

Perry/Cape Girardeau Area Ozone Designation Meeting

Jeffry D. Bennett, PE
Missouri Department of Natural Resources

August 5, 2008
Perryville, Missouri



MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

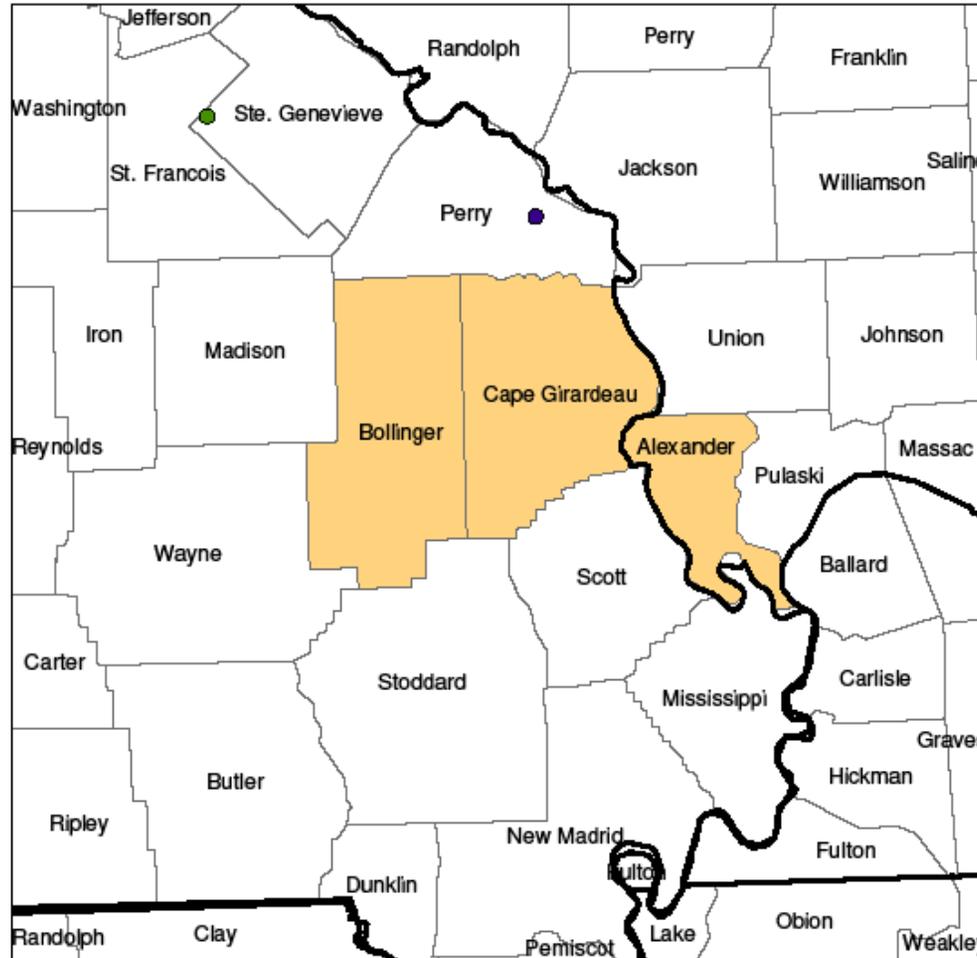
Presentation Overview

- 8-hour Ozone New Standard / Status
- Designation Process
- Summary Information for the Perry/Cape Girardeau Area
- Area-Specific Criteria Information
- Stakeholder Involvement

EPA's 2008 Ozone Standard

- Primary standard – 75 ppb
- Secondary standard – 75 ppb
- Area meets the new standard if design value (average of 4th highest 8-hour average at each monitor over three years) is less than or equal to 75 ppb
- 1997 Standard – 84 ppb

2008 Cape Girardeau Ozone Sites and 05-07 Design Values



- Farrar
- Bonne Terre
- Cape Girardeau MSA



Site Name (ppb)
Farrar (80)
Bonne Terre (83)



Department of Natural Resources
 Division of Environmental Quality
 Air Pollution Control Program
 Prepared by Bern Johnson 4 AUG 2008



EPA's Previous Guidance for Boundary Recommendation

- Test #1 – Does a monitor in the area violate the standard?
- Test #2 – Do VOC and NO_x emission sources in each county contribute to ozone concentrations over the standard?
- The designation process is not optional; if a monitor violates the standard, then that county is designated nonattainment and other surrounding counties are also considered based on contribution

Counties with violating monitor

- Perry (Farrar – 80 ppb)
- Ste. Genevieve (Bonne Terre – 83 ppb)
- Memphis Design Value – 89 ppb
- St. Louis Design Value – 89 ppb

Contribution to Monitored Violations

- Key issues:
- Do VOC and NOx emissions from each county contribute to monitored violations in the area?
- Use eleven EPA criteria to evaluate contribution.

Eleven Boundary Criteria

- Emissions and air quality in adjacent areas
- Population density and degree of urbanization (significant difference from surrounding area)
- Ozone monitoring data in surrounding area
- Location of emission sources
- Traffic and commuting patterns
- Expected growth (extent, pattern and rate)

