## Nonpoint Inventory

#### EIS and the NEI

- Emission Inventory System (EIS)
  - Data repository for air emissions data used to create the NEI
  - Contains State, Local, Tribal and EPA submitted data
  - Can be multiple emissions values for the same FIPS/pollutant/process
  - Annual, monthly, episodic, daily data
  - Data available via a password-protected web site
    - EIS Gateway <a href="https://eis.epa.gov/eis-system-web/welcome.html">https://eis.epa.gov/eis-system-web/welcome.html</a>
- National Emission Inventory (NEI)
  - Snapshot in time from EIS
  - One emissions value per process selected
  - Typically S/L/T data used preferentially
  - Typically NEI only contains annual emissions values

## S/L/T Reporting Requirement

- Air Emissions Reporting Rule (AERR) <a href="http://www.epa.gov/ttn/chief/aerr/">http://www.epa.gov/ttn/chief/aerr/</a>
  - Complete criteria pollutant inventory every 3 years
    - All point sources (emission threshold based on potential to emit)
    - Nonpoint sources
    - Onroad and Nonroad sources
    - Events (wildfires and prescribed fires)
    - 2011 Emissions due 12/31/2012, EIS window opens 6/1/2012
  - Annual reporting for type A point source facilities
    - Point source emission thresholds are higher
  - HAPs are submitted voluntarily by many S/L/Ts and are encouraged as part of an integrated report

#### Uses of the NEI

- The NEI is one of the key inputs for :
  - Modeling of national rules
    - NAAQS reviews, CSAPR, etc
  - Non-attainment Designations
  - NATA Review toxics risk modeling
  - Trends reports and analyses

## Components of the EIS

- Six different data categories
  - Facility Inventory
  - Point Emissions
  - Nonpoint Emissions
  - Onroad Emissions
  - Nonroad Emissions
  - Event Emissions (wildfires and prescribed fires)
  - No biogenic emissions, although these are part of EPA's modeling files

### What are Nonpoint Sources?

- Stationary sources that individually are small and numerous, and that have not been inventoried as specific point or mobile sources.
- These sources are grouped in such a way that they can be estimated collectively using one methodology. Examples are;
  - Residential heating
  - Consumer solvents
- Also includes
  - Commercial Marine Vessels
  - Locomotives
  - Paved roads, unpaved roads

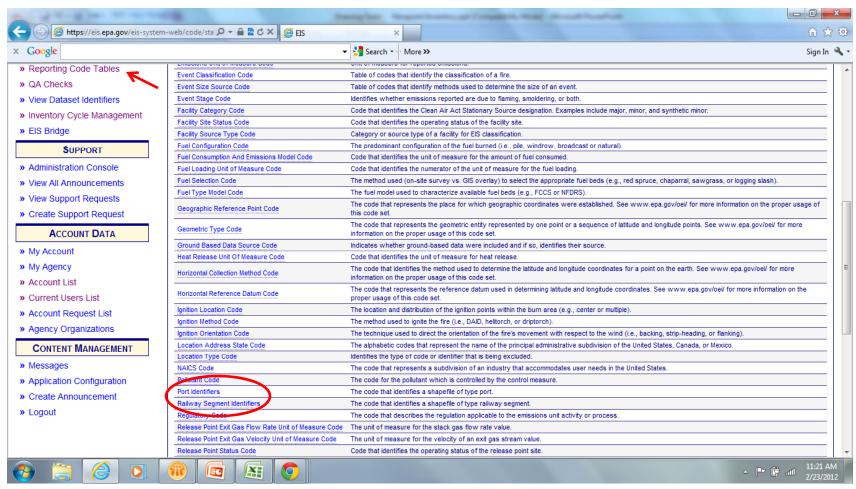
#### Commercial Marine Vessels

- S/L/Ts should not report emissions for ships in Federal Waters
  - We will use EPA estimates for all ships in federal waters
- Emissions must be reported at the shapeID level in counties where appropriate shapeIDs exist. Use the EIS shapeID library under reporting codes
- Emissions Type Code is required (indicates cruise, hoteling, maneuvering, refueling and reduced speed zone)
- Anytime EPA data exists for a shapeID/SCC/poll/emistype combination that does not exist in the submitted data, both will be selected and may cause double counting.

#### Locomotives

- Rail yards are preferred to be reported as points.
- Line haul class 1 and class 2/3 rail emissions must be reported at the shapeID level in counties where appropriate shapeIDs exist. Use the EIS shapeID library under reporting codes

# How do I report using shapefiles?



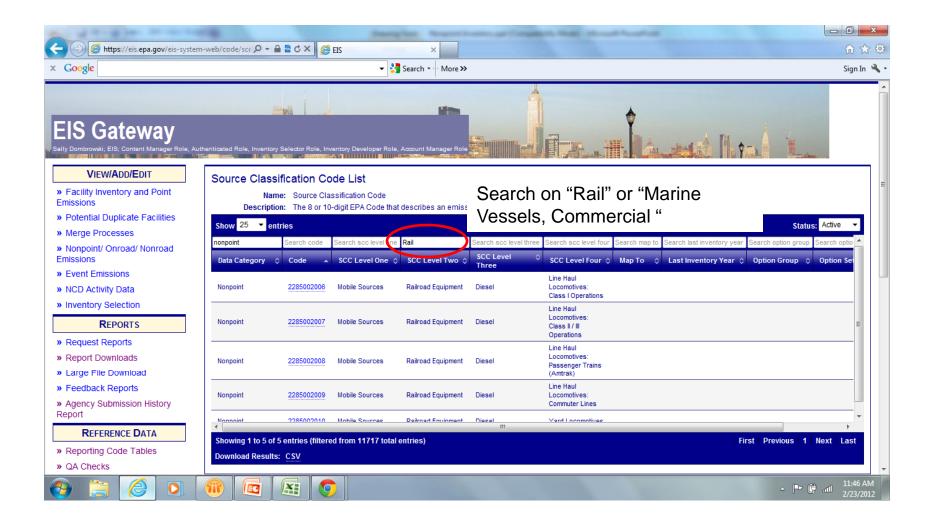
## Shapefiles



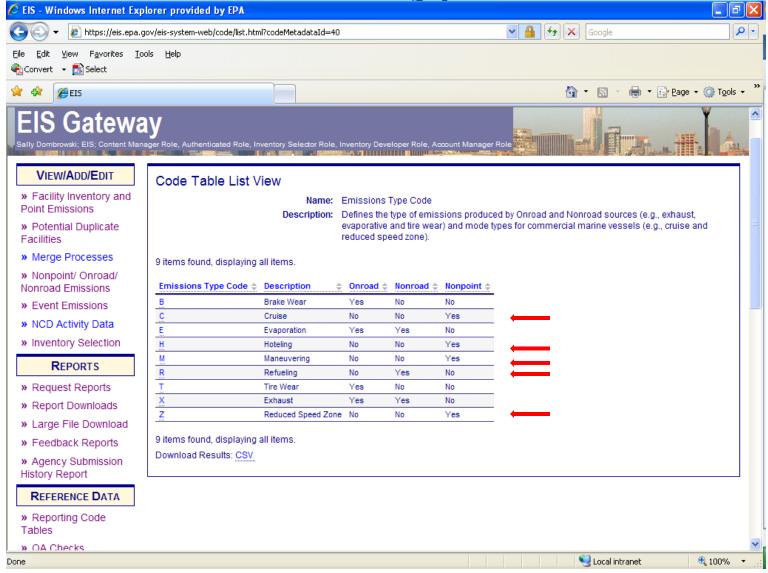
#### CMV and Rail

- Location
  - State and County Code
  - AND Shapefile Identifier (if exists in that county)
- Emission Process
  - State and County Code
  - Shapefile Identifier (if exists in that county)
  - Specific SCCs
  - Emissions Type Code (CMV only)

