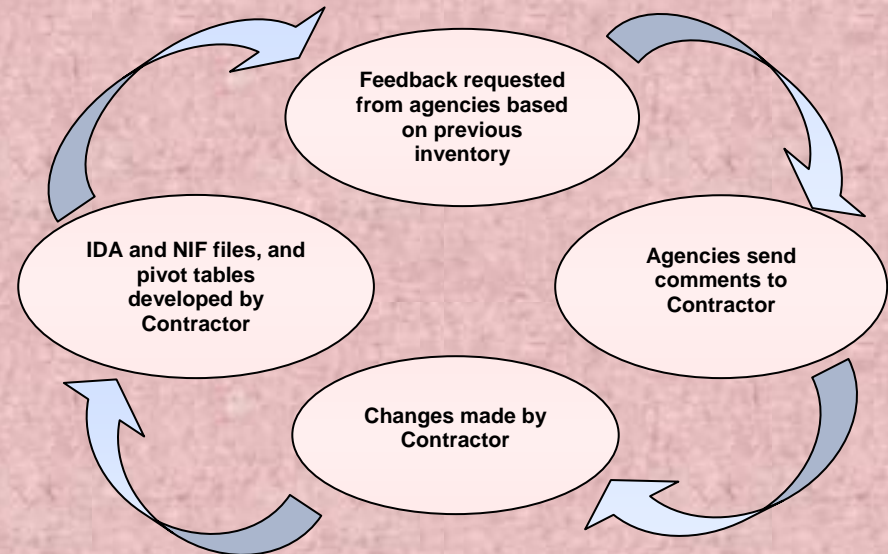


## Other Relevant Points:

- ◆ Depending on the file type and use, oil and gas may or may not be included
  - ◆ NIF files contain CA road dust, all other files do NOT
  - ◆ Use these EI versions when comparing 2002 to 2018 emissions:
    - 2002 Base Case (Jan 2006) to 2018 Base Case (Jan 2006); or
    - 2002 Base Case-Revised (Sep 2007) to Preliminary Reasonable Progress 2018 (PRP18) (May 2007)
    - No other comparisons are valid because changes made in 2002 emissions, such as removal/addition of facilities or records, would not be reflected in the 2018 emissions.
- Was the emissions inventory development process effective, efficient, productive?**
- ◆ Were intermediate products valuable?
    - Initial 2018 spreadsheets to states
    - Multiple EGU methods memos
    - Spreadsheets with BART flags and SIC/SCC records for 2002 Revision (September 2007)
  - ◆ What can be done to improve the EI update process in the future?
  - ◆ Are additional deliverables needed for SIP planning?



### RESEARCH/INFORMATION NEEDS:

- ◆ Additional analysis to support BART determinations

### FUTURE WORK:

- ◆ More pivot tables, NIF and SMOKE/IDA files to be developed with each inventory version: Final Reasonable Progress 2018 (FRP18)

### REFERENCES AND CONTACTS:

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- ◆ WRAP Emissions Forum  
<http://www.wrapair.org/forums/ef>
- ◆ WRAP Stationary Sources Joint Forum  
<http://www.wrapair.org/forums/ssjf>

## WRAP 2002 AND 2018 EMISSION INVENTORIES: DELIVERABLES AND FILES

Deliverables and files support dissemination of the 2002 base year and 2018 projections emissions inventories to agencies, modelers, and the WRAP Emissions Data Management System (EDMS). In addition to memos and reports pertaining to inventory development, other deliverables produced under ancillary tasks specifically addressed tribal emission sources, and NO<sub>x</sub> controls from coal-fired EGUs. Emissions inventory results were formatted using the U.S. EPA National Emissions Inventory Format (NIF), and SMOKE/IDA format. Also, pivot tables were developed in spreadsheet format.

### WRAP STATE, LOCAL, AND TRIBAL AGENCIES:

Tribal inventories were developed for 7 Native American Reservations: 2002, 2018.

NO<sub>x</sub> reduction feasibility analysis assists with BART determinations.

