Fine PM Test Method

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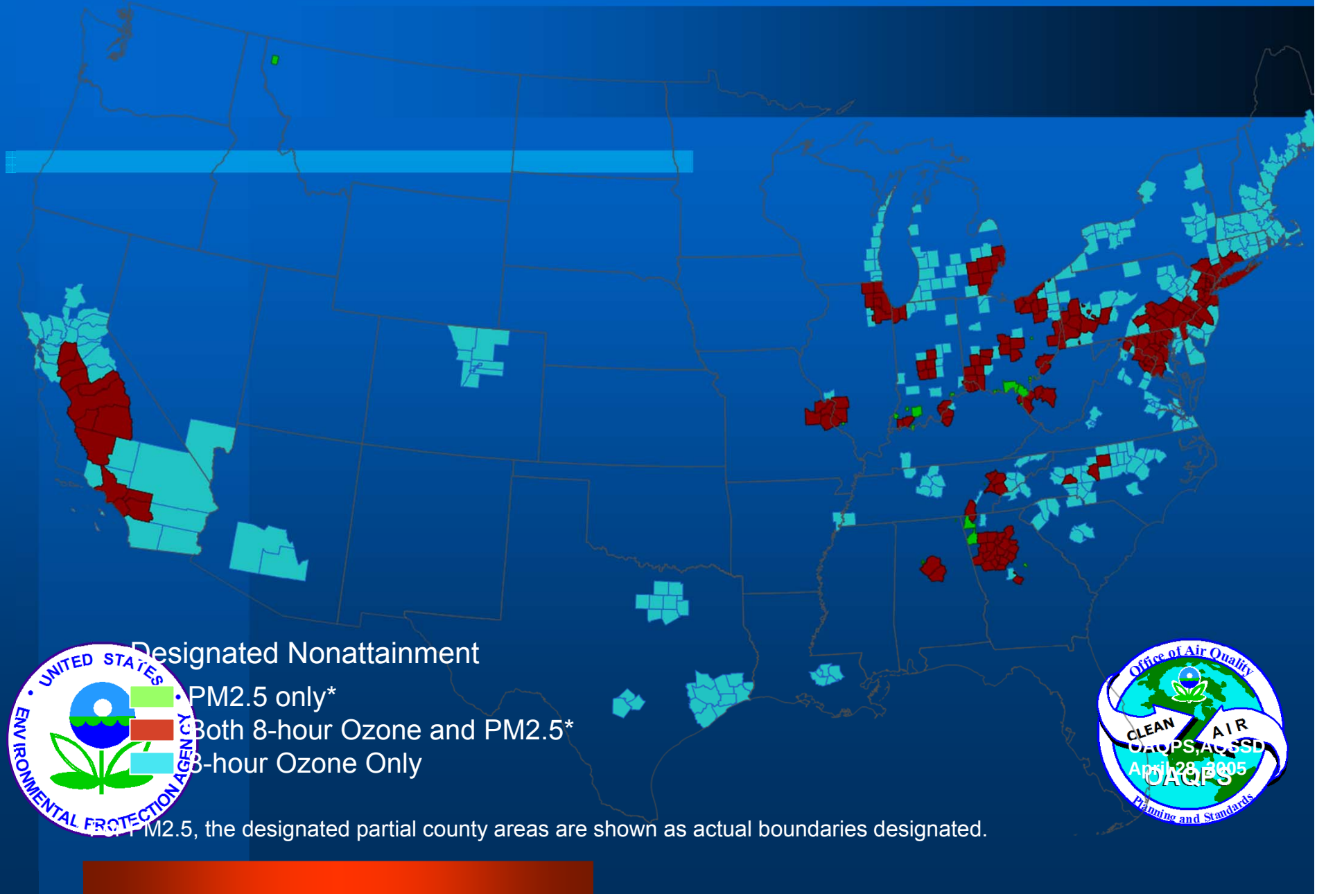
Presentation Topics

- Particulate Matter NAAQS
- Condensable PM Test Method
- Method 202 Issues
- Improved CPM Test Method
- Expanded Method 201A