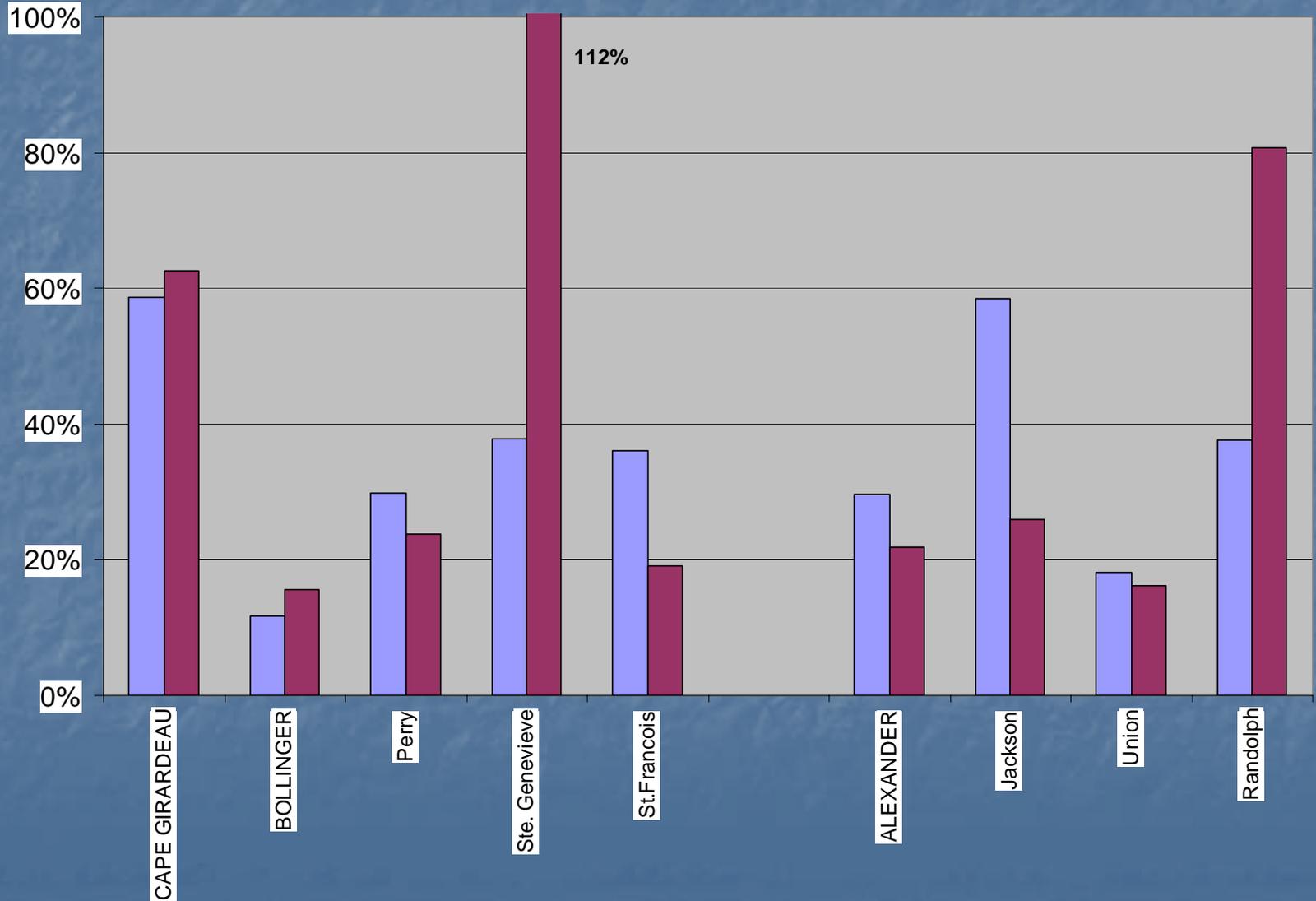
Eleven Boundary Criteria (cont.)

- Meteorology (weather and transport patterns)
- Geography/topography
- Jurisdictional boundaries (counties, air districts, current nonattainment area)
- Level of control of emission sources
- Regional emission reductions

Evaluation Data

- Emission totals and percentage of overall "area" inventory for each county
- Emission density plots
- Population/Urbanization
- Connectivity
- Growth
- Meteorological

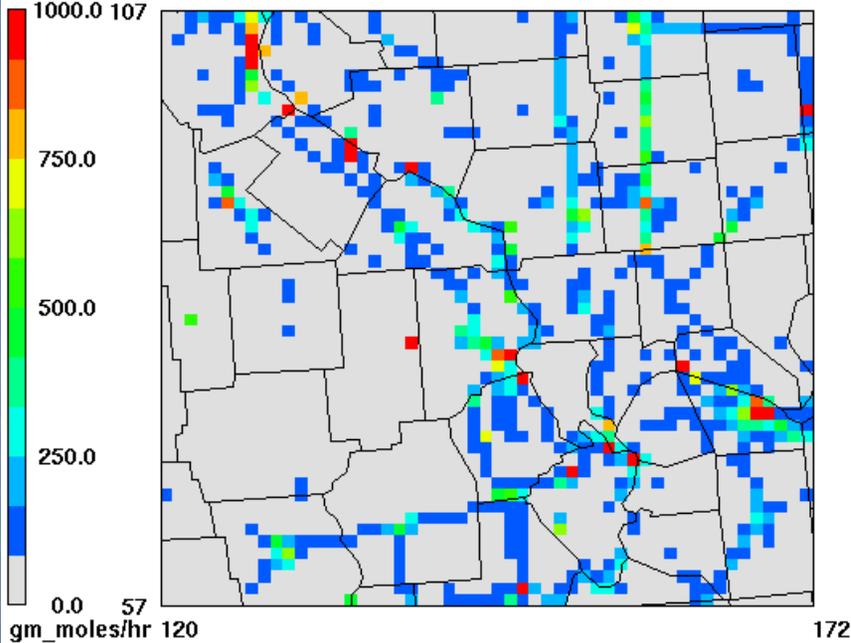
VOC/NOx - % MSA (2009)



NOx Emission Density

Total Low-level NOx Emissions (2009)

Density Plot
w=emiss_low.base4T_09_OTB.stl4km.20020707.CAMx

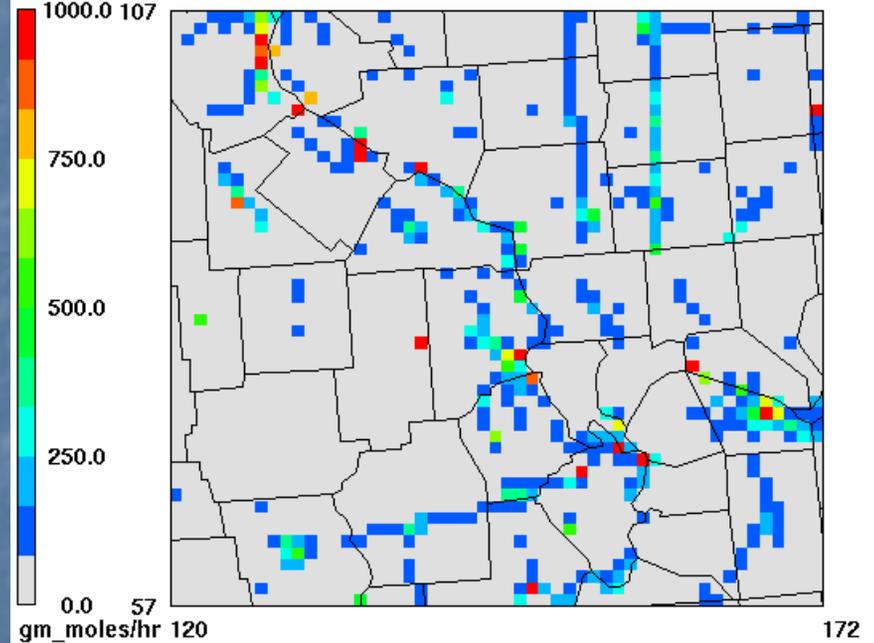


July 7, 2002 21:00:00
Min= 4.6 at (126,79), Max=4606.7 at (135,95)