Pivot tables:  
 - Developed for 2002 and 2018 to assist the development of haze plans.  
 - The 2002 revised (Sep 2007) pivot tables include BART flags.

### WRAP TECHNICAL SUPPORT SYSTEM (TSS)

NIF files for all inventories provide input to WRAP EDMS.

### WRAP RMC

Modeling files were developed in SMOKE/IDA format.

### SCOPE AND COVERAGE OF THE 2002 and 2018 EMISSION INVENTORY DELIVERABLES

- ◆ Pollutants: criteria plus ammonia
- ◆ Source types/categories: Point, Area (excluding fires, dust, and some ammonia sources)
- ◆ Oil and gas included in pivot tables and NIF files; NOT included in SMOKE/IDA files (developed separately by ENVIRON)
- ◆ Geographic resolution: WRAP states and tribes, county level
- ◆ Some data not verified: Stack parameters, control device information

### RELATED LESSONS LEARNED ON THIS TOPIC

- ◆ WRAP 2002 Emission Inventories – Point and Area Sources
- ◆ WRAP 2018 Emission Inventories – Point and Area Sources
- ◆ WRAP Oil and Gas (O&G) Emissions Inventory

### FORMAT AND COMPLEXITY DRIVERS

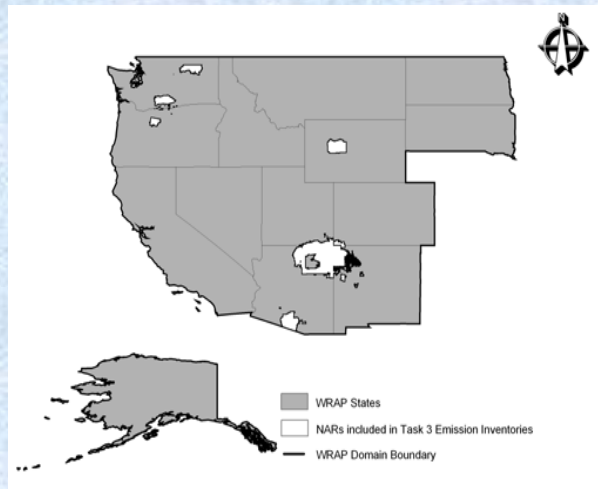
- ◆ SIPs, Control Strategy Development:
  - Accurate emissions
  - Facility, unit, process information
  - Stack parameters
  - BART flags
  - NO<sub>x</sub> reductions
- ◆ File Formats for Various Uses:
  - Pivot tables: spreadsheets (limited to 65,000 lines)
  - NIF files: database format with relational tables and key fields
  - SMOKE/IDA files: text format with explanatory headers

**Cautionary Note to Users of all Files: Download only the most current files. Be aware that if you downloaded pivot tables after the 2002 base case inventory was complete (Jan 2006), these emissions have changed, and you should now download the most recent files from the WRAP Web site at <http://www.wrapair.org/forums/ssjf/pivot.html>**

# METHODOLOGY – TRIBAL EMISSIONS INVENTORY AND NO<sub>x</sub> CONTROL STUDY

## TRIBAL INVENTORY OBJECTIVES AND METHODS

- 7 Native American Reservations (NARs):
- ◆ Improved existing emission inventories of major point, area sources (January 2006)
- ◆ Scope:
  - Point sources: >50 tpy NO<sub>x</sub> or SO<sub>2</sub> (Title V)
  - Area sources: oil and gas, based on permits, surveys, as provided by tribes



Additional tribal inventories have been developed and used in WRAP 2002 and 2018 modeling since this January 2006 project was completed.

