Emission Inventory in the Midwest
Challenges and Opportunities

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20th International Emission Inventory Conference
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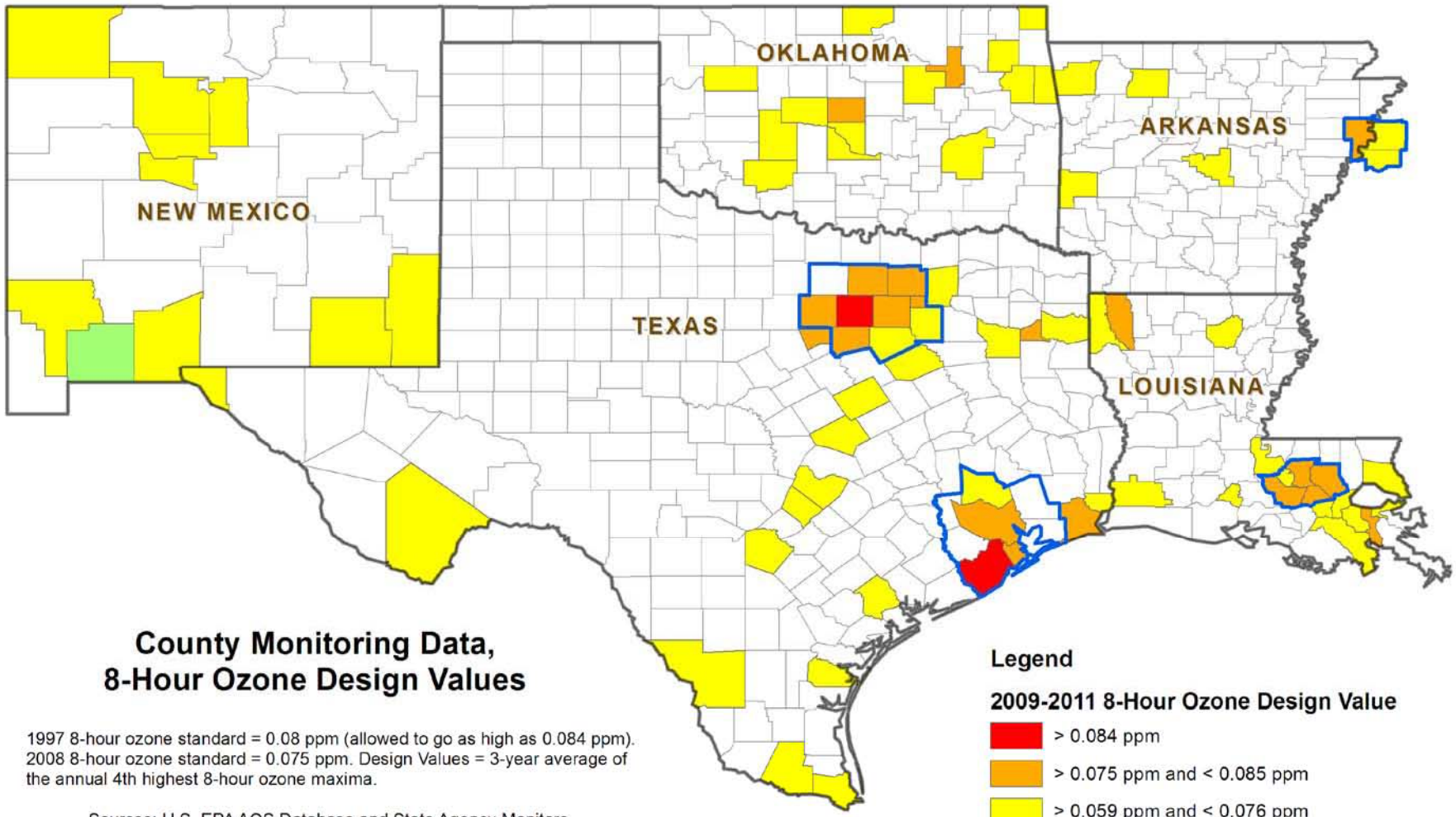
Welcome to the Midwest

Region 6 Ground Level Ozone Concentrations



County Monitoring Data, 8-Hour Ozone Design Values

1997 8-hour ozone standard = 0.08 ppm (allowed to go as high as 0.084 ppm).
2008 8-hour ozone standard = 0.075 ppm. Design Values = 3-year average of the annual 4th highest 8-hour ozone maxima.

