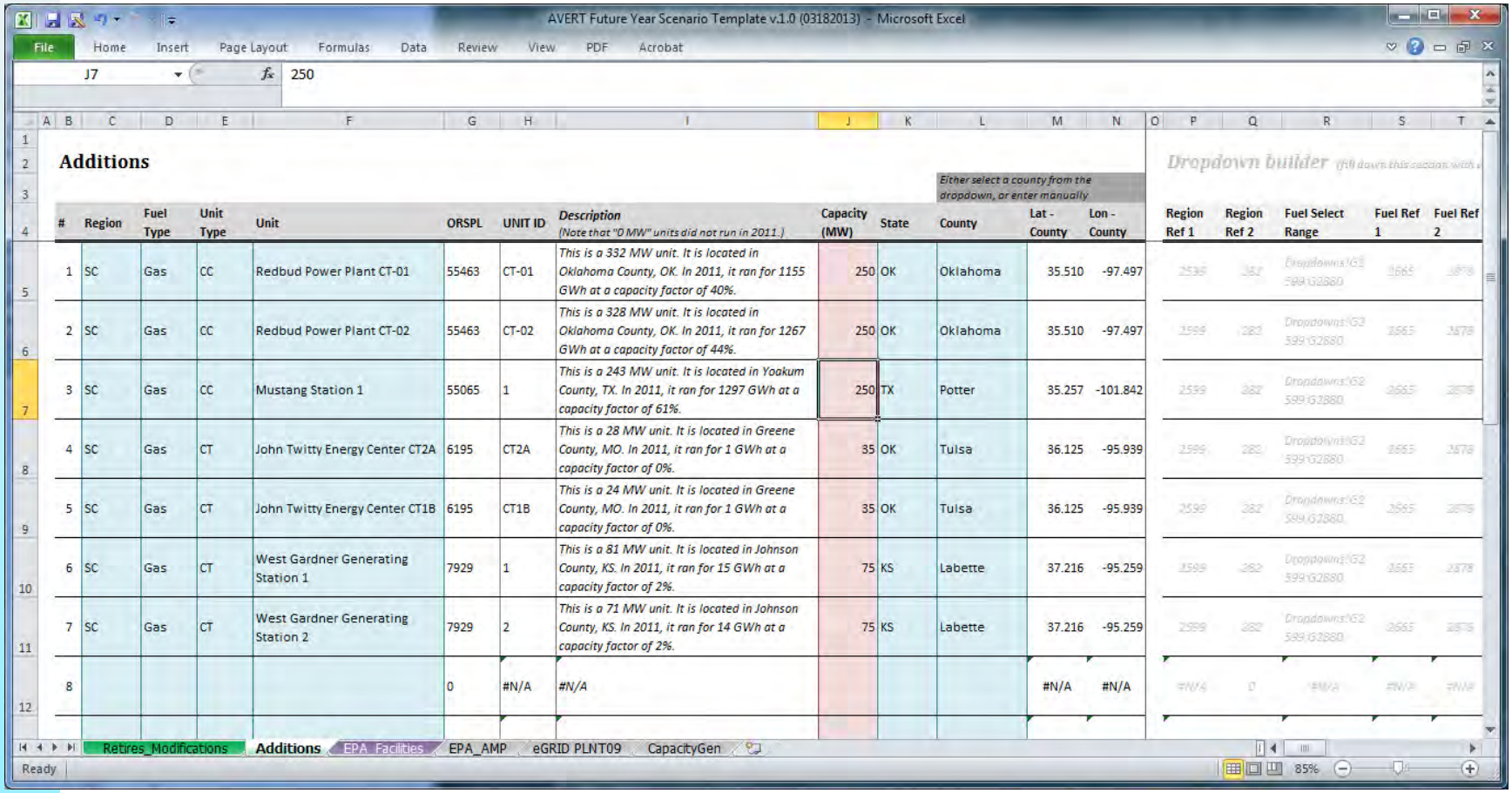
Retiring Units / Emission Modifcations

Enter an option manually in blue cells

Facility Name	ORSPL	UnitID	Retire?	Retire (binary)	Revise Emissions Rates?	Revise (binary)	Revised SO2 Rate (lbs/MWh)	Revised NOx Rate (lbs/MWh)	Revised CO2 Rate (Tons/MWh)	Revised PM2.5 Rate (Tons/MMBTU)	AVERT Region	capacity	unit type	CF
Healy Power Plant	6288	1	No	0	No	0	0.000	0.000	0.000	0.000	0	0	Coal	0%
Healy Power Plant	6288	2	No	0	No	0	0.000	0.000	0.000	0.000	0	0	Other	0%
AMEA Sylacauga Plant	56018	1	No	0	No	0	0.000	0.000	0.000	0.000	Southeast	49	Gas	6%
AMEA Sylacauga Plant	56018	2	No	0	No	0	0.000	0.000	0.000	0.000	Southeast	49	Gas	5%
Ascend (Decatur Plant)	880041	X015	No	0	No	0	0.000	0.000	0.000	0.000	Southeast	0	Coal	0%
Ascend (Decatur Plant)	880041	Z005	No	0	No	0	0.000	0.000	0.000	0.000	Southeast	0	Coal	0%
Ascend (Decatur Plant)	880041	Z006	No	0	No	0	0.000	0.000	0.000	0.000	Southeast	0	Coal	0%
Barry	3	1	No	0	No	0	0.000	0.000	0.000	0.000	Southeast	58	Gas	2%
Barry	3	2	No	0	No	0	0.000	0.000	0.000	0.000	Southeast	56	Gas	2%
Barry	3	4	No	0	No	0	0.000	0.000	0.000	0.000	Southeast	354	Coal	36%
Barry	3	5	No	0	No	0	0.000	0.000	0.000	0.000	Southeast	791	Coal	46%
Barry	3	6A	No	0	No	0	0.000	0.000	0.000	0.000	Southeast	291	Gas	83%
Barry	3	6B	No	0	No	0	0.000	0.000	0.000	0.000	Southeast	288	Gas	78%
Barry	3	7A	No	0	No	0	0.000	0.000	0.000	0.000	Southeast	288	Gas	82%
Barry	3	7B	No	0	No	0	0.000	0.000	0.000	0.000	Southeast	288	Gas	83%
