Technical explanations and QA needed for Multipollutant Spreadsheet.

**How to control the rankings**

The tab “Scores w ReducFormSector” contains the “user interface” where someone can change things and impact the sector ranking:

* The items shown with dark gray highlights are controls. Use the “Comments” to see what values can be entered.
  + When the “CONUS only” is set to “Y” then population data from Alaska, Hawaii, and the territories are excluded from the population information and any population-based calculations.
  + When the “PM Mortality” control is used by entering a value, only the counties that meet that criteria are included. Same for the “Ozone mortality” and “HAP Risk” columns.
  + When a “Y” is entered into a NAA? Control, only counties that fall into the NAA for that standard are included in the population-based or “selected” indicators.
* The blue values in Row 3 are the weights that can be used to weight the indicators listed in columns J through AE. (Note, the “per person” indicators are hidden and we decided not to use those)

**Other data columns on the Scores w ReducFormSector tab**

Columns AF through BA are hidden, and this is where the “weighted” scores are calculated and used to update the “Factor Weighted Score” (column G)

Columns BD through BH are for “Selected” emissions. These are emissions selected based on the choices made in the User Interface section of the tab. These selections change the selected emissions using the “Emissions ReducFormSectors” tab, and then the results are shown on the “Scores…” tab.

Columns BI though BR have all of the emissions associated with a sector. These are not changed based on the user-provided input.

Columns BS through CG are the initial rankings, before filtering out for only the top 10 using the indicator columns J through AE.

Columns CH through DB are other columns used for calculating information for the indicators, including the per capita indicators (that are hidden) and the benefit-per-ton indicators.

**Indicators and how they are calculated**

Here I described in (attempted) lay-person’s terms how the indicators should be working. Ideally, someone else can compare what is being done in the spreadsheet to these descriptions.

**Benefit Ranks (columns H-J):**

* If a percent reduction is assigned in the ranks C13 through E88, then a rank should appear in the associated row and column for the indicator.
* If the weight in row 3 is non-zero, then this indicator should be used to add to the overall factor weighted score (column G)

**Hg & Worse x pop fac Rank (column K):**

* This indicator is calculated as follows
  + Total “Hg & Worse” emissions for the sector multiplied by selected population for that sector (column F) divided by the median selected population (cell F4). This is the value that is ranked across sectors.
  + The indicator can be affected by the controls that change which population is selected for the calculations
  + The “Hg&Worse” value in column BN is used for this calculation, and it’s calculated using a “SUMIF” function that references the raw data in tab “Emissions…”
* If the weight in cell K3 is non-zero, then this indicator should be used to add to the overall factor weighted score (column G)

**“Selected” emissions indicators for NOx, PM2.5, SO2, 20 Worst HAPs, and Hg & Worse HAPs (columns Q through T)**

* These indicators are calculated by summing emissions on the “Emissions ReducFormSectors” tab, using the SUMIF function, and then ranking the results.
* The indicators are controlled by the “user interface” cells that allow counties to be selected.
* The selected counties show up on tab “Emissions ReducFormSectors” in columns P through U. the formula includes emissions in those columns if the characteristics of the county (cells H through N) match the selection criteria.
  + On this tab, cells G5 through N5 show the values entered in the “user interface” section
  + Columns G through N are populated via VLOOKUP to the various helper tables for population, mortality, HAP risk, and nonattainment area status.
  + Column O summarizes whether the county should be selected based on the entries in the nonattainment status part of the user interface (cells B4 through E4 on the “Scores…” tab
* If the weights in row 3 are non-zero, then these indicators should be used to add to the overall factor weighted score (column G)

**Total sector emissions indicators for NOx, VOC, PM2.5, SO2, 20 Worst HAPs, and Hg & Worse HAPs (Columns V through AA)**

* These indicators are calculated by summing emissions on the “Emissions ReducFormSectors” tab, using the SUMIF function, and then ranking the results.
* These indicators are not impacted by the user interface controls, EXCEPT the “CONUS only” control.
* If the weights in row 3 are non-zero, then these indicators should be used to add to the overall factor weighted score (column G)