### CMV and Rail SCCs



### **Emission Type Code**



## Estimation of Emissions – EPA Collaboration with States/Locals

- Eastern Regional Technical Advisory Committee (ERTAC)
  - First done for 2008
  - Comprised of the SLT east of the Mississippi River and EIAG
  - Kept the name ERTAC for consistency
- Expanded to all SLT for 2011 NEI effort
  - voluntary
- Purpose
  - Coordinate emission inventory needs for air quality modeling
  - Develop and improve emission inventories
  - Agree on methods, emission factors, and SCCs for developing default emissions
- EPA will develop emissions using these methodologies.
- Complete all sectors by July 2012

#### Methodologies/Emissions Posted on Web

- Posted on EPA website when completed
  - Somewhere on CHIEF, not sure where yet
  - Posted files will contain methodologies, emission factors, activity data, other info as appropriate
- SLT encouraged to review emissions and if emissions ok, to not submit.
  - Can indicate to EPA that you accept EPA emissions
  - This would allow EPA emissions to be selected in NEI
- SLT encouraged to submit "better" data if desired.
  - Also encouraged to use the same SCC

#### Sectors EPA Will Estimate for 2011

- ICI Fuel Combustion (activity data will be released)
- Residential fuel consumption
  - Coal (anthracite & bituminous)
  - Distillate oil
  - Natural gas
  - LPG
  - Kerosene
  - Wood
- Paved roads
- Unpaved roads
- Commercial cooking
- Construction activites
  - Road, residential, non-residential
- Mining and quarrying

## Sectors EPA Will Estimate for 2011, cont.

#### Solvents

- Architectural Coatings
- Auto Refinishing
- Surface Coating Traffic Markings
- Surface Coating Factory Finished Wood
- Surface Coating Wood Furniture
- Surface Coating Metal Furniture
- Surface Coating Paper, foil, and film
- Surface Coating Metal Can Coating
- Surface Coating Sheet, strip, and coil
- Surface Coating Machinery and Equipment
- Surface Coating Large Appliances
- Surface Coating Electronic and other Electric Coatings
- Surface Coating Motor Vehicles
- Surface Coating Aircraft
- Surface Coating Marine
- Surface Coating Railroad
- Surface Coating Miscellaneous Manufacturing
- Industrial Maintenance Coatings
- Other Special Purpose Coatings

## Sectors EPA Will Estimate for 2011, cont.

- Solvents, Continued
  - Degreasing
  - Dry Cleaning
  - Graphic Arts
  - C&C: Cosmetics and Toiletries
  - C&C: Cleaning Products; Household
  - C&C: Auto Aftermarket
  - C&C: Coatings and Related Products
  - C&C: adhesives and sealants
  - C&C: FIFRA Regulated Products
  - C&C: Misc. Products (not otherwise covered)
  - Cutback Asphalt paving
  - Emulsified Asphalt paving
  - Agricultural pesticide application
- Portable fuel containers
- Gasoline distribution, stage 1 & stage 2
- Aviation gasoline distribution, stage 1 & stage 2 (general aviation only)
- Open Burning (yard waste, household waste and land-clearing debris)
- Publically Owned Treatement Works (POTW)
- Agricultural Tilling

## Sectors EPA Will Estimate for 2011, cont.

- Fertilizer application
- Livestock
- Cremation human
- Dental Preparation and Use
- General Laboratory Activities
- Lamp Breakage (Landfill emissions)
- Lamp (Fluorescent) Recycling
- Oil and Gas Production

## Nonpoint Reporting Issues

- SCC Consistency
- Questionable Emissions Data
- Point Source Subtraction

## SCC consistency

- Makes the merge of numerous datasets into the NEI easier.
- EIAG wrote some rules to handle the issue of different data sets having different SCCs for essentially the same process
  - Unexpected results
- EIAG working with ERTAC to Streamline the number of NP SCCs
  - No Changes for 2011 cycle
- General vs Specific SCCs
  - Never use SCCs to subtotal emissions
  - Never double count emissions in your submittal

#### Questionable Data

#### 2008 Reporting issues

- Unexpected pollutants
  - Metals and PM-CON from fugitive dust sources (paved roads)
  - PM or Nox from evaporative sources
- Outliers
  - Extremely high values submitted
    - 277 tons of 2,3,7,8 dioxin from waste disposal
- Missing expected sources
  - Fireplaces but not woodstoves
- Errors in mass units (tons instead of pounds)
- Reporting one month of emissions as annual

### What you can do

- QA your submittal before submitting it.
  - We will look at the data, but the more looks the better.
  - Make sure reported units are correct
    - EIS accepts many mass units, so you do not have to convert to tons to submit.
- Compare to previous year or to alternative data (EPA data or neighboring state)
  - Divide current submittal by last year's number
    - Graph ratio on x/y graph, look for values not on the x=y line
    - Or can sort ratio and review real high and real low values
    - If emissions are off by factor of 2000, might be a pounds to ton conversion error
  - You can catch many of these common errors by this comparison.

#### Point Source Subtraction

- Necessary to avoid double counting of emissions
  - Regarding Point and Nonpoint
- Responsibility of Submitting Agency to Reconcile Point and Nonpoint
- Some sectors do not need to be adjusted for point sources
  - Consumer solvents, residential heating
- Others do
  - Industrial Fuel Combustion, Industrial Surface Coatings

#### Point Source Subtraction

### 1. Activity based

Nonpoint activity = Total activity for sector – Sum of Point source activity

Done at state level or county level

## Point Source Subtraction – Example Calculation, Activity Based

- 73,665 E6FT3 of Natural Gas used in the industrial sector (from dept of Energy)
  - Represents total NG used in Industrial Sector for state
- Subtract out volume of NG used in the facilities in the point source inventory (65,000 E6FT3)
  - At state level, county level usage usually not available
- Remainder (8665 E6FT3) used in nonpoint (area) inventory
  - Allocate to county appropriately

## Point Source Subtraction (cont.)

2. Employment based

Nonpoint Employment = Total Employment for source category – Sum of Point Source Employment

## Point Source Subtraction – Example Calculation, Employee Based

- Aircraft Surface Coating
  - Emission factor = 15 lbs VOC/ employee
- Need Total Employment data
  - Available by county from the Census Bureau, County Business Patterns
  - Relevant NAICS
    - 3364: Aerospace Product and Parts Manufacturing
- Need number of employees at Point source facilities

## Point Source Subtraction – Example Calculation, Employee Based

- Sum the number of employees that work in the facilities in your point source inventory in each county
- Subtract that from the number of employees from the Census Bureau for that county
- The remainder are the number of employees that are employed in the nonpoint sources in that county
- Use the employee-based emission factors to estimate emissions for each county

## Point Source Subtraction (cont.)

#### 3. Emissions based

Uncontrolled NP Emiss = Total Uncontrolled Emiss of Sector – Sum of Uncontrolled Emiss of Point Sources

Not recommended for fuel combustion due the difficulty of estimating uncontrolled emissions. Preferred approach for fuel combustion is the activity (fuel throughput) based approach.