Calhoun Energy Center	55409	CT1	Yes	1	No	0	0.000	0.000	0.000	0.000	Southeast	163	Gas	4%
Calhoun Energy Center	55409	CT2	Yes	1	No	0	0.000	0.000	0.000	0.000	Southeast	164	Gas	2%
Calhoun Energy Center	55409	CT3	No	0	No	0	0.000	0.000	0.000	0.000	Southeast	165	Gas	3%
Calhoun Energy Center	55409	CT4	No	0	No	0	0.000	0.000	0.000	0.000	Southeast	161	Gas	5%
Charles R Lowman	56	1	No	0	Yes	1	1.000	1.000	1.000	1.000	Southeast	80	Coal	3%
Charles R Lowman	56	2	No	0	Yes	1	1.000	1.000	1.000	1.000	Southeast	239	Coal	30%
Charles R Lowman	56	3	No	0	Yes	1	1.000	1.000	1.000	1.000	Southeast	241	Coal	43%
Colbert	47	1	No	0	No	0	0.000	0.000	0.000	0.000	Southeast	170	Coal	16%
Colbert	47	2	No	0	No	0	0.000	0.000	0.000	0.000	Southeast	156	Coal	17%
Colbert	47	3	No	0	No	0	0.000	0.000	0.000	0.000	Southeast	164	Coal	11%
Colbert	47	4	No	0	No	0	0.000	0.000	0.000	0.000	Southeast	163	Coal	9%

- 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, K, or L.

AVERT Future Year Scenario Additions



#	Region	Fuel Type	Unit Type	Unit	ORSPL	UNIT ID	Description (Note that "0 MW" units did not run in 2011.)	Capacity (MW)	State	County	Lat - County	Lon - County
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
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
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
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
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
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
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
8					0	#N/A	#N/A				#N/A	#N/A