Sources: U.S. EPA AQS Database and State Agency Monitors.

Legend

2009-2011 8-Hour Ozone Design Value

- > 0.084 ppm
- > 0.075 ppm and < 0.085 ppm
- > 0.059 ppm and < 0.076 ppm
- < 0.060 ppm
- Nonattainment Counties/Parishes under the 2008 8-hour ozone standard

0 50 100 200 300 Miles

N W E S

EPA Region 6
GIS M2P2 Division
May 21, 2012

20120521JMS

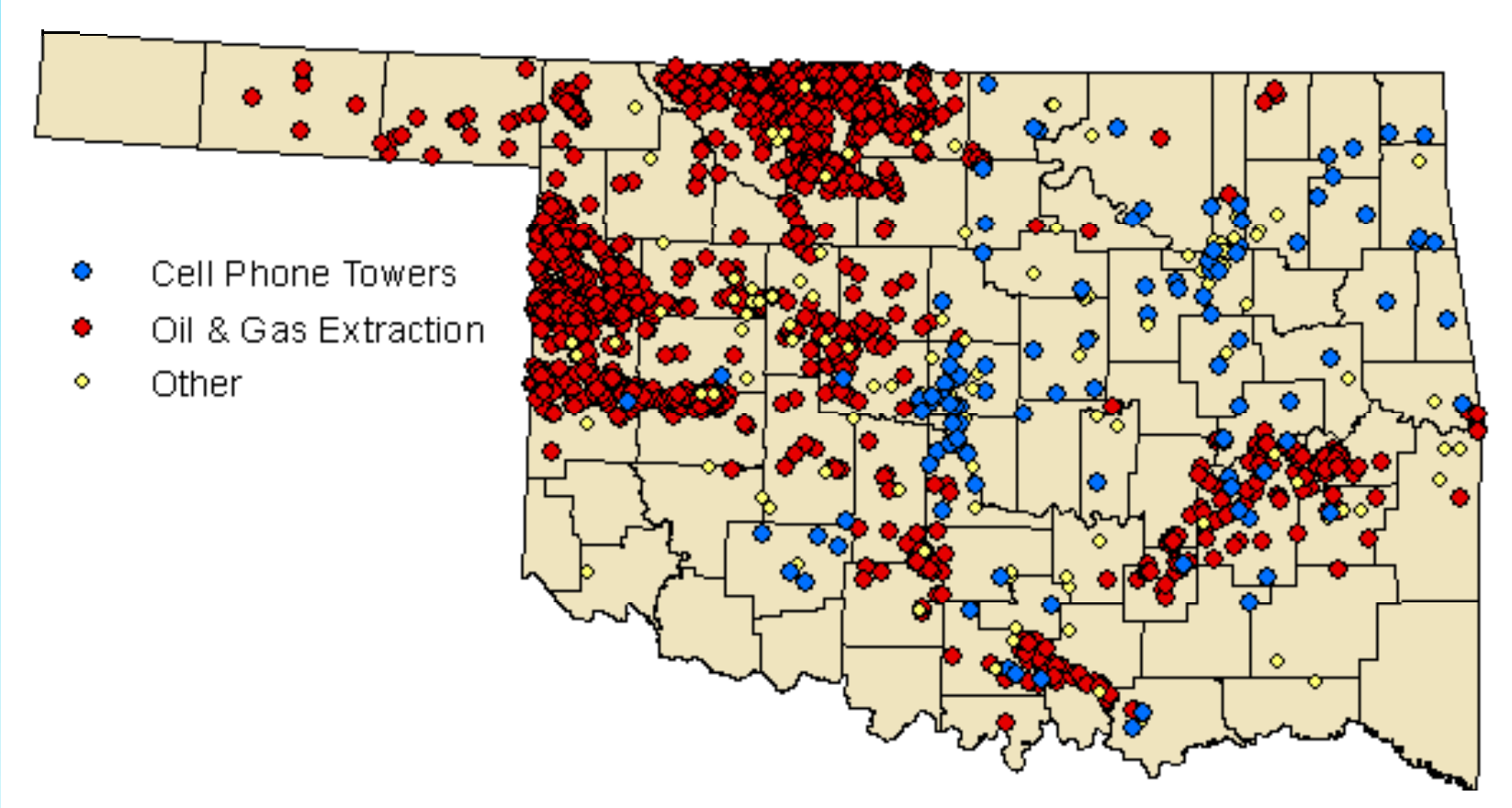
Region 6 8-hr Ozone Exceedance Day Update

preliminary data (through July 26, 2012)