## Point Source Subtraction – Example Calculation, Emissions Based

#### Dry Cleaners

- Have state level sales of solvents used at dry cleaners
- Subtract out emissions reported at point sources
- Remainder is emissions at nonpoint dry cleaners
- Allocate to county using employment

### **Break**

Short Break – Back in 10 mintues

## EIS Format - Nonpoint Inventory

- 13 Tables, all must be submitted. Some can be null.
- Required (not null)
  - CERS
  - Exchange Header
  - Location
  - Emissions Process
  - Reporting Period
  - Emissions
- Optional (can be null)
  - Excluded Location Parameter
  - Regulation
  - Operating Details
  - Control Approach, Control Measure and Control Pollutant
  - Supplemental Parameter

#### Required - CERS

- Required
  - User ID (EIS login)
    - Usually your email address
  - Program System Code
    - e.g., ADEM Alabama
  - Emissions Year
    - e.g., 2011
- Optional
  - Model
  - Model Version
  - Emissions Creation Date
  - Submittal Comment

#### Required - Exchange Header

#### Required

- Author Name (not ID)
- Organization Name
- Document Title (EIS)
- Data Flow Name (EIS\_v1\_0)
- Submission Type (QA or Production)
- Property-Data Category (Nonpoint)

#### Optional

- Keywords
- Comments
- Property-NCD Data File (Only when submitting NCD)

#### Required - Location

- Required
  - State/County FIPS, Tribal Code, OR Census Tract Identifier,
  - AND Shape Identifier (CMV and Rail)
- Optional
  - Location Comment

#### Required - Emissions Process

- Required
  - State/County FIPS, Tribal Code, OR Census Tract Identifier,
  - AND Shape Identifier (CMV and Rail)
  - Source Classification Code
  - Emissions Type Code (Used for CMV)
- Optional
  - Process Comment

### Required - Reporting Period

#### Required

- State/County FIPS, Tribal Code, OR Census Tract Identifier,
- AND Shape Identifier (CMV and Rail)
- Source Classification Code
- Reporting Period Type Code
  - Annual, monthly, 5 month ozone season, episodic, winter, summer day
  - At a minimum, you must report annual ("A")

#### Optional

- Calculation Parameter Type Code (I, O, E)
- Calculation Parameter Value and UOM (activity)
- Calculation Material Code (fuel consumed or material)
- Calculation Data Year (year of data if different)
- Calculation Data Source (Source of activity data)
- Reporting Period Comment

#### Required - Emissions

#### Required

- State/County FIPS, Tribal Code, OR Census Tract Identifier,
- AND Shape Identifier (CMV and Rail)
- Source Classification Code
- Reporting Period Type Code
- Pollutant Code
- Total Emissions and UOM
- Emissions Calculation Method Code
  - e.g., 8=AP42 ef, 3=material balance

#### Optional

- Emission Factor, Numerator and Denominator
- Emission Factor Text
- Emissions Comment

### **Optional - Operating Details**

#### Required

- State/County FIPS, Tribal Code, OR Census Tract Identifier,
- AND Shape Identifier (CMV and Rail)
- Source Classification Code
- Reporting Period Type Code

#### Optional

- Seasonal Throughput
  - All 4 seasons must be reported
  - Total must equal 100

#### Optional – Excluded Location

- Required
  - State/County FIPS, Tribal Code, OR Census Tract Identifier,
  - AND Shape Identifier (CMV and Rail)
  - Location Type Code
    - TC Tribe
    - CTI Census Tract Identifier
  - Location Parameter
    - Tribal Code or Census Tract Identifier
- Optional
  - Location Comment

### Optional - Control Approach

- Required
  - State/County FIPS, Tribal Code, OR Census Tract Identifier,
  - AND Shape Identifier (CMV and Rail)
- Optional
  - Control Approach Description or Control Approach Comment
  - Percent Control Approach Capture Efficiency
  - Percent Control Approach Effectiveness
    - Adjustment to the control effectiveness to account for failures and uncertainty that affect actual performance of control
    - EPA default = 0.80
  - Percent Control Approach Penetration
    - % of category expected to be complying to the reg
- If reporting Control Approach
  - Control Measure Required
  - Control Pollutant Required

#### **Control Measure**

- Required
  - State/County FIPS, Tribal Code, OR Census Tract Identifier,
  - AND Shape Identifier (CMV and Rail)
  - Control Measure Code (Device or Practice)
- Can have multiple Control Measures for a given Control Approach

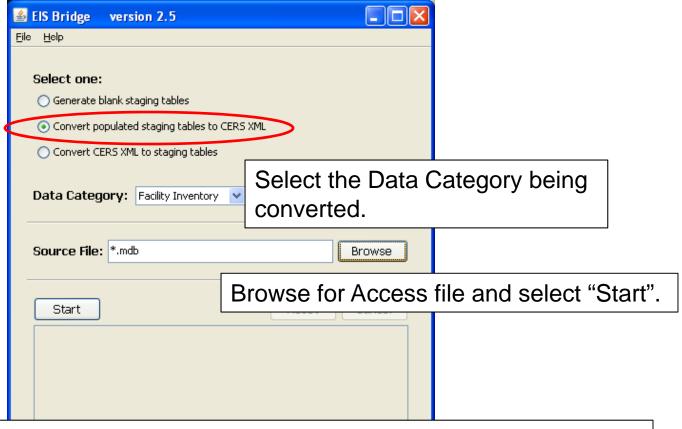
#### **Control Pollutant**

- Required
  - State/County FIPS, Tribal Code, OR Census Tract Identifier,
  - AND Shape Identifier (CMV and Rail)
  - Pollutant Code
- Optional
  - Percent Control Measure Reduction Efficiency
- Can have multiple pollutant records

### Optional – Supplemental Parameter

- Required
  - State/County FIPS, Tribal Code, OR Census Tract Identifier,
  - AND Shape Identifier (CMV and Rail)
  - Reporting Period Type Code
  - Supplemental Calculation Parameter Type
    - Heat Content, Percent Sulfur Content, Percent Ash Content
  - Supplemental Calculation Parameter Value
  - Supplemental Calculation Parameter Numerator and Denominator
    - Heat Content must be BTU or E6BTU
- Optional
  - Supplemental Calculation Parameter Data Year, Data Source and Comment

## Creating XML File via the Bridge Tool



**REMEMBER**: The Bridge Tool works on Access 2003. If your file is saved as Access 2007 or later, you will need to do a "save as" to Access 2003 prior to using the Bridge Tool.