## NO<sub>x</sub> CONTROL ON COAL-FIRED ELECTRIC GENERATING UNITS (EGUS)

- ◆ Characterized NO<sub>x</sub> emissions, existing controls, operational characteristics
- ◆ Estimated performance and cost of existing controls, new but not used
- ◆ Identified furnace type, coal used
- ◆ Built on 2003 study and research by EPA's Clean Air Markets Division (CAMD)
- ◆ Results:
  - 1/3 = no NO<sub>x</sub> control
  - 2/3 = low NO<sub>x</sub> burners
  - A few with selective catalytic seduction

Methodology and results are summarized in: "Analysis of Combustion Control for Reducing NO<sub>x</sub> Emissions From Coal-Fired EGUs in the WRAP Region," September 2006. WRAP Web site at: <http://www.wrapair.org/forums/ssjf/documents/eiccts/NOxEGU.html>

## NAR INVENTORIES COMPLETED BY ERG/ENVIRON

NAR	# Title V Sources	O&G Sources
Wind River	2	✓
Ute Mountain	None	✓
Navajo	13	✓
Tohono O'odham	1	
Colville	2	
Yakama	4	
Warm Springs	1	
Southern Ute <sup>a</sup>		✓

NAR	2002 Base Case Point Source Emissions (TPY)		
	NO <sub>x</sub>	SO <sub>2</sub>	PM <sub>10</sub>
Wind River	147	1,132	11
Ute Mountain	-	-	23
Navajo	83,387	37,028	4,115
Tohono O'odham	42	3	68
Colville	227	22	308
Yakama	60	16	96
Warm Springs	-	-	-
All Others	10,500	1,296	2,686

<sup>a</sup> Oil and gas inventory was provided by the tribe.

## DISTRIBUTION OF COAL-FIRED EGUS IN WRAP OVER THE LAST 50 YEARS

Unit In-Service Date	No. of Units	2001-2003 Annual Avg. NO <sub>x</sub> (Tons) <sup>a</sup>
Prior to 1960	8	12,700
1960 to 1969 <sup>b</sup>	24	77,300
1970 to 1979 <sup>b</sup>	38	273,700
1980 to 1989	30	202,500
1990 to 1991	3	7,800
No Date Supplied	17	8,000
<b>Total</b>	<b>120</b>	

<sup>a</sup> Emissions data (rounded to nearest 100 tons) were retrieved from U.S. EPA's CAMD database in 2005, and supplemented with 2002 NEI data if CAMD data were not available.

<sup>b</sup> BART in-service eligibility = 1962 to 1977

**NO<sub>x</sub> control study results are useful for unit-level analysis of BART-eligible sources, and determining boiler types, firing configuration, current controls, and feasibility of new NO<sub>x</sub> controls.**

# RESULTS – PIVOT TABLES & NIF FILES

## PIVOT TABLES:

### Features:

- ◆ Drill down to SCC8 (area sources) or SCC6 (point sources)
- ◆ WRAP total, state, pollutant
- ◆ Double-click to expand or contract

### Limitations:

- ◆ 1 gigabyte of RAM preferred
- ◆ 500 megabyte of RAM may have problems with point SCC3 or SCC6

## POINT SOURCE PIVOT (AZ, NO<sub>x</sub>):

## AREA SOURCE PIVOT (OR, SELECTED POLLUTANTS):

## NIF FILES:

### Features:

- ◆ Conform to U.S. EPA NEI format
- ◆ Allows input to WRAP EDMS

### Limitations:

- ◆ Database tables not intuitive
- ◆ NIF3.0 requires unique emission release points although multiple units may have same release point (tblPointER)

## NIF POINT SOURCE DATABASE TABLES:

NIF Table	Description	Mandatory Fields
tblPointTR	Transmittal	-State and County FIPS -Tribal Code
tblPointSI	Site	-State and County FIPS -Tribal Code
tblPointEU	Emission Unit	-State and County FIPS -Emission Unit ID -Tribal Code
tblPointEP	Emission Process	-State and County FIPS -Emission Unit ID -Process ID -Tribal Code
tblPointCE	Control Equipment	-State and County FIPS -Emission Unit ID -Process ID -Pollutant Code -Tribal Code
tblPointER	Emission Release Point	-State and County FIPS -Emission Release Point ID -Tribal Code
tblPointPE	Emission Period	-State and County FIPS -Emission Unit ID -Process ID -Start Date -End Date
tblPointEM	Emission	-State and County FIPS -Emission Unit ID -Process ID -Emission Release Point ID -Start Date -End Date -Emission Type