Applicable Standard = 75 ppb

State/Cities	8-hour Ozone Exceedance Days Year to Date		Max. exceedance levels week of 7/20-7/26							Year to Date Air Quality Index Category Totals		
			F	S	S	M	T	W	R	# Unhealthy for Sensitive Groups	# Unhealthy	# Very Unhealthy
Texas	# > 75 ppb	# > 84 ppb										
Houston	20	10								16	3	1
Dallas-Fort Worth	19	8		88						17	2	
Beaumont	8	4								6	2	
Longview	2									2		
Tyler	2									2		
El Paso	1									1		
Austin	3	1								3		
San Antonio	3	2								3		
Corpus Christi	1									1		
Waco	2									2		
Killeen	2									2		
Victoria												
Louisiana												
Baton Rouge	8	3					76			8		
Pointe Coupee	2									2		
Shreveport	1									1		
New Orleans	7									7		
Lake Charles	1									1		
Lafayette	1									1		
Lafourche Parish	3									3		
Oklahoma												
Tulsa	13	5	85	88						12	1	
Oklahoma City	9	1		78						9		
Cherokee Tribal	6	2								6		
Cherokee Fort Smith MSA	4	2	77							4		
Quapaw Tribal	2	1								2		
Arkansas												
Little Rock	7	2	79							7		
Crittenden Co.	6	3								6		
Shelby Co., TN	11	6	83							10		1
DeSoto Co., MS	3	1								3		

New Minor Sources 2011-2012



Emission Inventory Challenges in the Midwest

- Many areas likely to go out of attainment
- Need to do more with the same, if not less resources
- Staff turnover
- Need to improve area estimates
  - Oil & Gas area emissions potentially significant
- Need to leverage limited resources
  - State, Regional, National
  - Push QC upstream

What does the NEI mean to us?

- Not so much?
  - Will use our own point data for permit modeling
- Something to fire off and forget about?
- But it does come back to impact us…
- In fact it is:
  - Used extensively for regional modeling
  - Important resource for the public
  - Well defined structure for all our work

The NEI is an important consistent and coherent resource that is easily accessible

Figuring out the EIS

- Big improvement on the NIF
  - Accessible
  - Transparent
  - Facility data separated from emissions data
  - Things stay fixed – or get better
  - Handles release points much better
  - Excellent foundation for the future
- Thank Goodness for the Staging Tables!
- Exchange Network Grants have helped

Figuring out the EIS

- Lot of legwork
  - Not our facilities
  - Not our units or processes
  - Incorrect process ID's
- Want to maintain historical continuity
- Sync'ing databases – use the same ID's
- Data structure for handling multiple years
  - What should stay fixed year to year?
  - Code year – this year or January 1st of the next year?

How could the EIS be improved?

- Improve system speed where possible
- Gateway Navigation
- Comprehensive FAQs
- Bridge Tool Error Messages
- Staging Table Check Queries
- Add Time/Date Stamp for when record last modified in XML/Staging Tables output

How could the EIS be improved?

- Characterizing Controls

Control Approaches

Add Control Approach

Description	Control Measures	% Capture Efficiency	% Effectiveness	% Penetration	First Inventory Year	Last Inventory Year	Comment	Last Updated On	Last Updated By	Last Updated From Agency
Spray Dryer	Baghouse, SNCR, Spray Dryer...	100			2011			2012-07-31 04:18 PM	Carrie Schroeder	Oklahoma Department of Environmental Quality
ELECTROSTATIC PRECIPITATOR - MEDIUM EFFI	Electrostatic Precipitator - Medium Efficiency				1990	2012	?	2012-07-31 04:18 PM	Carrie Schroeder	Oklahoma Department of Environmental Quality

Download Results: CSV

2008 NEI

- Post submission QA packages really helped
- Concerns about primacy of S/L/T data
  - Overly conservative gap-filling
  - Reliance on a single bad stack test
  - Not enough time to review GPR v2 thoroughly
  - Let us know if something is really crazy
- Difficult to compare datasets
- Go back and fix it?