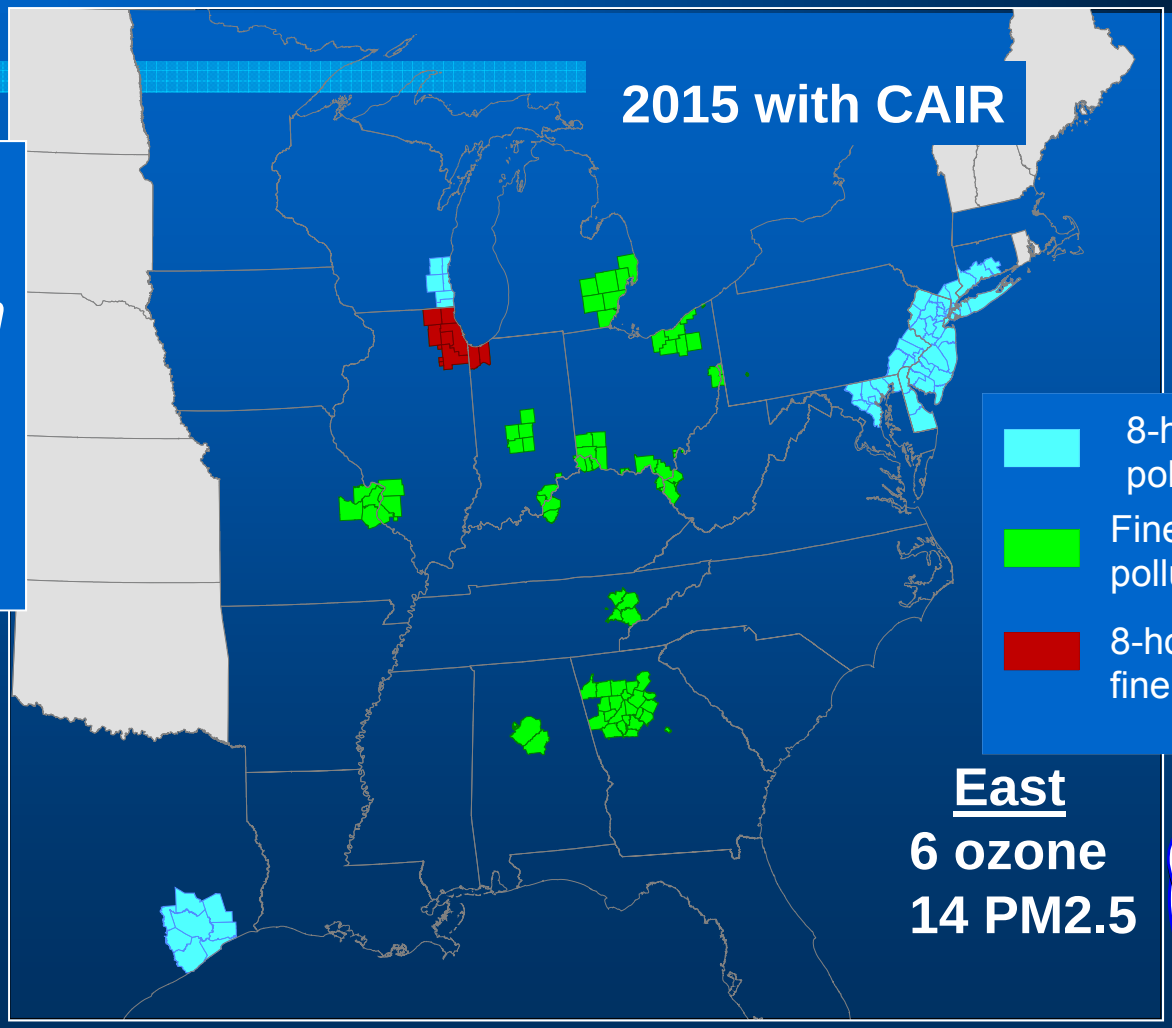
8-hour Ozone and Annual PM2.5 NA Areas



* For PM2.5, the designated partial county areas are shown as actual boundaries designated.