## Common Bridge Tool Errors

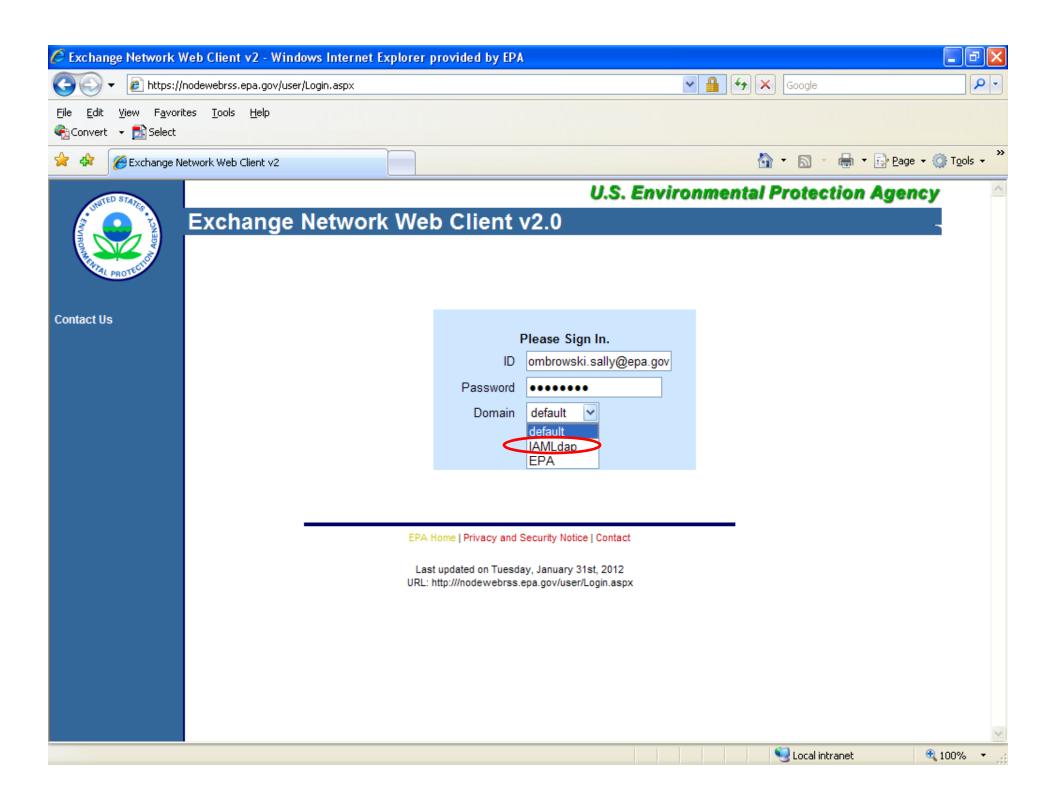
- XML validation failed due to the following: Invalid byte 1 of 1-byte UTF – 8 sequence.
  - This error is usually cased by a special character that may have been introduced if you used cut and paste.