2011 NEI

- Work in progress
- First triennial NEI under AERR
  - December 31st deadline is a busy time for states
- Rush to publish?
  - Getting data from other agencies
  - Will second versions be inevitable?
- Will be a key resource for new SIPs and control strategies

Pushing QC Upstream

- EIS QA and Production Environments
- Put more QC in industry->state reporting programs
- But we start planning for a new inventory in advance of RY+1
- Can EPA let us know earlier what their plans will be for 2014?

Area Emissions Inventories: National Collaboration

- ERTAC and ERTAC2 very successful
- All sectors have reasonable default values
  - Leaders
  - Users
  - Followers
- Enhance training & documentation
  - Especially for point source subtraction
- Make process easier where possible

Area Emissions Inventories: Enhancement Projects

- Regional inventory work products with most benefit for CenSARA member states
- Initially considered mobile modeling work
- 2011 NEI submissions – a clear goal
- Focus on key area sectors:
  - Oil & Gas
  - Area ICI and Residential Combustion
  - Pesticides

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Central States Air Resource Agencies

Pesticide Application Emissions

- Background
  - Pesticide applications can be a significant source of VOC emissions especially in rural communities.
- Improve states' agricultural pesticide application data
  - obtain county level activity data for row and non-row crops in each of the nine CenSARA states
  - prepare an up-to-date pesticide database for use in EPA's 2011 NEI

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Pesticide Application Emissions

- Expected Enhancements
  - VOC emission factor reflects various chemical formulations of registered pesticides
    - Based on CA Dept. of Pesticide Regulation database
    - Factor expressed in lbs VOC per lbs active ingredient applied
  - Determine pesticide throughput based on lbs active ingredient applied per crop-acre and a near comprehensive crop-acres data set.

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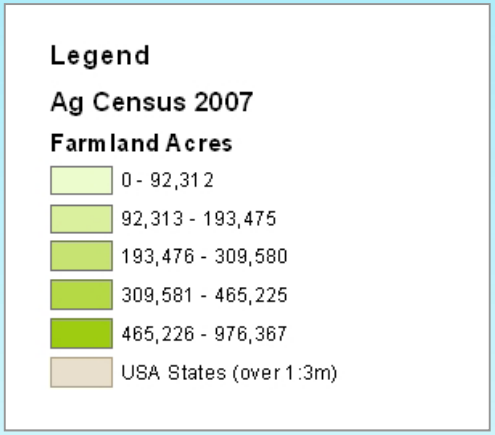
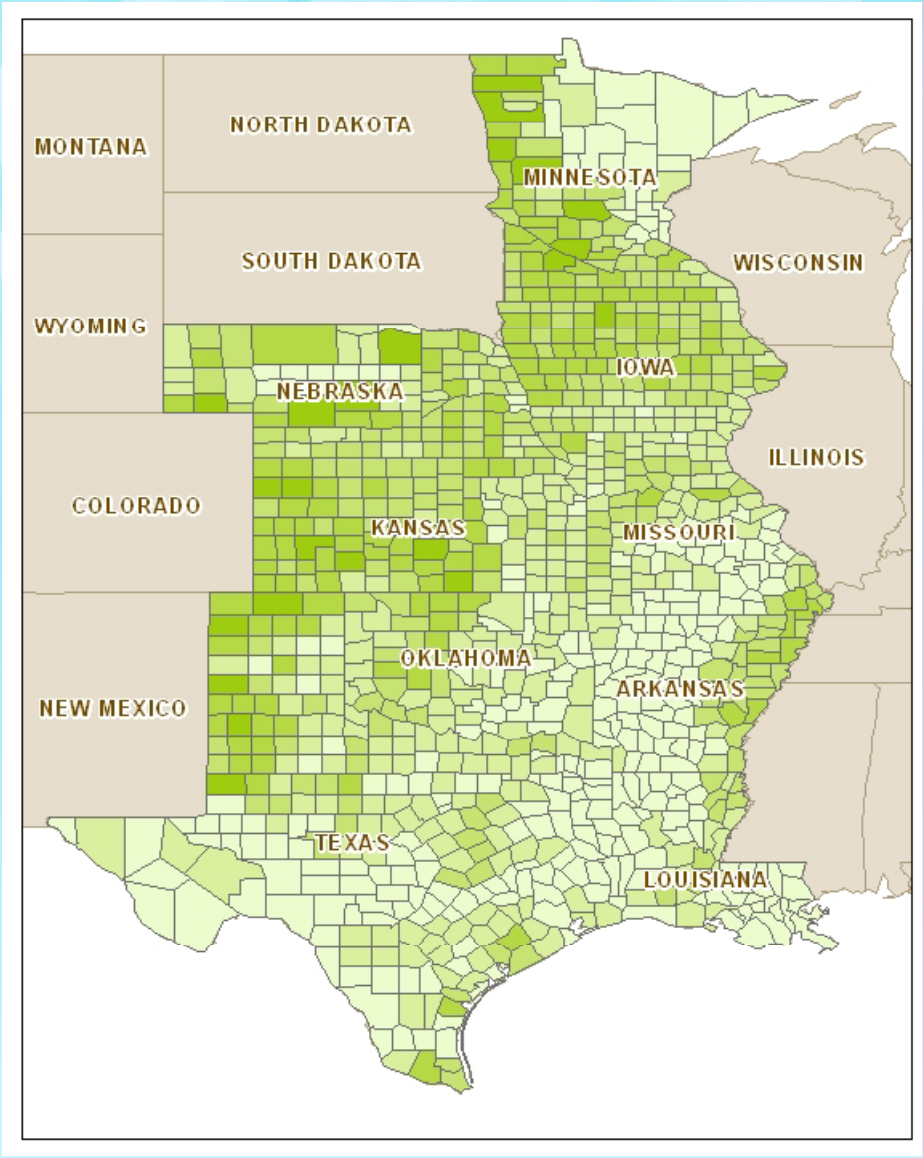
Selected Results