Non Attainment Areas w/ CAIR

Projected NAs in 2015 after Reductions from CAIR and Existing CAA programs



East
6 ozone
14 PM2.5

Measurement/Monitoring Drivers

- **PM fines NAAQS**
  - **Ambient Air Speciation Data**
  - **Implementation Rule**
- **Permits Program**
  - **NSR/PSD**
  - **Title V**
  - **State Programs**
- **Consolidated Emissions Reporting Rule**

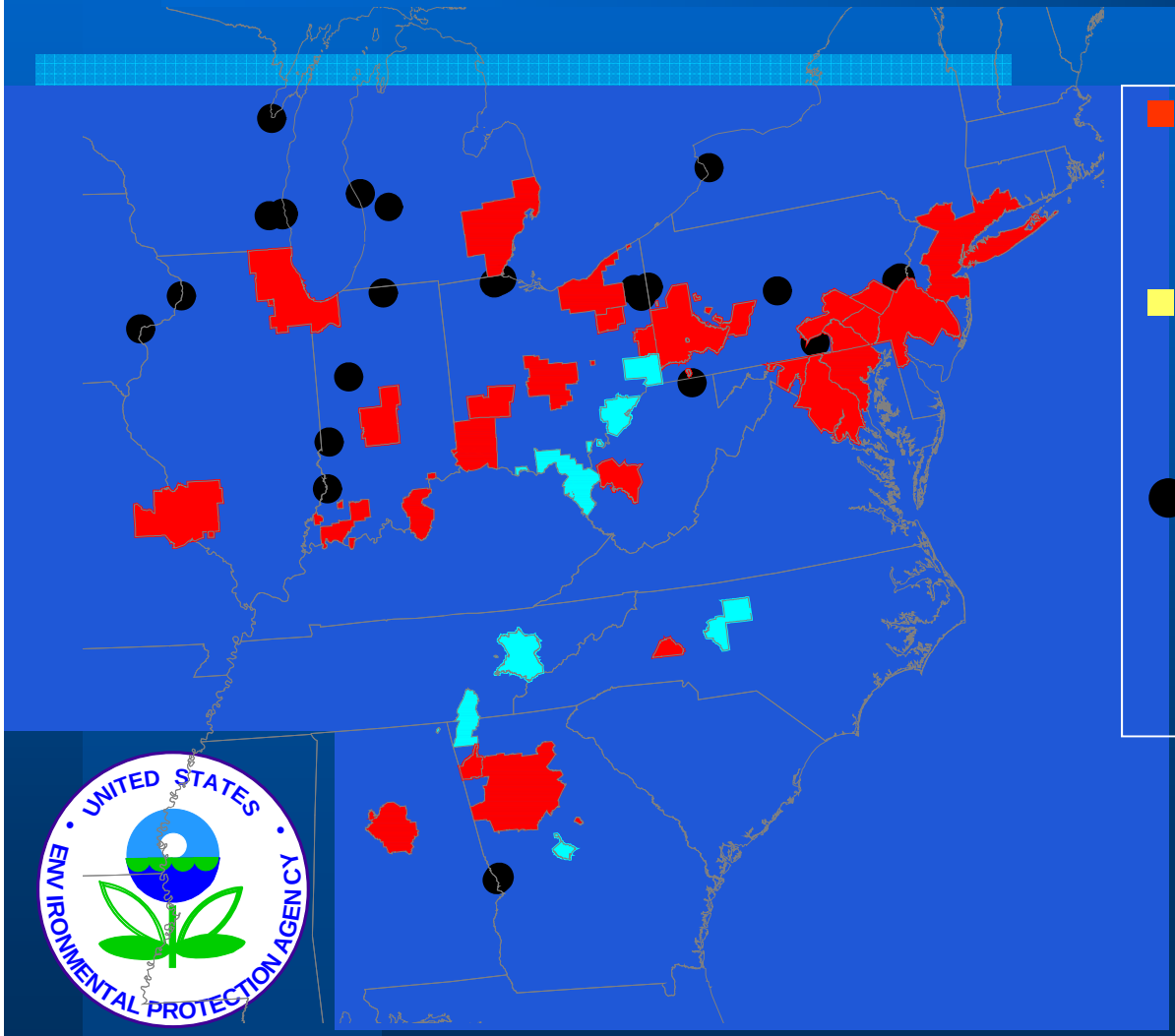
Promulgated Implementation Rule

- **April 25, 2007 in Federal Register**
  - **Regulation of precursor pollutants**
    - **SO2, NOx**
    - **VOC, NH4**
  - **RACT/RACM selected to attain NAAQS as expeditiously as practicable**
  - **Regulation of Condensable PM**
    - **Transition period from 2007 to 2011**
      - **CPM regulation encouraged but not required**
    - **Regulations developed after 2011 are required to address CPM**
- **Petitions filed by Advocacy Groups, Industry Groups, State Agencies**