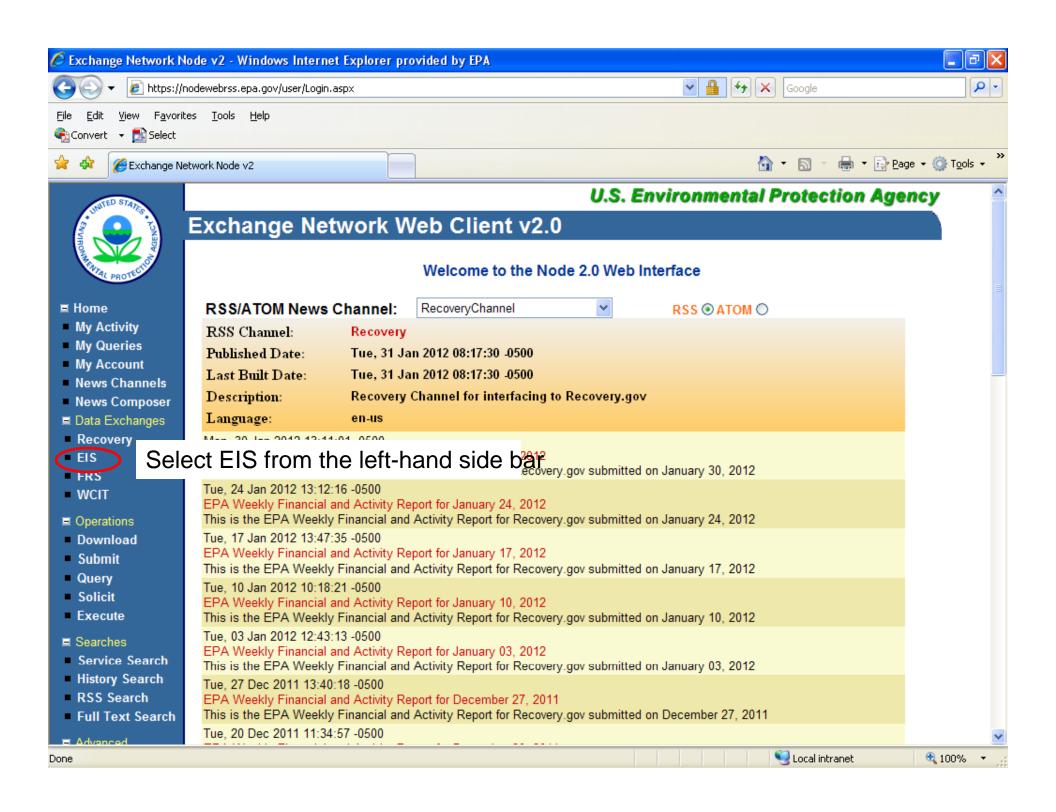
## Common Bridge Tool Errors

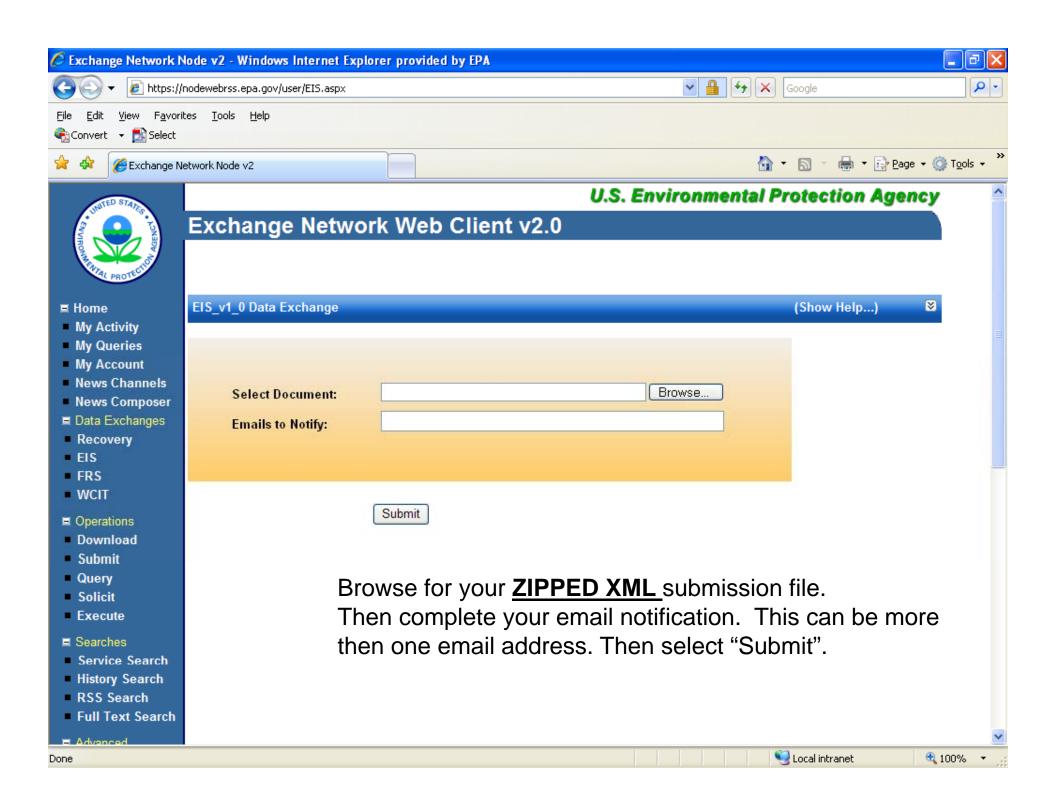
- Widows and orphans
- Duplicate records

## Submitting the zipped XML File

- Two methods
  - Node-to-node
  - CDX web client (most common method)
    - https://nodewebrss.epa.gov/user/Login.aspx
    - Use Gateway login and password
- QA and Production Environment
  - QA is always open to check your data. Does not change anything in the EIS
  - Production submission is your official submission and will update the EIS
  - Recommend always sending to QA first







#### **Email Notifications**

- First email, from "CDXNotification", immediate
  - Transaction Status: Pending
- Second email, also from "CDXNotification", when EIS completes processing
  - Transaction Status: Completed. Feedback report is available at EIS Gateway
- Third email, from "noreply" (EIS Gateway), on quarter hours
  - Status : Completed or Failed
    - Wrong file submission error Usually a zipped Access file is submitted instead of the xml file
    - Window closed error "User, agency, submission year not authorized"
    - Completed might be for an XML file containing no data
- Go to EIS Gateway and read the Feedback Report and resolve any critical errors and Potential Duplicates

### The Feedback Report

- Summary Page
  - Name of submitter
  - What environment submissions was made to
    - QA or Production
  - Data Category submitted
    - Nonpoint
  - Total number of critical and warning errors.

## Feedback Report Statistics

Component	Added	Updated
Location	0	0
ExcludedLocationParameter	0	0
LocationEmissionsProcess	670	0
ControlApproach	0	0
Regulation	0	0
ReportingPeriod	670	0
OperatingDetails	0	0
SupplementalCalculationParameter	0	0
Emissions	28676	0
Total	30016	0

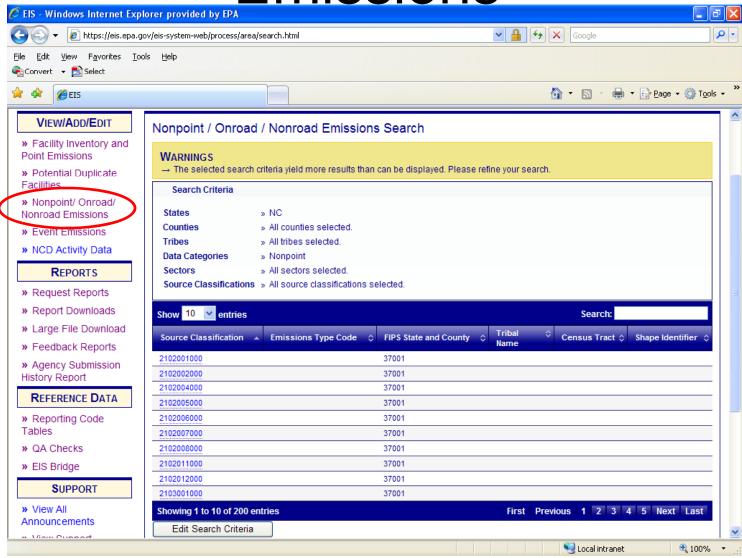
## Feedback Report Critical Errors

- The most important page of your feedback report
- All critical errors must be resolved prior to submitting to Production
  - Or you might have problems

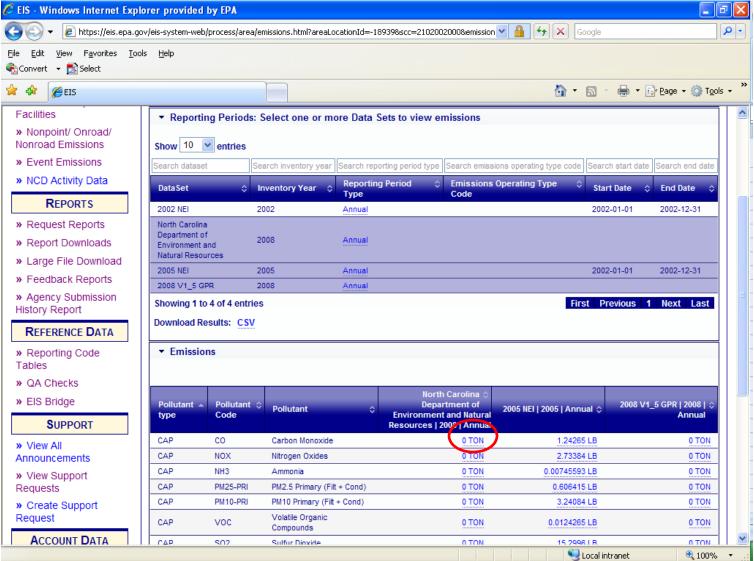
## When will my data show up in EIS?

