Data Processing/Cleaning Changelog

3/4/2025

- Sheet Electricity Generation: Table 7.2b
    - Removed table formatting and extra rows
    - Included units in all column headers
    - Replaced all “Not Available” with blank cells
    - Converted values to number data type
    - Converted units to base SI (Million kWh- > kWh)
    - Copied resulting values to separate sheet for analysis
- Sheet Fossil Fuel Consumption: Table 7.4b
    - Removed table formatting and extra rows
    - Included units in all column headers
    - Removed 2024 row
    - Replaced all “Not Available” with blank cells
    - Removed prefix thousand from barrel/short tons units
    - Converted all fields to have units of metric tons using the following conversions
        - 1 short ton = 0.9071847 metric tons
        - 1 barrel of residual/distillate fuel oil = 0.157 metric tons
        - 1 barrel of non-fuel oil petroleum liquids ~ 0.1052 metric tons
            - Averaging conversion values from ethane (0.059), liquified petroleum gas (0.086), gasoline (0.12), kerosene (0.127), gas oil/diesel (0.134) to estimate overall conversion
            - Values are small compared to other petroleum products, so slight errors will not cause an issue in analysis
        - 1 billion cubic feet of natural gas = 0.024 million metric tons of oil equivalent
        - 1 trillion BTU = 0.025 million metric tons of oil equivalent
            - Used to estimate the amount of wood, waste, and other consumption to generate electricity based on natural gas equivalence
            - Values are comparatively small so an error will not cause an issue in later analysis
    - Converted values to number data type
    - Copied resulting values to separate sheet for analysis
- Sheet CO2 Emissions: Table 11.6
    - Removed table formatting and extra rows
    - Included units in all column headers

    - Replaced all “Not Available” with blank cells
    - Converted units from million metric tons of CO2 to metric tons of CO2
    - Converted values to number data type
    - Copied resulting values to separate sheet for analysis

3/6/2025

- Sheet Uranium Consumption: Table 8.2
    - Removed table formatting and extra rows
    - Included units in all column headers
    - Replaced all “Not Available” with blank cells
    - Replaced all “Withheld” with blank cells
    - Replaced all “Not Applicable” with blank cells
    - Removed “Average Price of Purchased Imports” and “Average Price of Domestic Purchases” columns
    - Converted units from million pounds of uranium oxide to metric tons of uranium
    - Converted values to number data type
    - Copied resulting values to separate sheet for analysis
- Sheet Nuclear Waste: PNNL Uranium Waste
    - Removed table formatting and extra rows
    - Removed “BWR Number of discharged assemblies”, “PWR Number of discharged assemblies”, “BWR Average initial enrichment (Weight % U-235) of discharged assemblies”, “PWR Average initial enrichment (Weight % U-235) of discharged assemblies “, “Cumulative total number of discharged assemblies “, and “Cumulative total metric tons of initial heavy metal (MTiHM) of discharged assemblies “ columns
    - Converted values to number data type
    - Copied resulting values to separate sheet for analysis

3/11/2025

- Replaced all empty cells with #N/A value to prevent automatic zero when plotting/calculating
- Combined Fossil Fuel Consumption and Uranium Consumption sheets into a single sheet to correctly align data with years recorded
    - Took all column from Fossil Fuel Consumption sheet, but only “Loaded into U.S. Nuclear Reactors (Metric Tons Uranium)” column from Uranium Consumption sheet

    - Inserted #N/A values for missing data after including additional years
    - Included years from 1949-2023
- Combined CO2 Emissions and Nuclear Waste sheets into a single sheet to align data with years recorded
    - Took all column from CO2 Emissions sheet, but only “Total Metric tons of initial heavy metal (MTiHM) of discharged assemblies” column from Nuclear Waste sheet
    - Inserted #N/A values for missing data after including additional years
    - Included years from 1949-2023

Data Cleaning Updated: 3/11/2025