Promulgated NAAQS Revision (2006)

- **Affirms 15 ug/M^3 $PM_{2.5}$ annual average**
- **Establishes 35 ug/M^3 $PM_{2.5}$ 24 hr average standard**
  - **Increases need for local controls**
  - **Short term emissions more important**
    - **Start up / shut down**
    - **Malfunction impacts**
    - **Performance degradation**
  - **Becomes air quality driver**
- **Establishes 150 ug/M PM_{10} 24 hr average standard**

Potential 24-Hour $PM_{2.5}$ NAAQS NA's



- Current nonattainment area violates new 24-hr NAAQS [32 areas]
- Current nonattainment area meets new 24-hr NAAQS [7 areas]
- Sites not in a current nonattainment area violate the new 24-hr NAAQS (59 sites)

Potential 24-Hour $PM_{2.5}$ NAAQS NA's

- Current nonattainment area violates new 24-hr NAAQS [32 areas]
- Sites not in a current nonattainment area violate the new 24-hr NAAQS (59 sites)

Method 202 (12//17/91)

- **Intent - replicate ambient air emissions**
- **PM is defined by the conditions**
- **Each M202 option creates different mass**
  - **N_2 purge/Air purge/No purge**
  - **Water evaporation temperature**
  - **Multiple sulfate mass**
  - **Analysis of some components**
- **No Referee Method available in 1990**

Method 202 Assessment (2004)

- **Conducted Laboratory Study**
- **36 samples**
- **SO_2 bubbled through impingers**
  - **300 ppm for 1 & 3 hours**
  - **50 ppm for 6 hours**
  - **Nitrogen purge and no purge**
  - **Hold times from 1 to 20 hrs for initial analysis**