- Nonpoint data on the Gateway is available immediately
- Reports available the next day

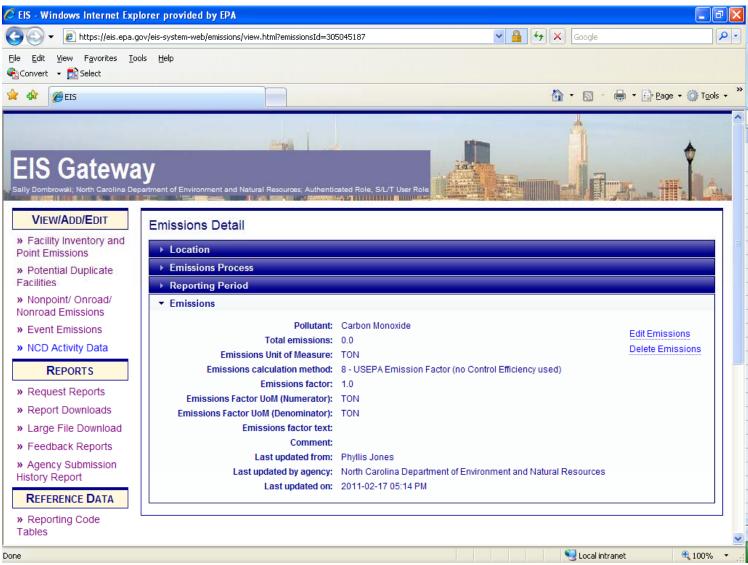
## Nonpoint/Onroad/Nonroad Emissions



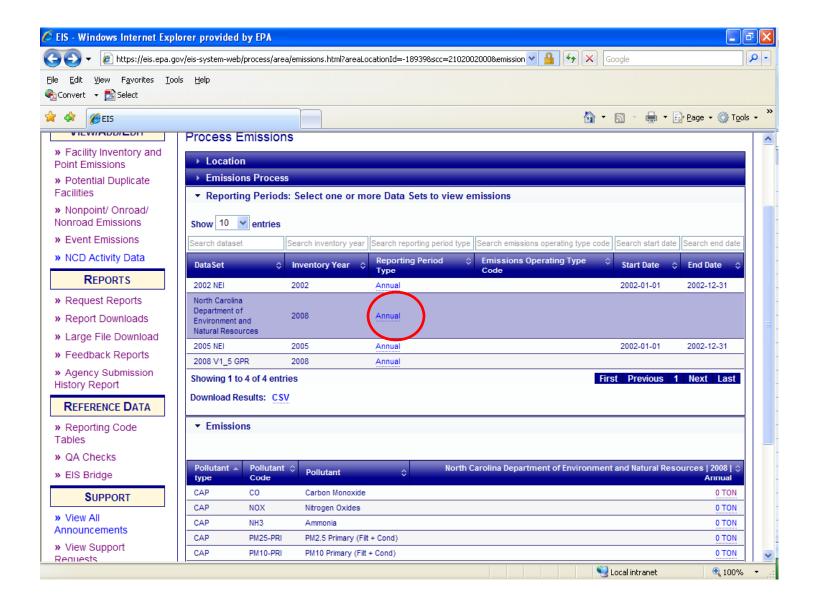
## **Editing Emissions**



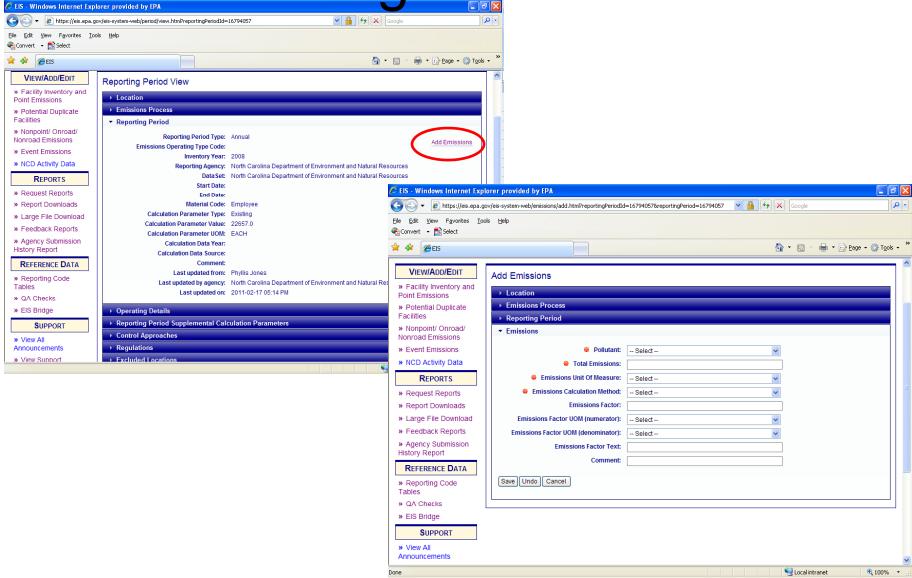
## **Editing Emissions**



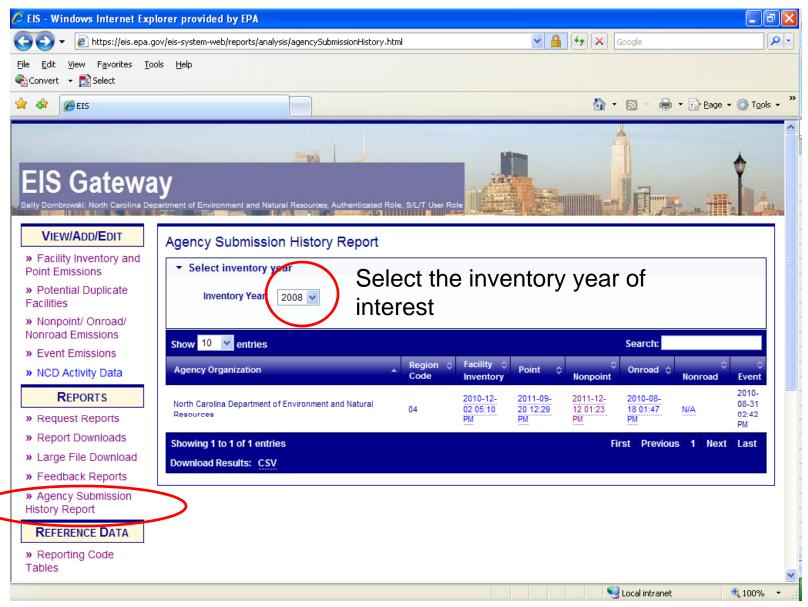
