



# ICI Combustion Tool

Demonstration for  
EPA's Emissions  
Inventory Conference  
April 13, 2015



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# Source Categories



SCC	Description
2102001000	Industrial /Anthracite Coal /Total: All Boiler Types
2102002000	Industrial /Bituminous/Subbituminous Coal /Total: All Boiler Types
2102004001	Industrial /Distillate Oil /Boilers
2102004002	Industrial /Distillate Oil /IC Engines
2102005000	Industrial /Residual Oil /Total: All Boiler Types
2102006000	Industrial /Natural Gas /Total: Boilers and IC Engines
2102007000	Industrial /Liquified Petroleum Gas /Total: All Boiler Types
2102008000	Industrial /Wood /Total: All Boiler Types
2102011000	Industrial /Kerosene /Total: All Boiler Types
2103001000	Commercial/Institutional /Anthracite Coal /Total: All Boiler Types
2103002000	Commercial/Institutional /Bituminous/Subbituminous Coal /Total: All Boiler Types
2103004001	Commercial/Institutional /Distillate Oil /Boilers
2103004002	Commercial/Institutional /Distillate Oil /IC Engines
2103005000	Commercial/Institutional /Residual Oil /Total: All Boiler Types
2103006000	Commercial/Institutional /Natural Gas /Total: Boilers and IC Engines
2103007000	Commercial/Institutional /Liquified Petroleum Gas /Total: All Combustor Types
2103008000	Commercial/Institutional /Wood /Total: All Boiler Types
2103011000	Commercial/Institutional /Kerosene /Total: All Combustor Types

# ICI Emissions Calculations



## ICI Calculation Methodology:

- Nonpoint Emissions =

(Total State Activity – Point Source Activity) \* Emission Factor



# Activity Data and County Distributions



- Total State Energy Data comes from EIA
  - State Energy Data System (SEDS)
  - Fuel Oil and Kerosene Sales
- State-level data are distributed to the county level based on employment
  - Industrial sector: NAICS 31 – 33
  - Commercial/Institutional: NAICS 42 – 92, Census of Governments

# Assumptions and Adjustments



- Coal
  - % Anthracite and % Bituminous/Subbituminous (*EIA Annual Coal Distribution Report*)
- Distillate Fuel and LPG
  - % of fuel used by Stationary Sources (i.e. not mobile sources; *EIA Fuel Oil and Kerosene Sales and EPA's NONROAD Model*)
- Distillate Fuel
  - Split Between Boilers and Engines
    - EIA data is total distillate use, and must be split into boilers and engines
- Coal and Residual Oil
  - % Sulfur and % Ash (*EIA Quarterly Coal Report*)
- All fuels
  - % of Energy Resources used for Nonfuel (Feedstock) Purposes (*EIA Manufacturing Energy Consumption Survey*)

# Point Source Subtraction



- Point source data are subtracted from total state energy consumption to avoid double counting emissions using the following steps:
  1. **Import the data.** The ICI Tool includes a user-friendly interface to import point source activity data at the county and/or state level
  2. **Link point source SCCs to nonpoint source SCCs** using a crosswalk included in the tool
  3. **Subtract point source activity from total state activity**
    - If both county- and state-level activity data are provided, subtraction from county-level is performed first and then gaps are filled with state-level data
  4. **Corrections:**
    - If PS activity data  $>$  Total activity for a county, then the nonpoint activity is set to 0 for that county and the difference between total activity and PS activity for that county is distributed to the other counties in the state.
    - If PS activity  $\geq$  Total activity for all counties, then the nonpoint activity for all counties is set to 0.

# Emissions Factors



- Majority of emissions factors are from AP-42 and the EPA/ERTAC2 database
- Ammonia emissions factors for wood combustion are from an EPA Emission Inventory Improvement Program (EIIP) guidance document
- For coal combustion, the SO<sub>2</sub> emissions factors are based on the sulfur content of the coal burned
- Some PM emissions factors for anthracite coal require information on the ash content of the coal

# Tool Demonstration



- Unzip folder (ICI Tool v1.1\_2015-4-8\_DRAFT.zip)
- Should have the following files:
  - ICI Tool v1.1\_2015-4-8\_DRAFT.accdb
  - ICI Tool Output - EIS Format.mdb
  - ICI Tool v1.1\_Documentation\_\_2015-4-8\_DRAFT.pdf
  - ICI\_County-Level\_Point\_Source\_Template\_DEMO.xls
  - ICI\_State-Level\_Point\_Source\_Template\_DEMO.xls
- Let's start by opening the first Access database

# Questions?



BOLD  
THINKERS  
DRIVING  
REAL-WORLD  
IMPACT