– Agricultural Intensity

2007 Agricultural Census





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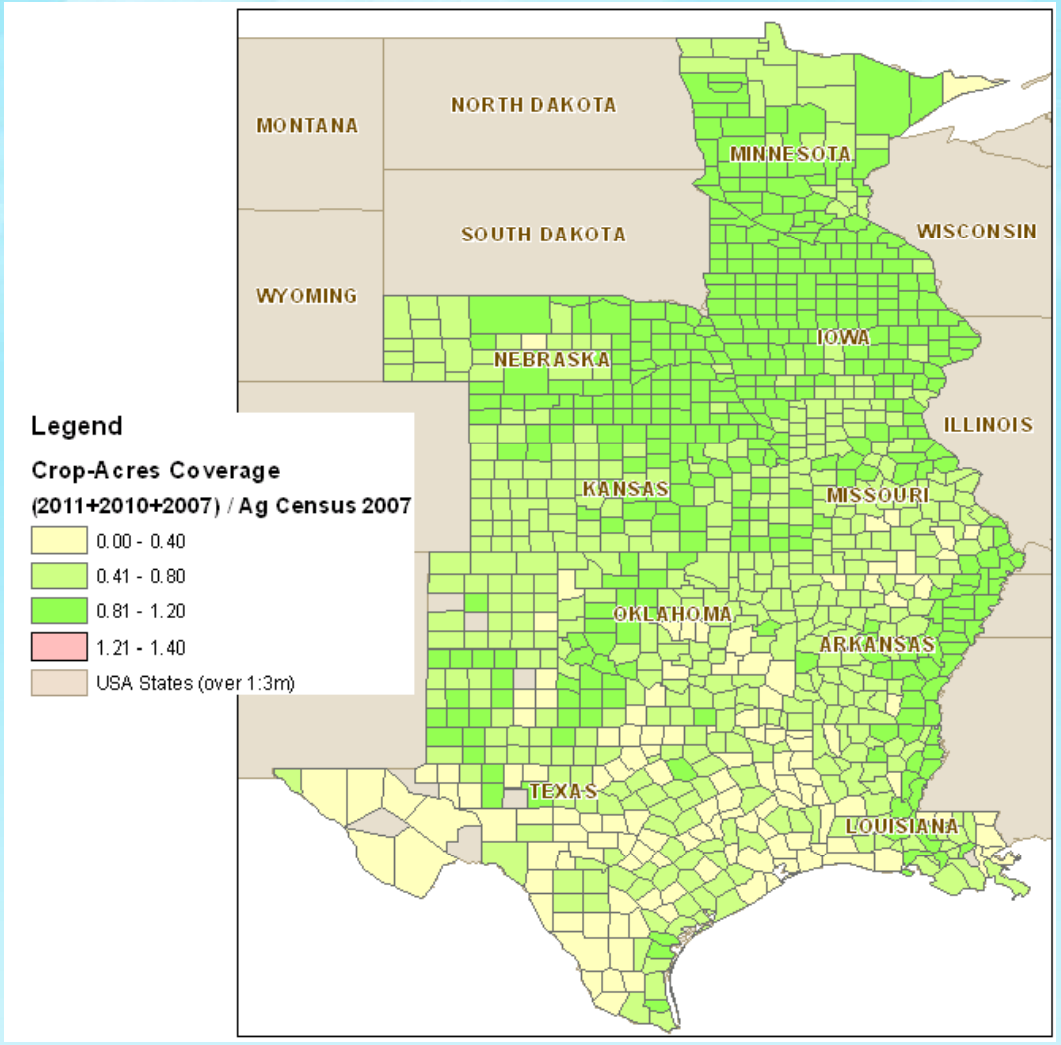
Selected Results