July 7, 2002 – 8 AM

Total Low-level NOx Emissions (2009)

Density Plot
w=emiss_low.base4T_09_OTB.stl4km.20020707.CAMx



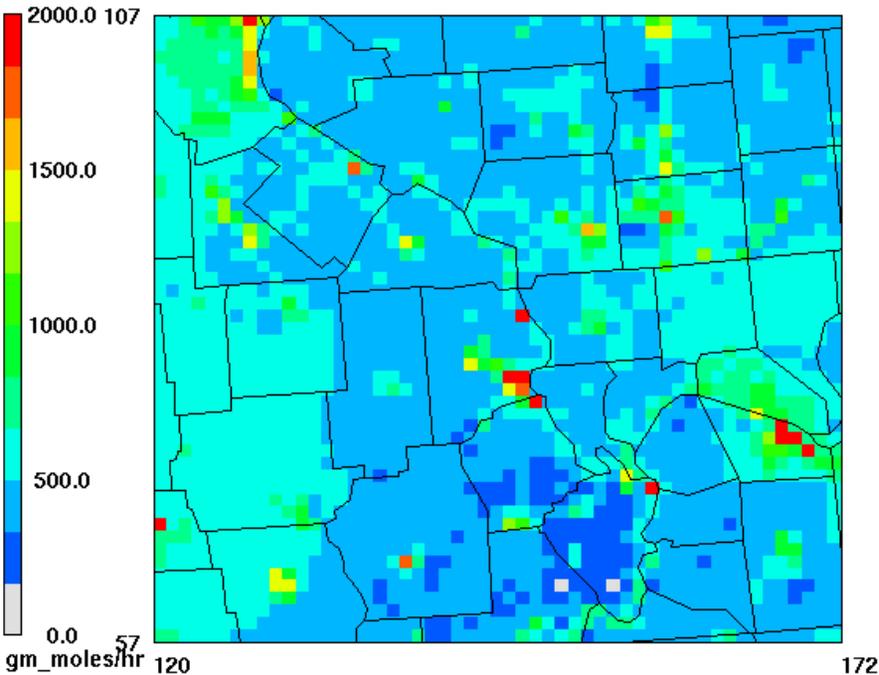
July 7, 2002 14:00:00
Min= 3.3 at (130,76), Max=4514.5 at (135,95)

July 7, 2002 – 3 PM

VOC Emission Density

Total Low-level VOC Emissions (2009)

Density Plot (minus ISOP and FORM)
w=emiss_low.base4T_09_OTB.stl4km.20020707.CAMx

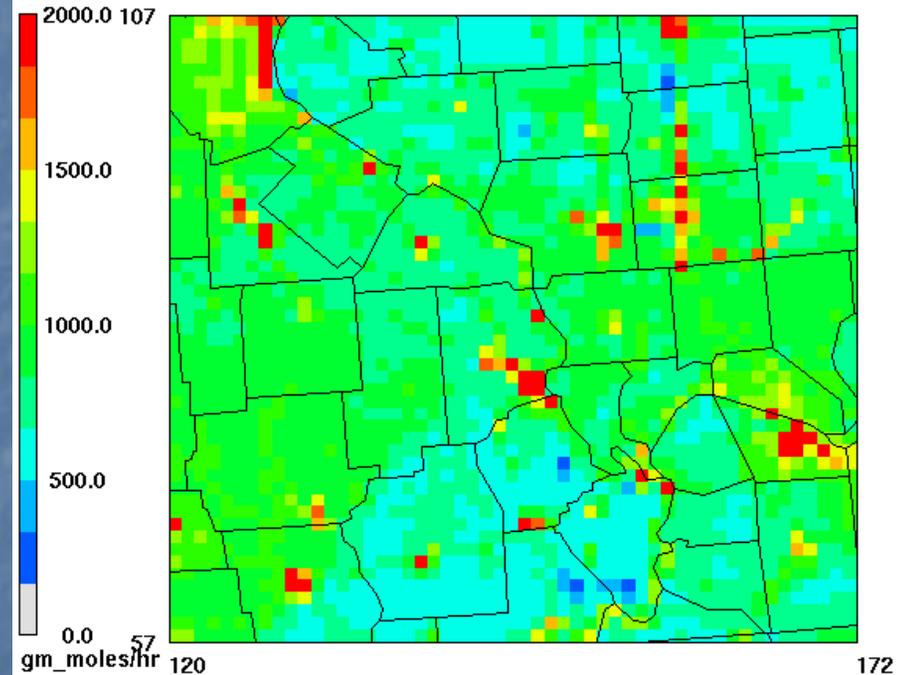


July 7, 2002 14:00:00
Min= 94.2 at (155,61), Max=10352.0 at (120,66)

July 7, 2002 – 8 AM

Total Low-level VOC Emissions (2009)