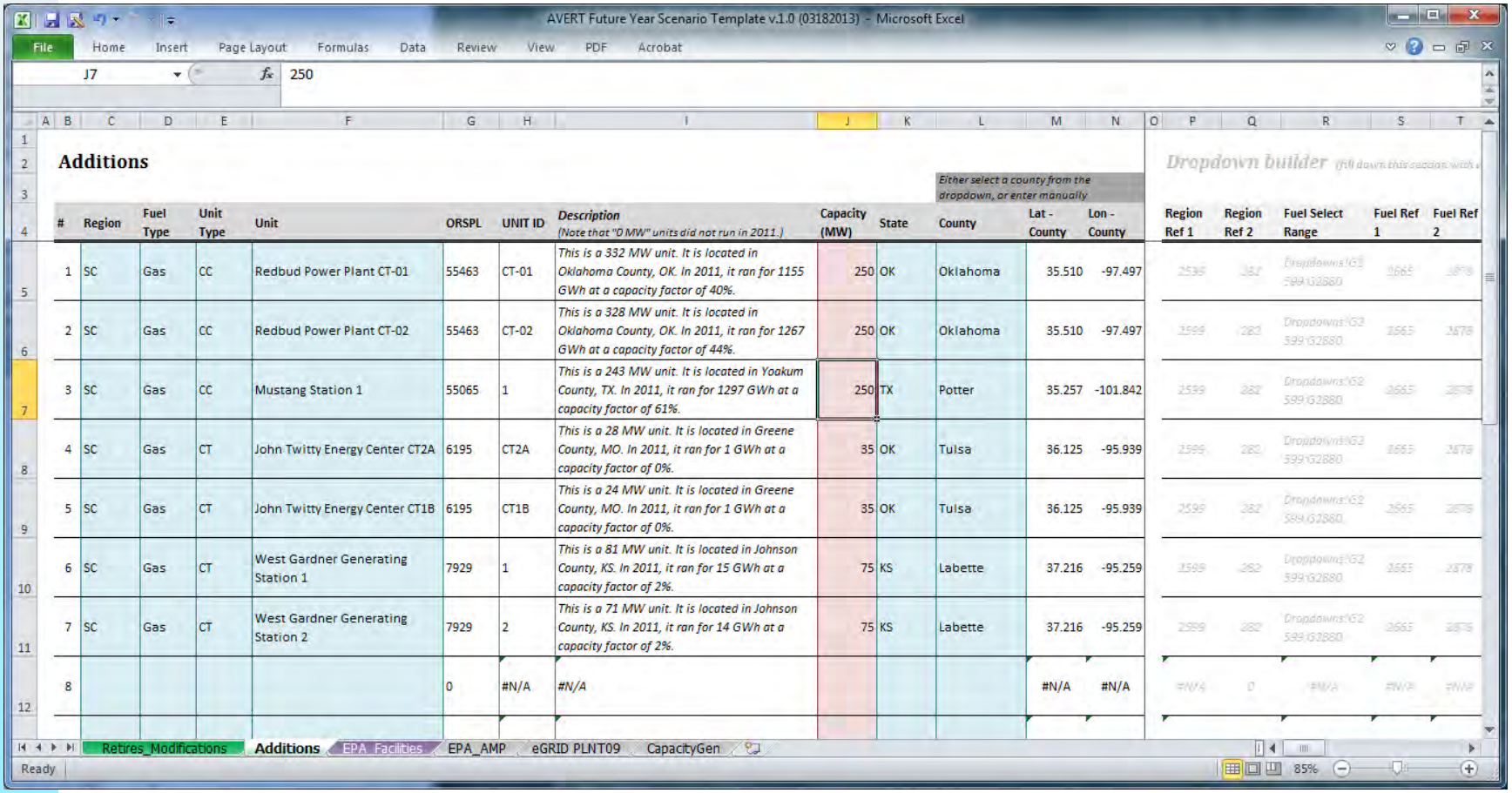
Region Ref 1	Region Ref 2	Fuel Select Range	Fuel Ref 1	Fuel Ref 2
2536	282	Dropdowns!G2:G599	3665	3678

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

Either select a county from the dropdown, or enter manually

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8					0	#N/A	#N/A				#N/A	#N/A

Dropdown builder (fill down this section with ...)

Region Ref 1	Region Ref 2	Fuel Select Range	Fuel Ref 1	Fuel Ref 2
2536	282	Dropdowns!G2:G99!G2880	3665	3678
2599	282	Dropdowns!G2:G99!G2880	3665	3678
2599	282	Dropdowns!G2:G99!G2880	3665	3678
2599	282	Dropdowns!G2:G99!G2880	3665	3678
2599	282	Dropdowns!G2:G99!G2880	3665	3678
2599	282	Dropdowns!G2:G99!G2880	3665	3678
2599	282	Dropdowns!G2:G99!G2880	3665	3678
#N/A	0	#N/A	#N/A	#N/A