- Degree of completion of crop-acre data relative to the 2007 Agricultural Census

- Counties with the larger completion ratio correspond to locations with highest agricultural intensity.



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Oil & Gas Area Emissions

- CAPs, NH_4, selected HAPs, H_2S and CH_4
  - County level emissions
- HPDI database for production data
- Improve data sources
- ERG Subcontractor, Spreadsheet Tool
  - To be used for national O&G tool in separate EPA-funded project
  - Easy to update inventories for future years

ENVIRON

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Oil & Gas Area Emissions

- High Tier Source Categories:

NOx	VOC
Compressor Engines	Tank Flashing
Drill Rigs	Dehydration
Artifical Lift Engines	Pneumatic Devices
Fracking Pumps	Completion Venting

- Data Sources:
  - Synthesize existing studies (CENRAP, WRAP)
  - Industrial, trade association or permit datasets
  - Limited surveys of operators in key basins

ENVIRON

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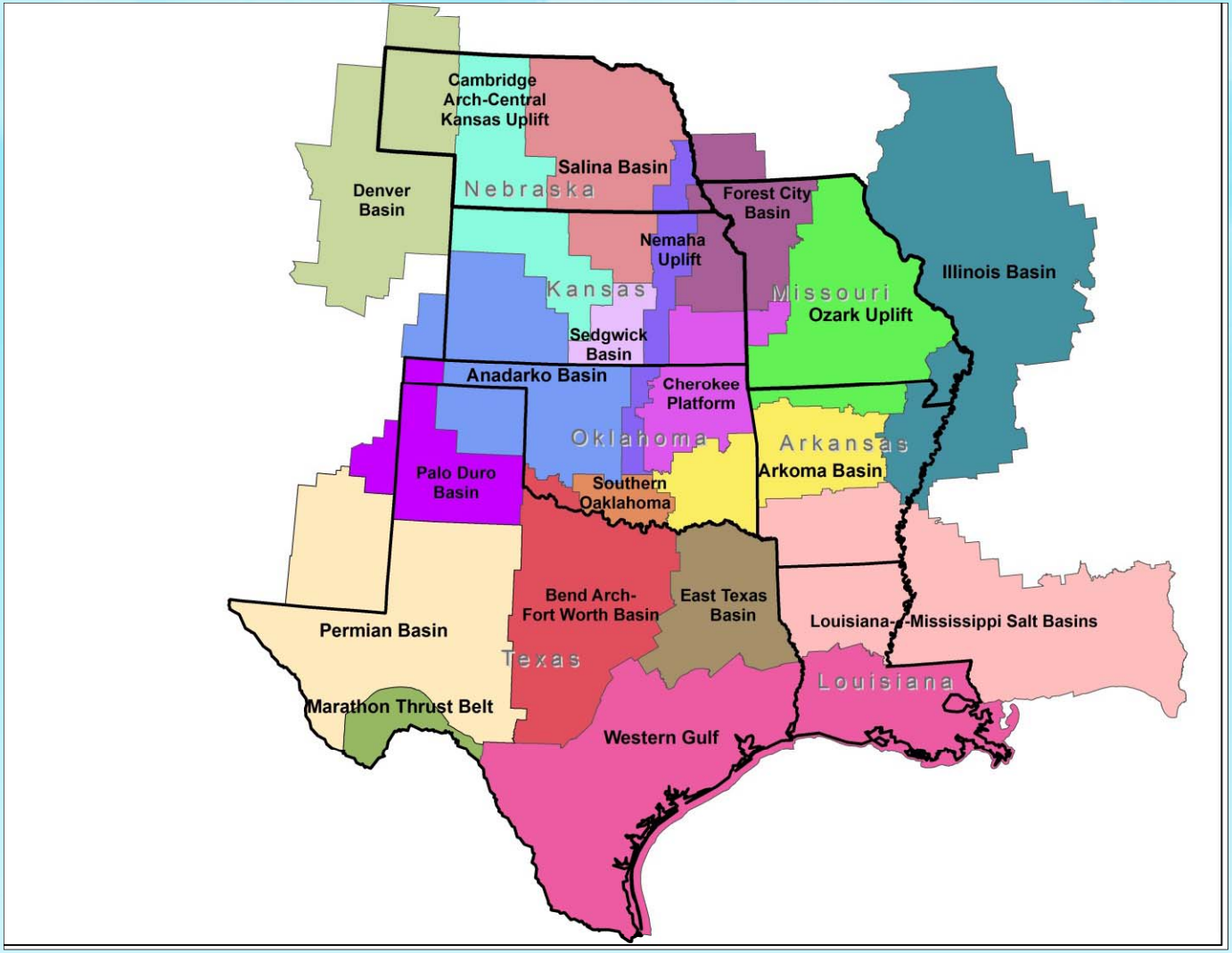
Geologic Basins in the CenSARA Region