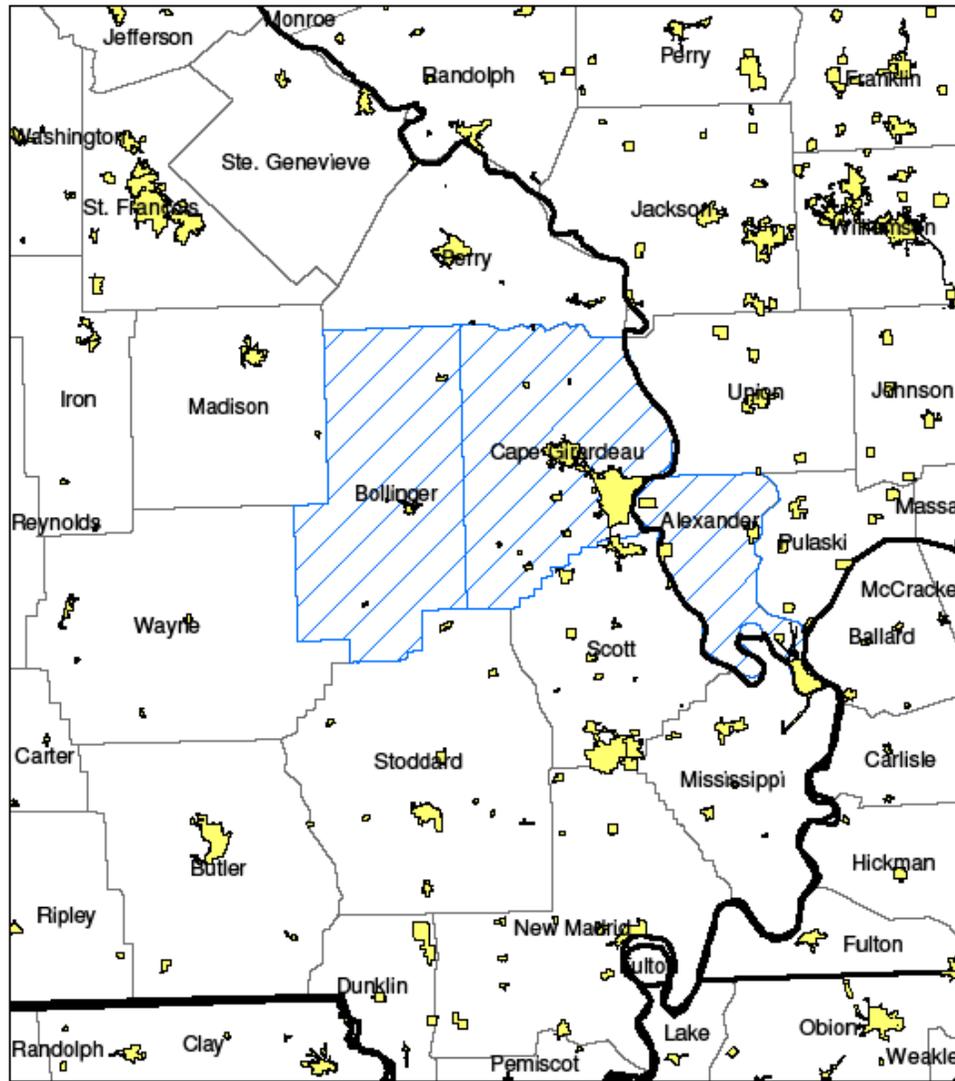
Density Plot (minus ISOP and FORM)
w=emiss_low.base4T_09_OTB.stl4km.20020707.CAMx



July 7, 2002 21:00:00
Min= 171.8 at (155,61), Max=10864.7 at (120,66)

July 7, 2002 – 3 PM

2000 Urbanization - Cape Girardeau



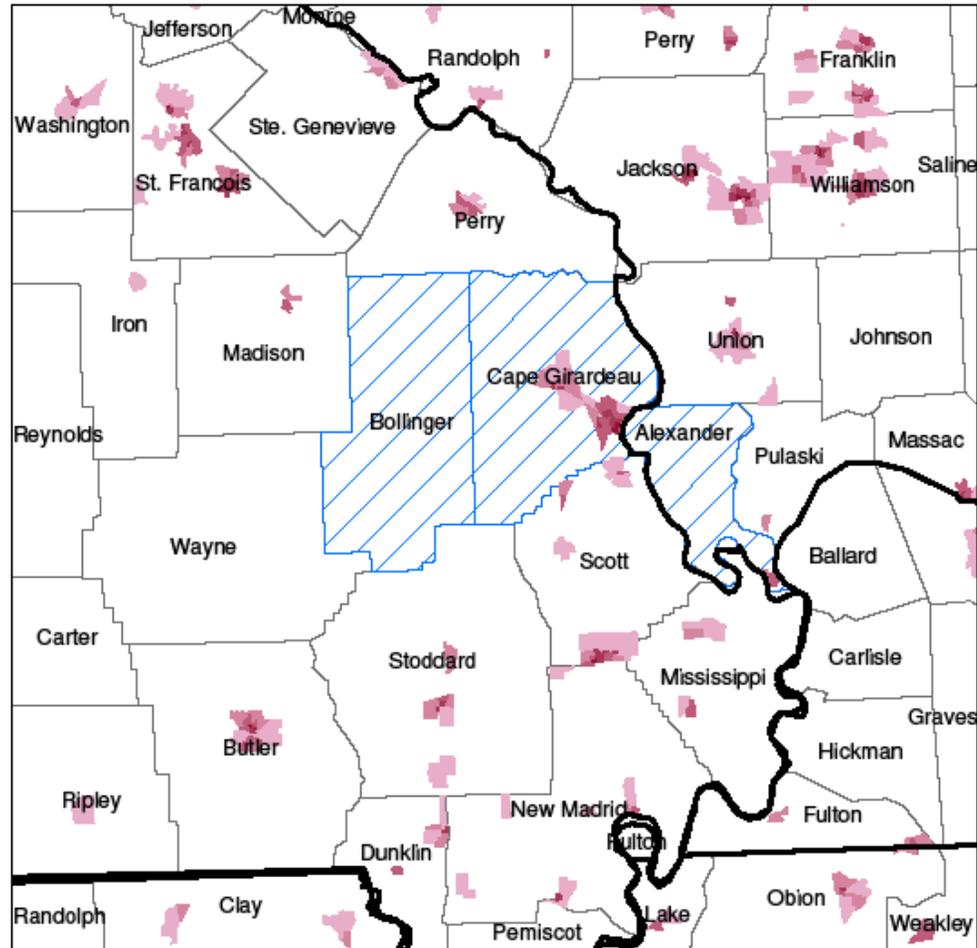
 Cape Girardeau MSA

 Urban Areas

 Department of Natural Resources
Division of Environmental Quality
Air Pollution Control Program
Prepared by Bern Johnson 4 AUG 2008



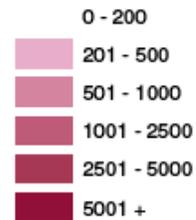
2000 Population Density - Cape Girardeau