## Adding Emissions



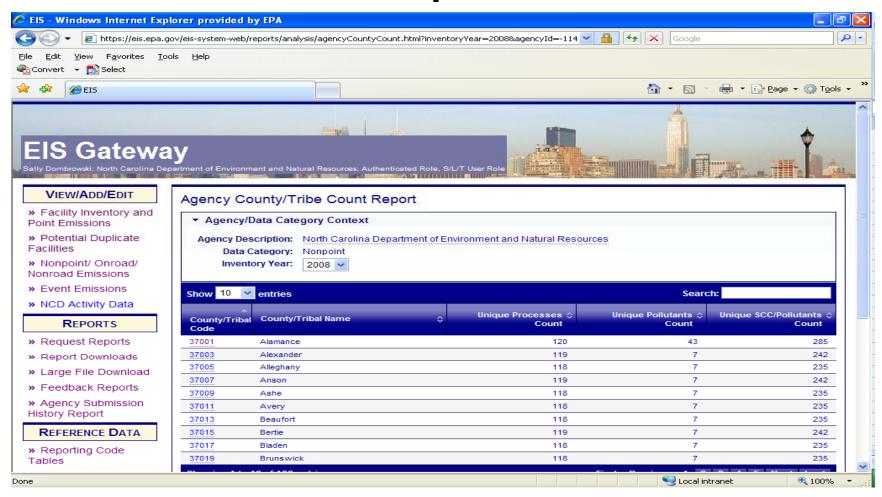
Adding Emissions



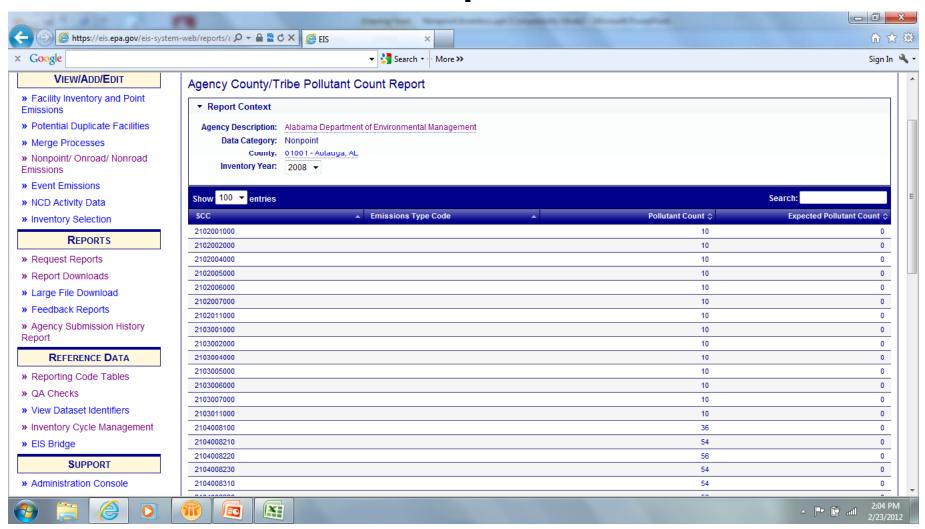
### Agency Submission History Report



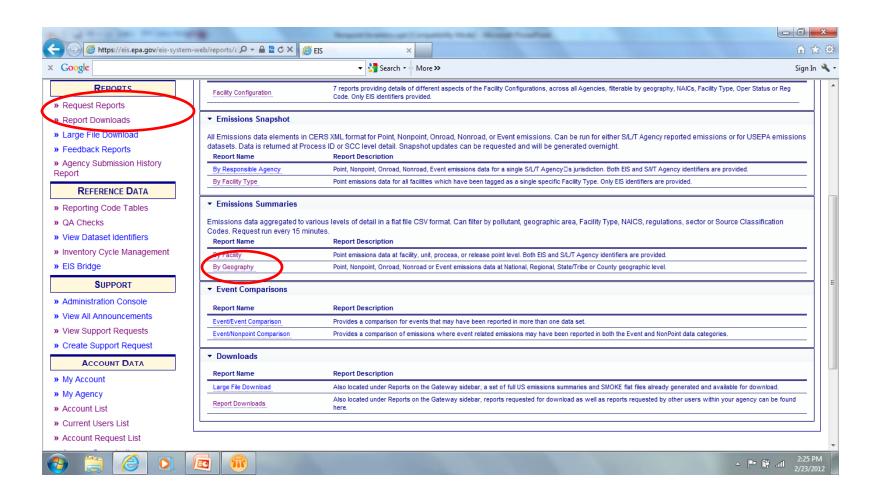
## Agency Submission History Report



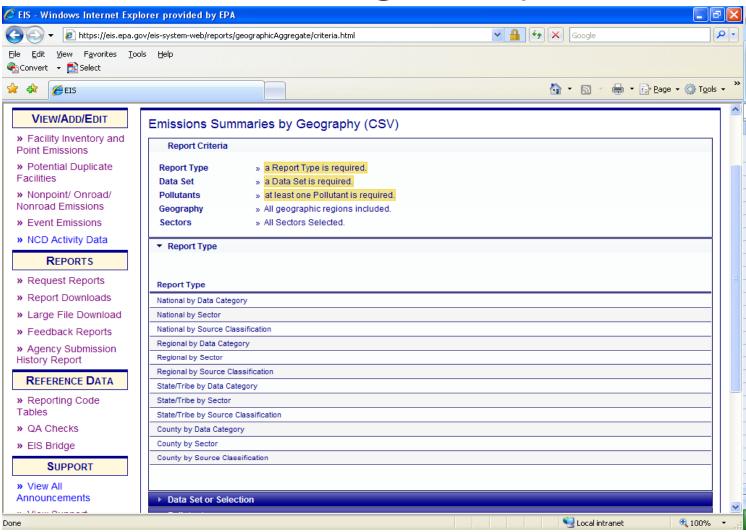
## Agency Submission History Report



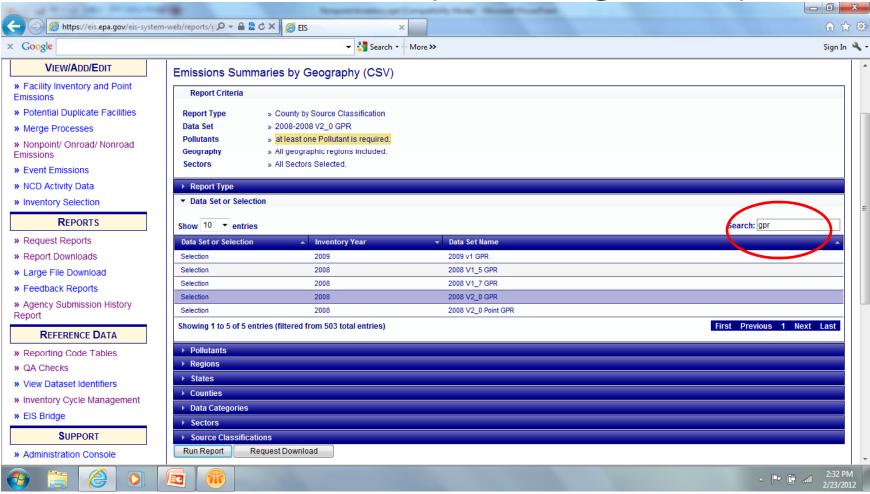
## How do I get data out of EIS?