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Area Combustion Emissions

- 2008 NEI for CenSARA states:
  - 50% of area SO_2 emissions
  - 40% of area CO emissions
- Compile 2011 ICI and residential fuel combustion activity data at county level
- Develop crosswalk between point and area SCC's to facilitate point source adjustments
- Improve factors and methods as needed
- Calculation Tool, export EIS staging tables

ERG

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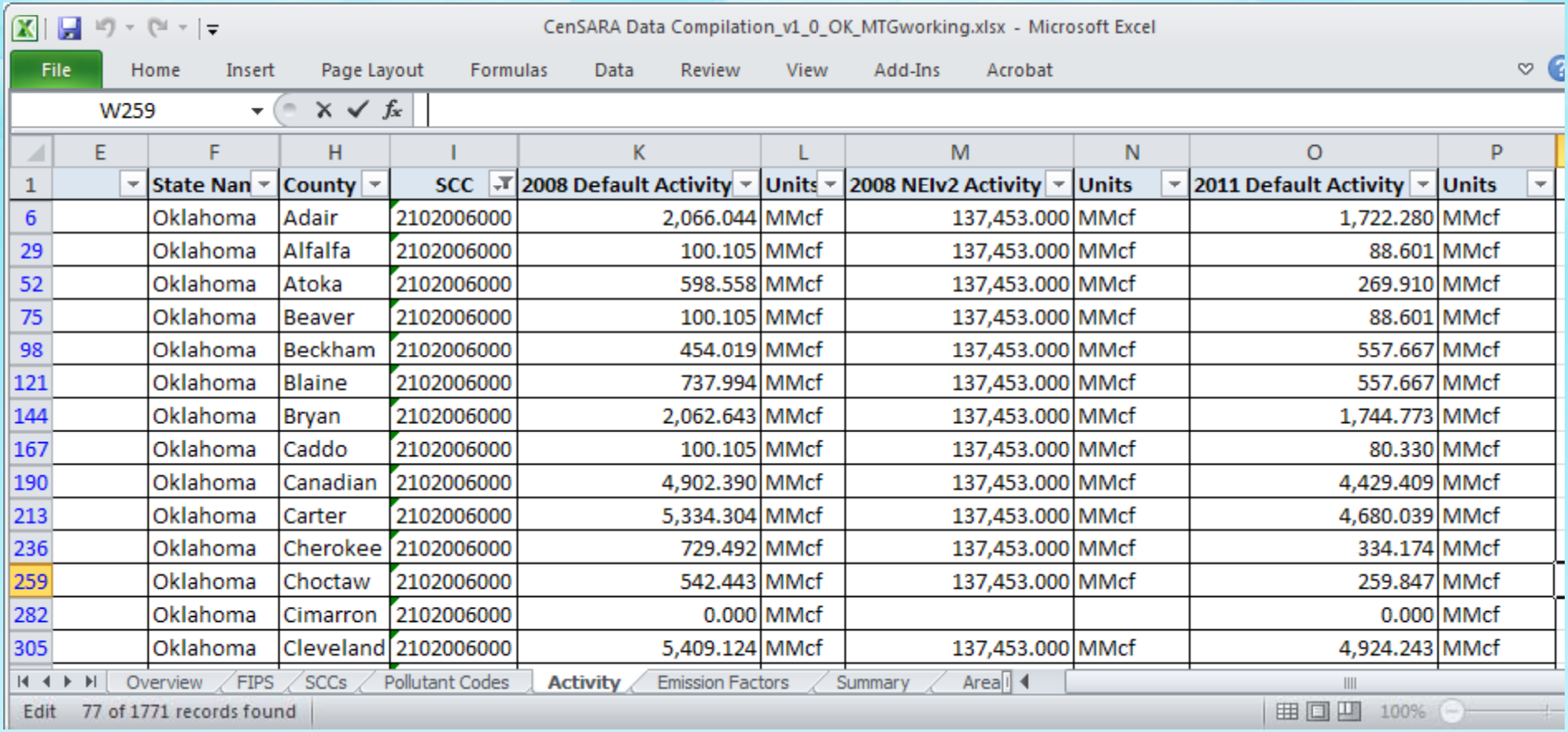
Something's wrong in the 2008 NEI GPR v2…