 Cape Girardeau MSA



Population Density Persons / sq mile



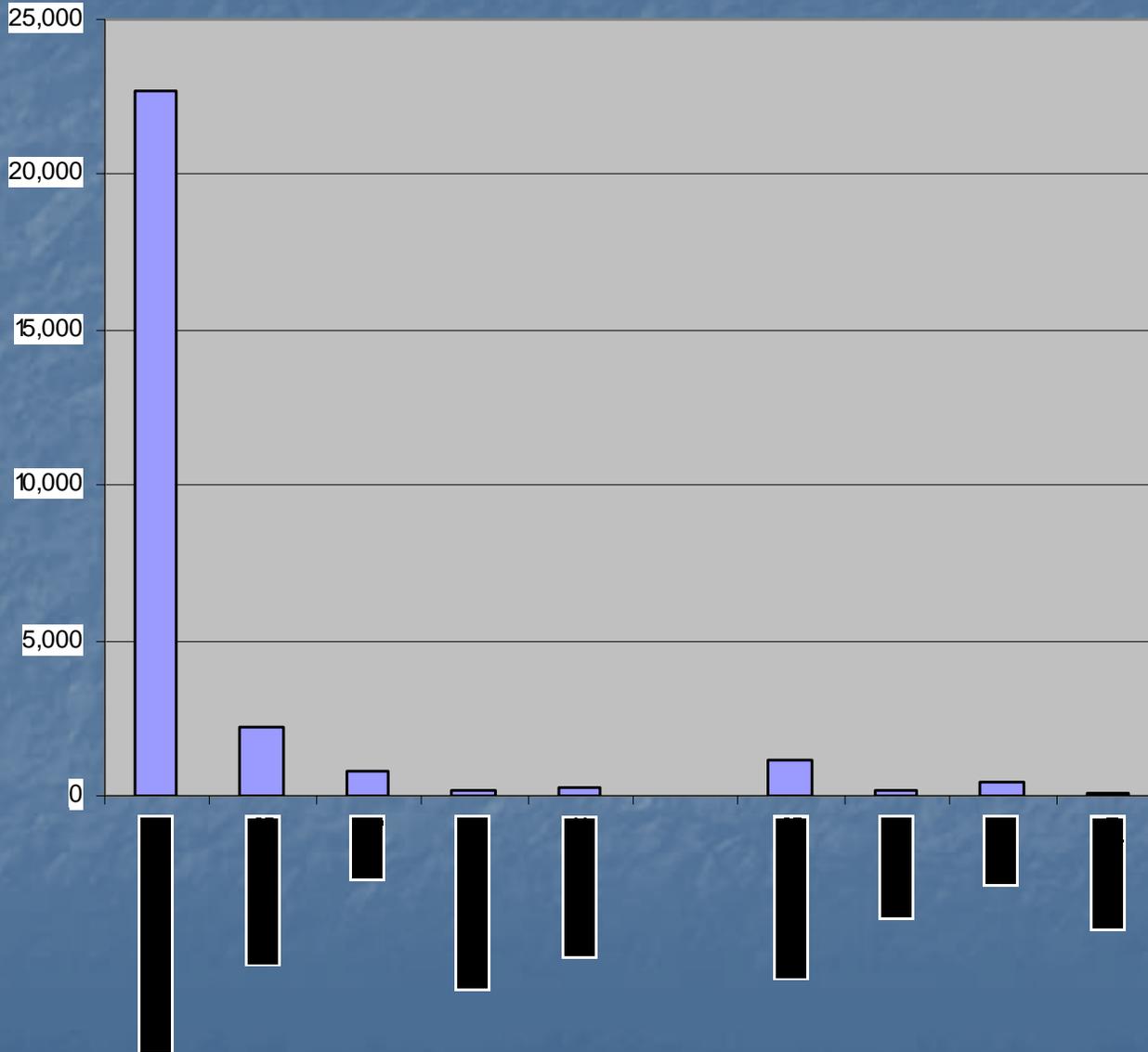
Department of Natural Resources
Division of Environmental Quality
Air Pollution Control Program
Prepared by Bern Johnson 4 AUG 2008



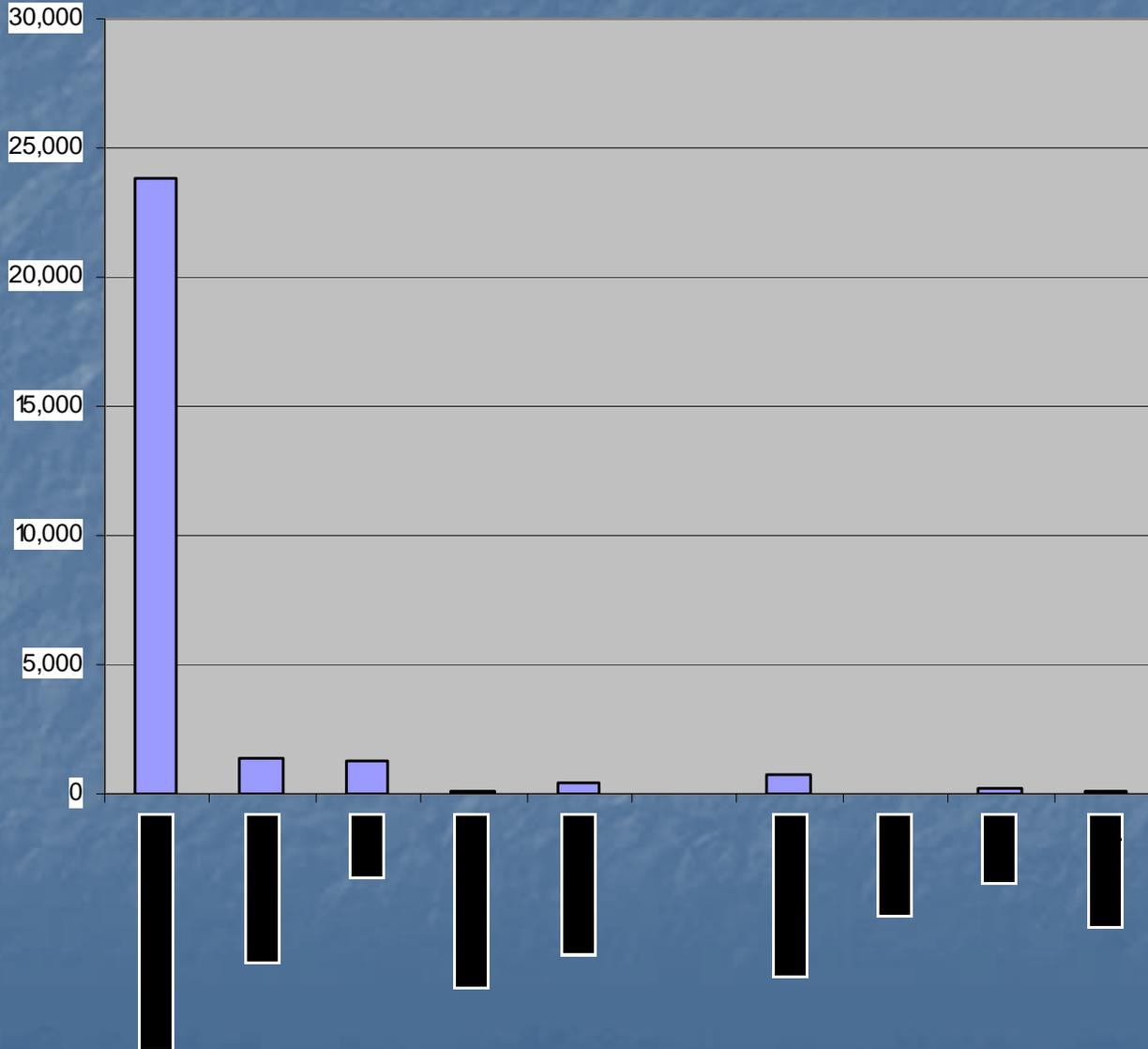
“Connectivity”