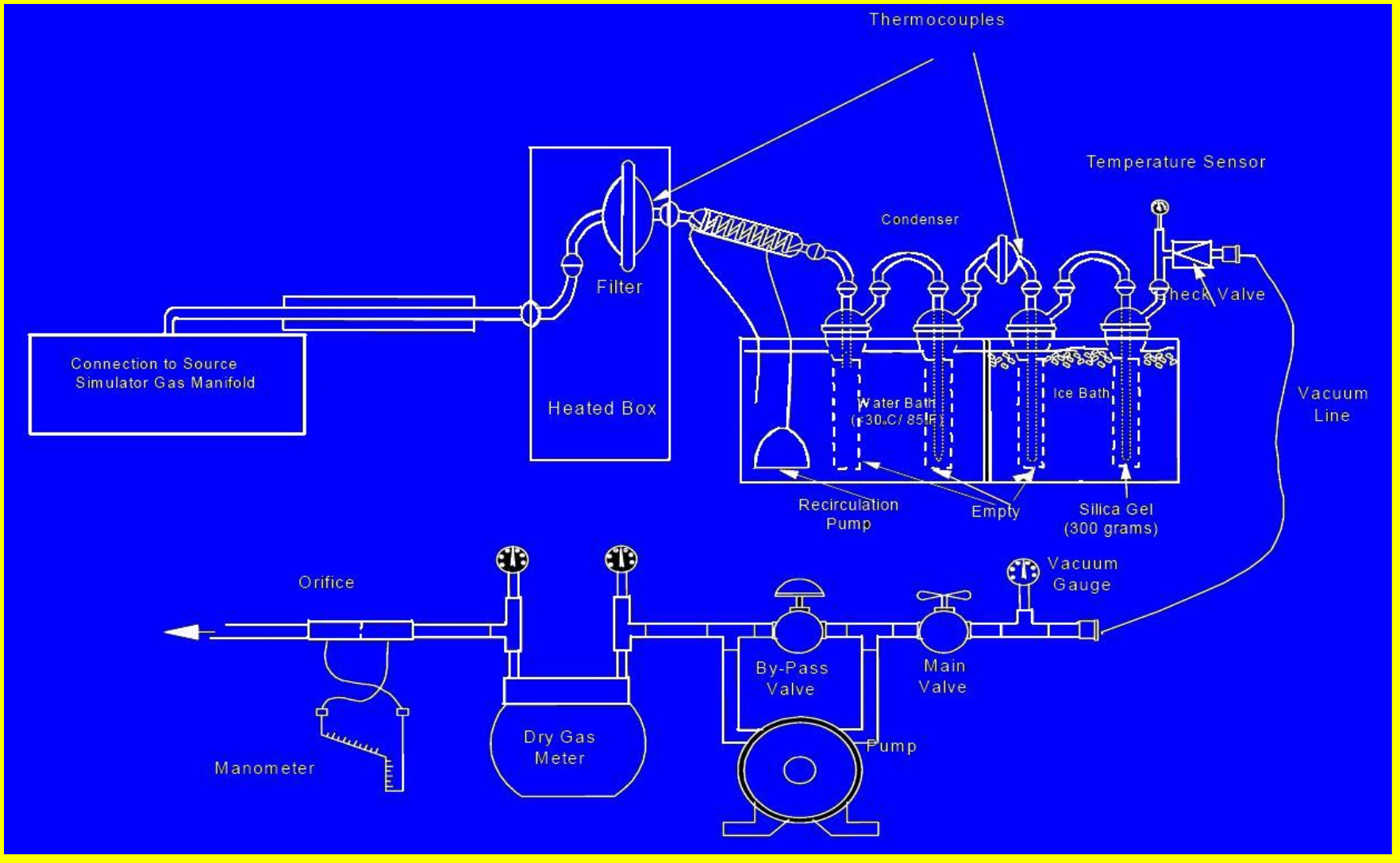
Method 202 Artifacts

SO_2 ppm	Test duration	H_2O volume	Artifact Mass (mg)	
			No Purge	Purge
300	1 Hr	400 ml	180 ± 6	10 ± 0.5
300	3 Hr	800 ml	400 ± 25	20 ± 5
50	6 Hr	1400 ml	200 ± 10	20 ± ??

Method 202 Improvement

- **Air Control Techniques dry impinger modification**
- **Began M202 improvement stakeholder process**
- **Over 100 participants**
  - **Environment Canada**
  - **Industrial Sources**
    - **EPRI, US CAR, API, NEDA/CAP, NCASI, PAPERCAN, PCA, UARG . . .**
  - **State Local Agencies**
    - **NACAA, NYSERDA, AL, CA, DE, IN, WI, MD, MI, NC, NJ, NY, OR, Indianapolis, Knoxville**
  - **Other Organizations**
    - **Alston Power, B&W, ICAC, SES**

Dry Impinger Train Layout



Dry Impinger Method

Dry Impinger Method Performance

Run	Organic (mg)	Inorganic (mg)	Filter (mg)	Total
1	0.11	2.23	-0.34	2.34
2	0.15	2.88	-0.06	3.03
3	0.09	1.37	0.00	1.46
4	0.30	1.91	0.00	2.22
5	0.16	1.54	0.07	1.77
6	0.33	2.19	-0.17	2.52
7	0.08	1.18	0.30	1.56
8	0.02	1.87	0.17	2.06
Blank	-0.02	0.21	0.00	0.68
Average	0.16	1.90	0.00	2.12
Std Dev	0.1	0.51	0.17	0.45
MDL	0.31	1.54	0.49	1.36

Future Performance Evaluations

- **EPRI laboratory studies**
  - **Higher moisture concentrations**
  - **Higher SO_2 concentrations**
  - **Lower SO_2 concentrations**
  - **Addition of SO_3**
- **EPA laboratory studies**
  - **Addition of Ammonia**
- **Field precision evaluation**

Filterable PM Sizing

- **Method 201A (1990)**

- **Method 201A (2008/9)**

Comments or Questions