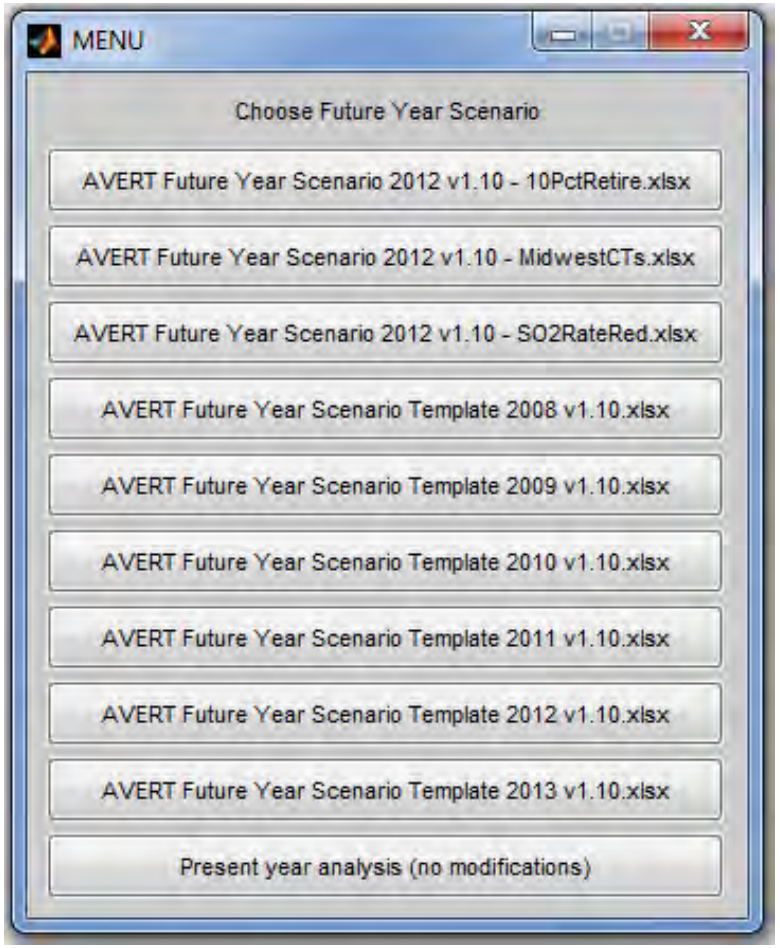
Retires_Modifications | Additions | EPA_Facilities | EPA_AMP | eGRID PLNT09 | CapacityGen

Ready

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

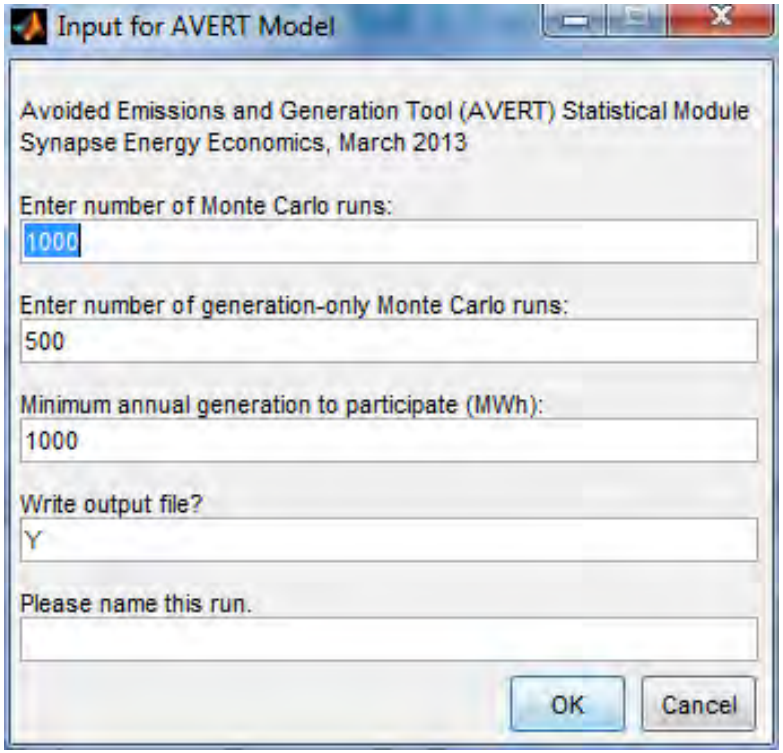
Use AVERT Future Year Scenario in Statistical Module