- Two ways to evaluate this:
 - Number of people living in one county working in another (i.e. people living in Cape Girardeau County working in Perry County)
 - Number of people working in one county living in another (i.e. people working in Cape Girardeau County living in Perry County)

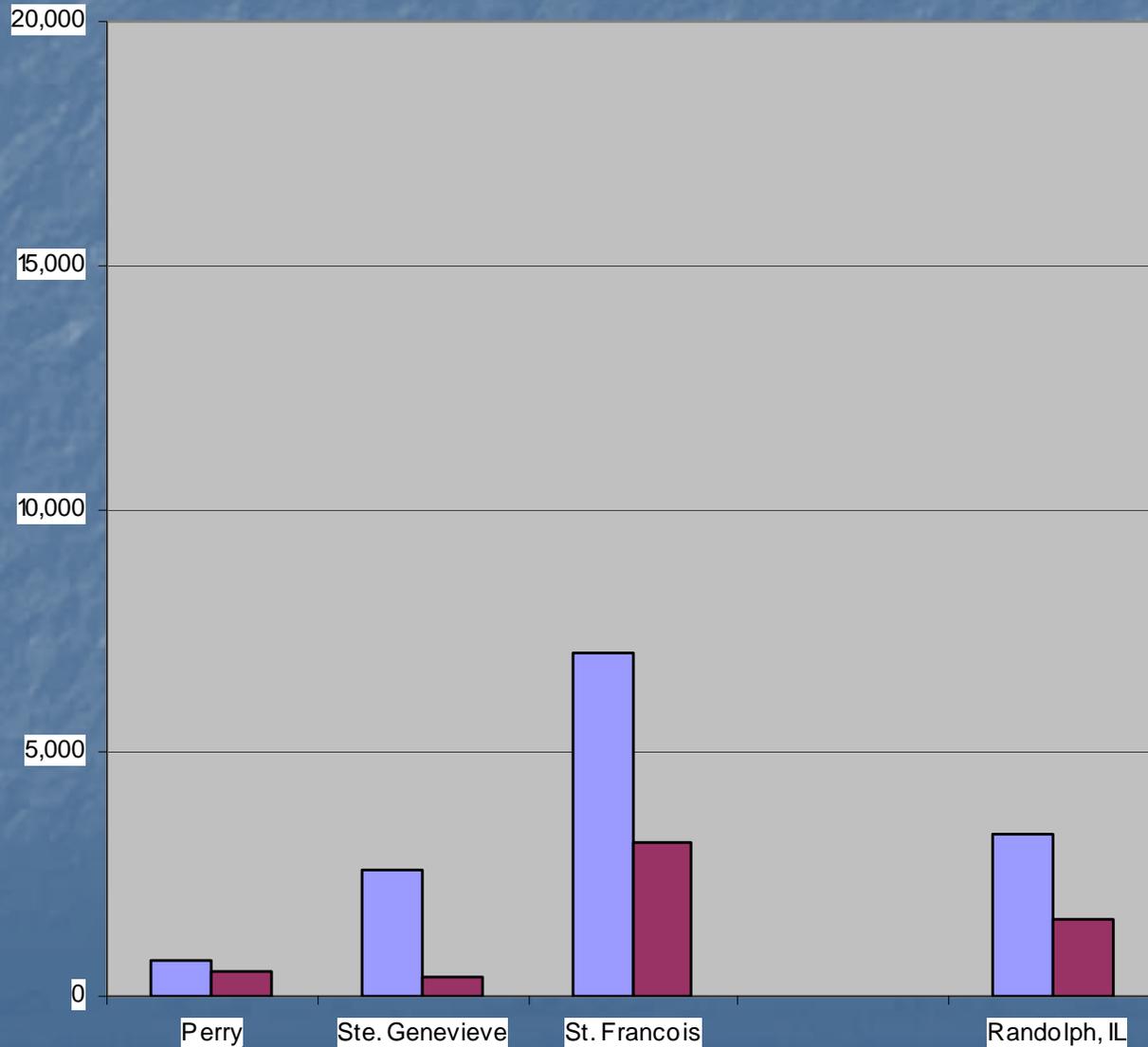
Working in MSA, Living in this County



Living in MSA, Working in this County



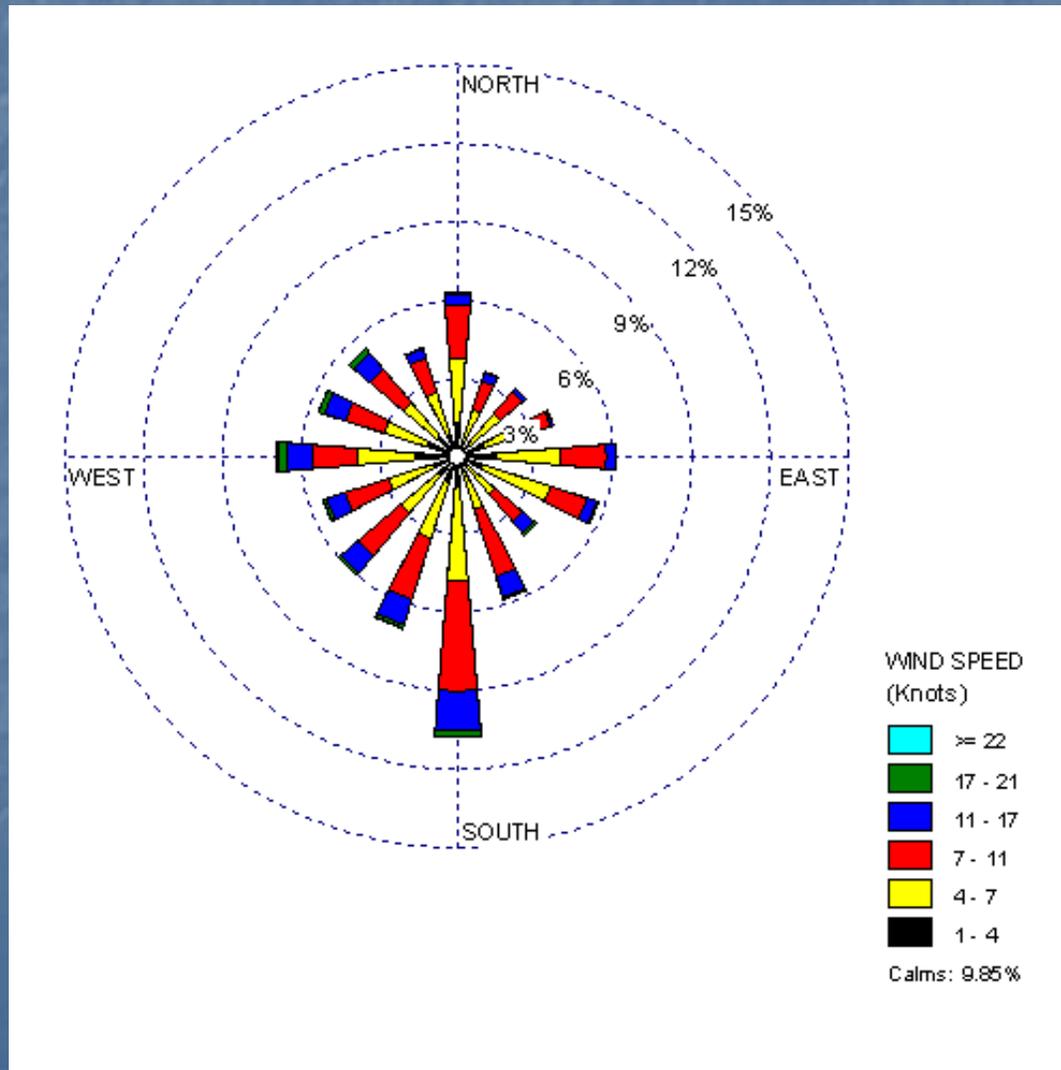
Working/Living in St. Louis MSA, Living/Working in County