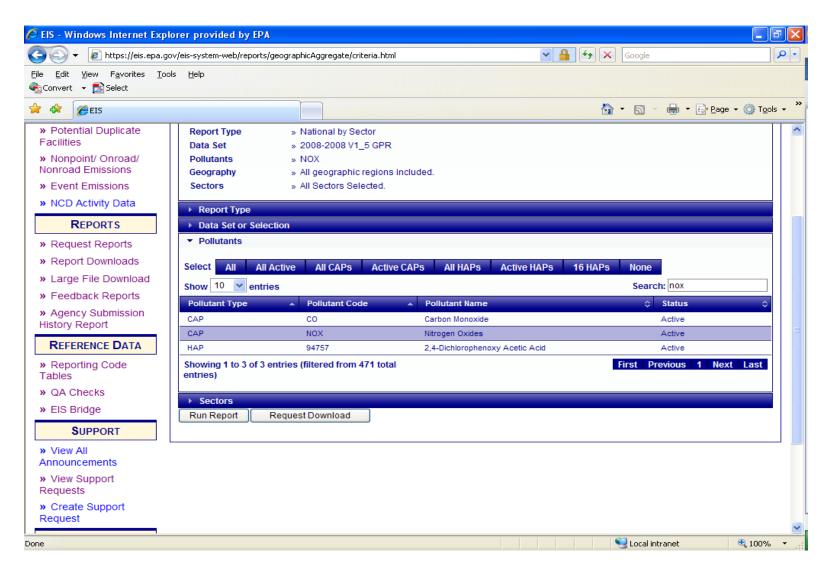
# Reports – Emissions by Geography



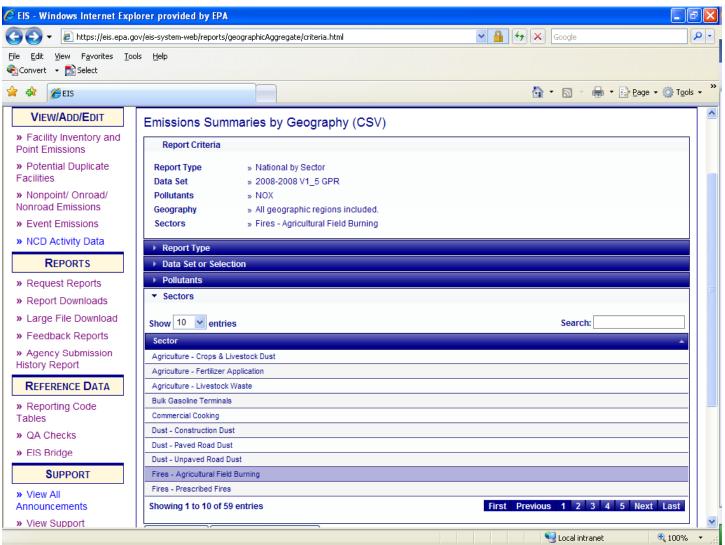
# Reports Emissions by Geography



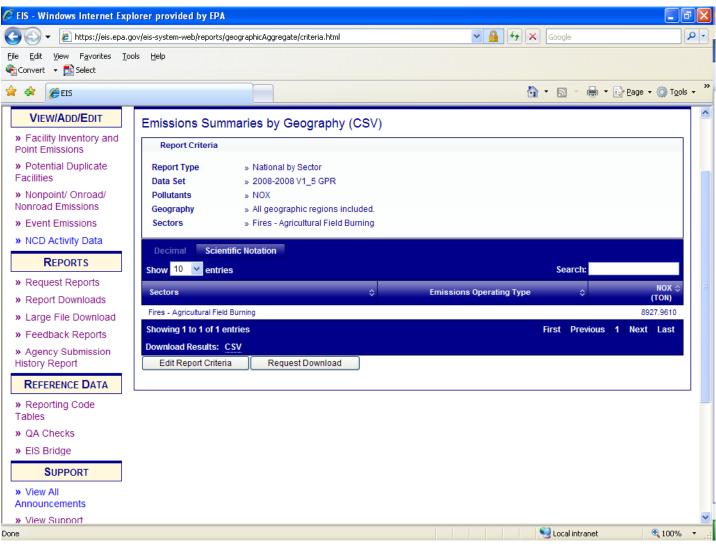
## Reports Emissions by Geography



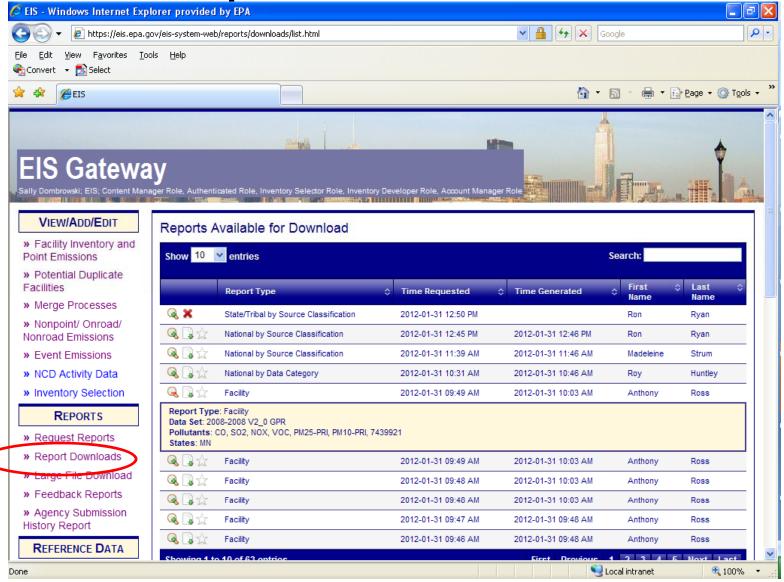
# Reports – Emissions by Geography



# Emission Summary by Geography



### Report Downloads



## How does EPA Check Your Data?

- EPA compares submitted data to alternate data (like EPA data) if applicable and to previous yrs.
  - Note that for sectors that span both point and nonpoint, compares sector level data (as opposed to SCC level)
  - Point /nonpoint overlap of emissions.
- Outliers

#### How is the NEI created?

- General Purpose Release (GPR)
- Data Merge (Selection) The datasets are put in an order for the purpose of selecting only one datum per FIPS, SCC, and pollutant code
  - State/local/tribal data used preferentially
  - EPA data used for gap-filling
- PM Augmentation Fills in missing PM species.
  - Example, SLT submits PM10-FIL but not PM2.5-FIL
  - In 2008, this was a manual method
- EPA estimates

### Recap - 2011 Changes

- Codes added/retired
  - Retiring Dioxins/furans
    - 141 (benzene soluble organics),
    - 142 (methylene chloride soluble organics),
    - 626 (Dioxins/Furans as 2,3,7,8-TCDD TEQs -I/89)
    - 627 Dioxins/Furans as 2,3,7,8-TCDD TEQs -WHO/98
    - 600 Dioxins/Furans as 2,3,7,8-TCDD TEQs TEQ scheme unspecifiedNew QA checks

#### Adding

 628 (Dioxins/Furans as 2,3,7,8-TCDD TEQs -WHO2005)

## Recap – 2011 Changes

- QA Checks changed to critical
  - CMV
    - Emission Type Code required for CMV
  - -PM
    - PM2.5 must not exceed PM10
    - If PM2.5 reported, PM10 must be reported
- QA Checks new
  - HAP groups
    - Total group pollutant can not be reported at the same process as specific pollutants belonging to the same group.

#### Contacts

- Submittal Issues
  - Sally Dombrowski
     dombrowski.sally@epa.gov; 919-541-3269
- Inventory Issues
  - Roy Huntleyhuntley.roy@epa.gov, 919-541-1060
  - Laurel Driver CMV and Rail
     <u>driver.laurel@epa.gov</u>, 919-541-2859