- 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

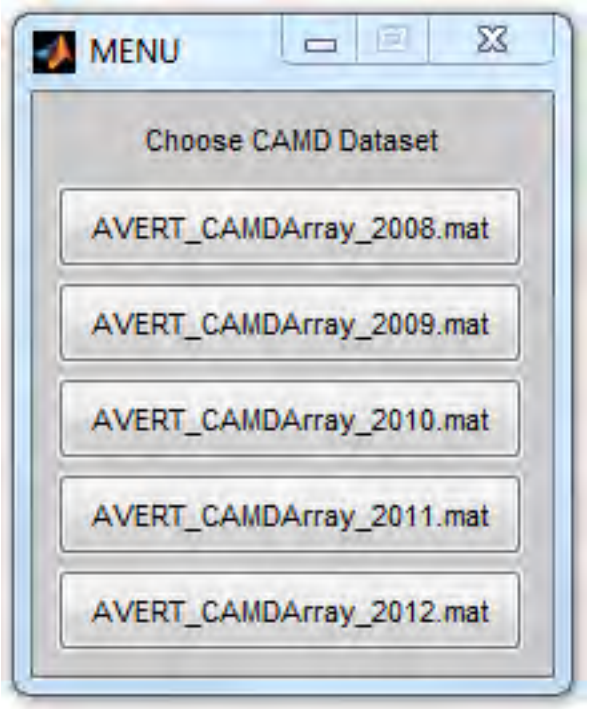
- Higher number of Monte Carlo (MC) runs reduces noise.
  - For test runs, use a low number of MC runs (10) and generation-only MC runs (5).
  - For final runs, use a high number of MC runs (1,000) and generation-only MC runs (500).
- Select "Y" to write output and save runs.



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

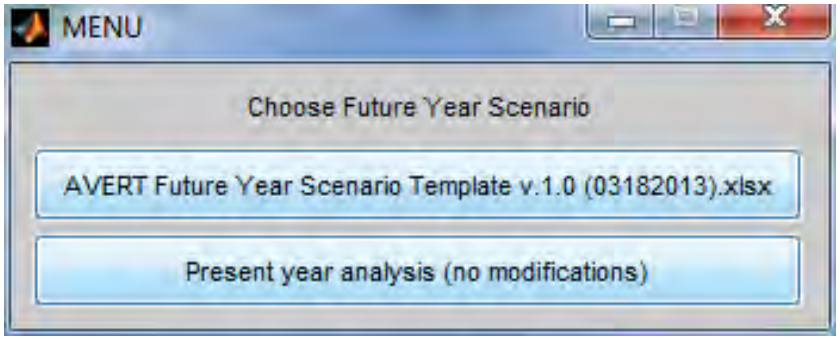
AVERT Statistical Module Choose Data File

- Choose base year for analysis.
  - Data now available from 2017 through 2023.
  - 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

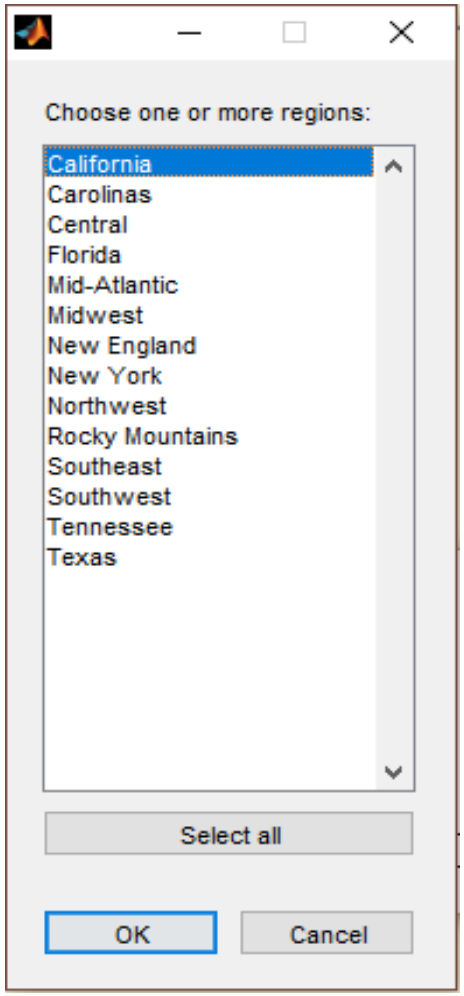
- Select either
  - Saved future year scenario
  - Present year analysis



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.