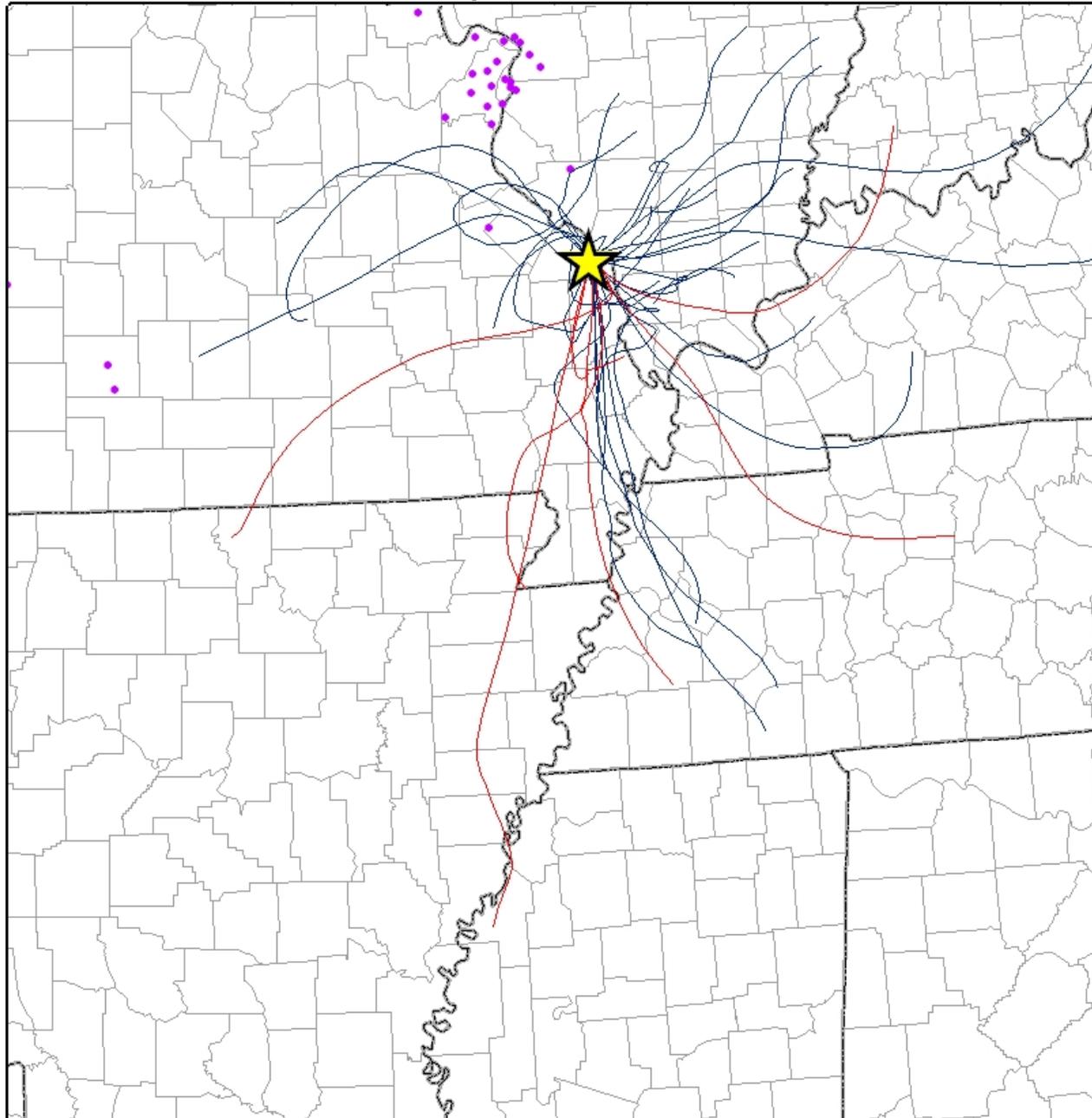
Population Growth

County	2000	2010	2020	2030	00-10 Growth %	00-20 Growth %
CAPE GIRARDEAU	68,693	74,106	79,916	84,612	7.9%	16.3%
BOLLINGER	12,029	12,260	12,555	12,805	1.9%	4.4%
Perry	18,132	18,948	20,100	21,164	4.5%	10.9%
St. Francois	55,641	64,538	69,815	73,382	16.0%	25.5%
Ste. Genevieve	17,842	17,899	18,161	18,426	0.3%	1.8%
ALEXANDER	9,590	9,501	9,933	10,464	-0.9%	3.6%
Jackson	59,710	61,574	63,719	63,825	3.1%	6.7%
Union	18,326	18,809	20,454	21,617	2.6%	11.6%
Randolph	33,951	34,432	35,743	37,004	1.4%	5.3%