CenSARA Data Compilation_v1_0_OK_MTGworking.xlsx - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Add-Ins Acrobat

W259

	E	F	H	I	K	L	M	N	O	P
1		State Nan	County	SCC	2008 Default Activity	Units	2008 NEIv2 Activity	Units	2011 Default Activity	Units
6		Oklahoma	Adair	2102006000	2,066.044	MMcf	137,453.000	MMcf	1,722.280	MMcf
29		Oklahoma	Alfalfa	2102006000	100.105	MMcf	137,453.000	MMcf	88.601	MMcf
52		Oklahoma	Atoka	2102006000	598.558	MMcf	137,453.000	MMcf	269.910	MMcf
75		Oklahoma	Beaver	2102006000	100.105	MMcf	137,453.000	MMcf	88.601	MMcf
98		Oklahoma	Beckham	2102006000	454.019	MMcf	137,453.000	MMcf	557.667	MMcf
121		Oklahoma	Blaine	2102006000	737.994	MMcf	137,453.000	MMcf	557.667	MMcf
144		Oklahoma	Bryan	2102006000	2,062.643	MMcf	137,453.000	MMcf	1,744.773	MMcf
167		Oklahoma	Caddo	2102006000	100.105	MMcf	137,453.000	MMcf	80.330	MMcf
190		Oklahoma	Canadian	2102006000	4,902.390	MMcf	137,453.000	MMcf	4,429.409	MMcf
213		Oklahoma	Carter	2102006000	5,334.304	MMcf	137,453.000	MMcf	4,680.039	MMcf
236		Oklahoma	Cherokee	2102006000	729.492	MMcf	137,453.000	MMcf	334.174	MMcf
259		Oklahoma	Choctaw	2102006000	542.443	MMcf	137,453.000	MMcf	259.847	MMcf
282		Oklahoma	Cimarron	2102006000	0.000	MMcf			0.000	MMcf
305		Oklahoma	Cleveland	2102006000	5,409.124	MMcf	137,453.000	MMcf	4,924.243	MMcf

Overview FIPS SCCs Pollutant Codes Activity Emission Factors Summary Area

Edit 77 of 1771 records found 100%

…Activity rates were not apportioned by county

ERG

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Help us to help you!

- We want to do a good job
- Our resources are fundamentally limited
  - Let us know EIAG plans early
- Documentation / Training
  - How to exactly to do point source subtraction
  - How to get non-road activity data
- Regional & National Collaboration
  - Will continue to be successful
  - Coordinate efforts
  - Promote easy export of work products