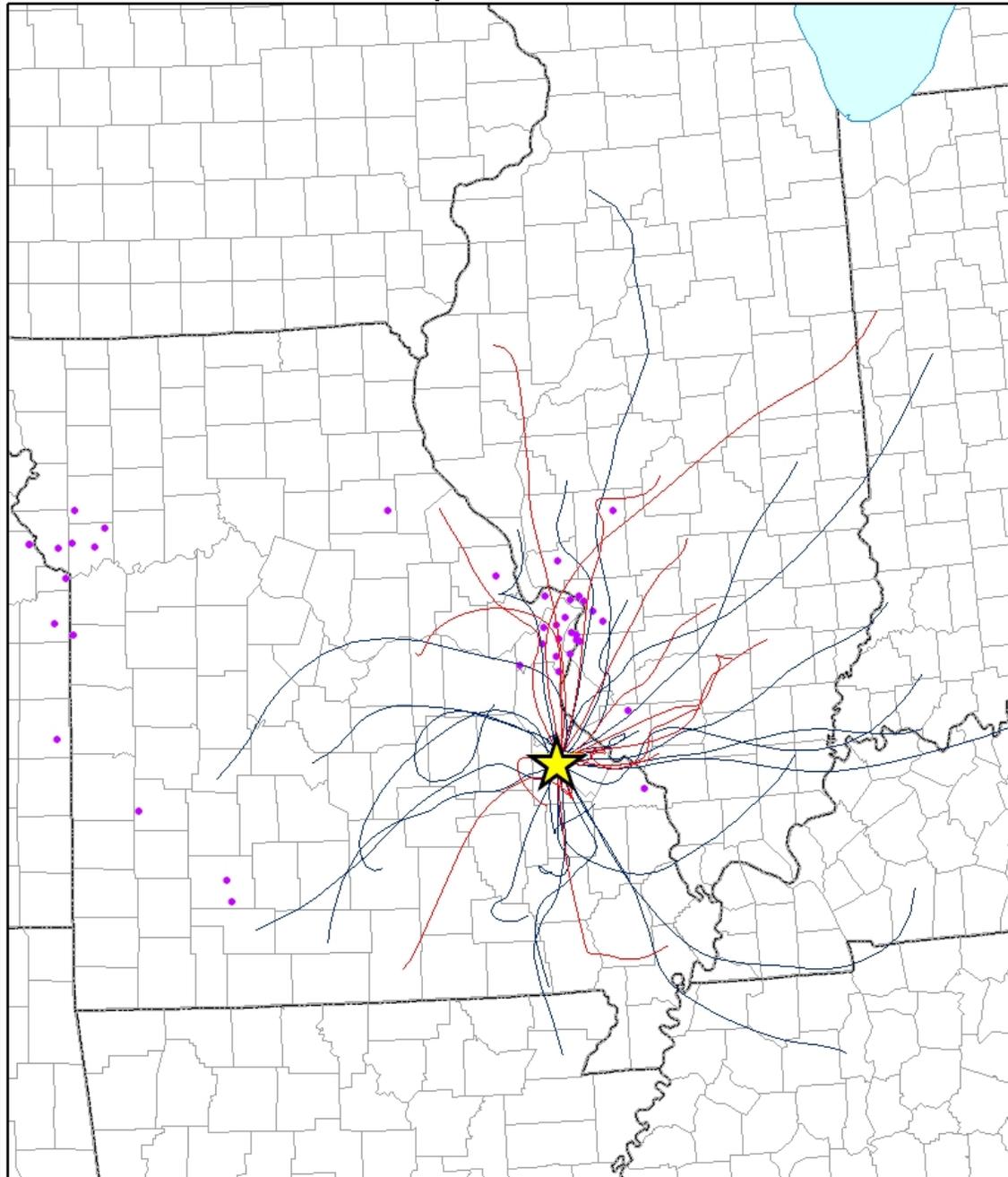
St. Louis – Lambert Wind Rose April – September (2003-2007)



Site: Farrar
Years of Operation: 2004-2007



Site: Bonne Terre
Years of Operation: 2003-2007



Timeline for Implementation

<u>Milestone</u>	<u>Date</u>
EPA Administrator signed final rule	March 12, 2008
Effective Day of final rule (60 days following the publication in the Federal Register)	June 2008
State provide recommendations on designations to EPA	March 2009 (based on 2005-2007 monitoring data)
Final Designations by EPA	March 2010
Effective Date of Designations	Summer 2010
SIPs Due	Summer 2013
Attainment Dates	2013-2030 depending on severity of problem

Opportunity for Input

- Review technical information posted on the webpage for ozone designation process
 - <http://www.dnr.mo.gov/env/apcp/ozone/8hourdesignationprocess.htm>
 - Meteorological data
 - Emission data
 - Commuter data
 - Eleven boundary criteria
 - Population / Growth data
 - Provide comments on any data, if necessary (especially on population growth, economic growth/business development)

Next Steps in Designation Process

- One additional stakeholder meeting
- Last meeting expected to be late September
 - Provide draft designation boundaries for areas
 - Designations proposed at that time will not necessarily be final
 - Opportunity to review technical data and logic for recommendation
- Ultimately, EPA will make final boundary decision

Missouri Timeline for Boundary Designation Submission

- Missouri will follow normal MACC adoption process
- Public comment period
 - Comment period to start in late October
- Public hearing
 - December MACC meeting
- MACC adoption of boundary recommendations
 - February MACC meeting

Questions/Comments?

Jeffry D. Bennett, PE
Air Quality Modeling Unit Chief
jeff.bennett@dnr.mo.gov
573-751-4817