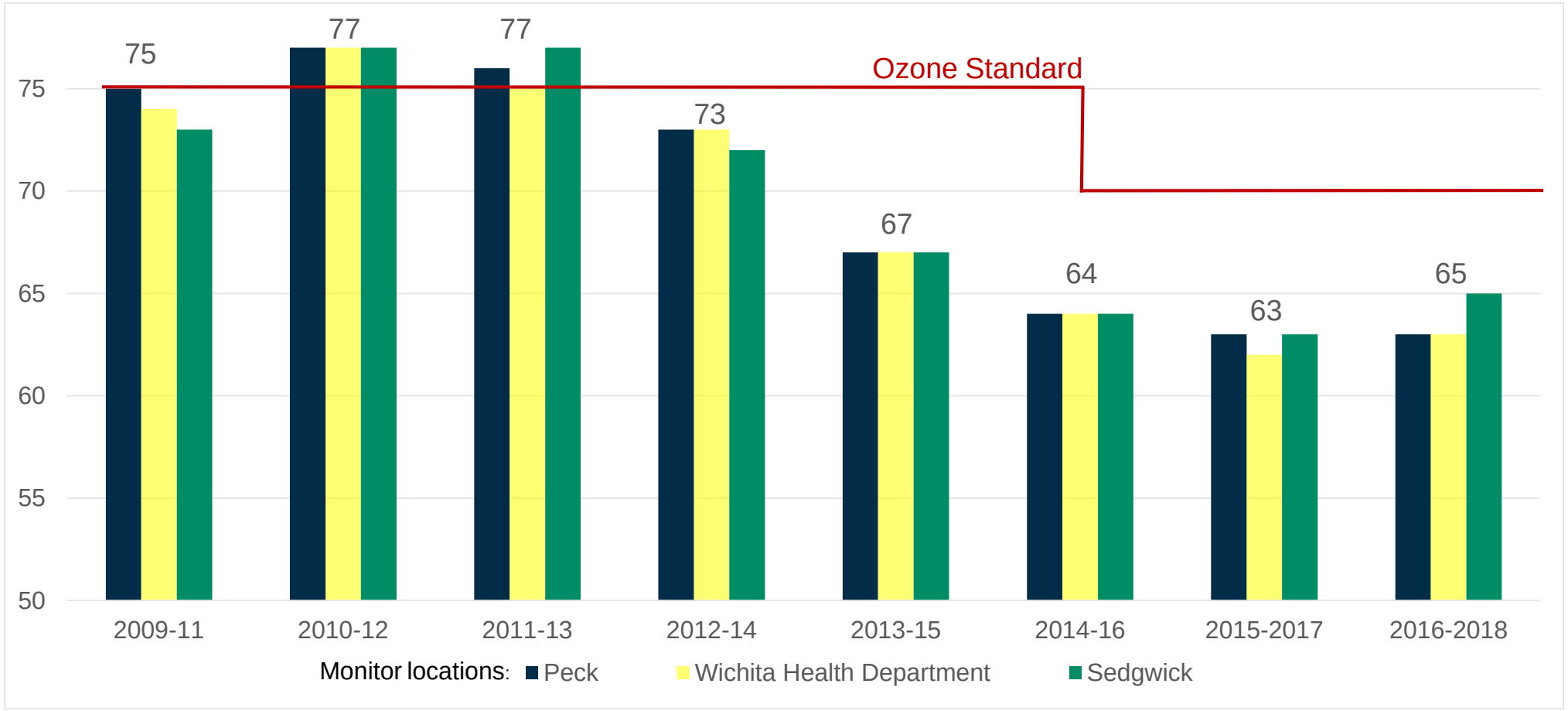
Wichita MSA Attainment Status



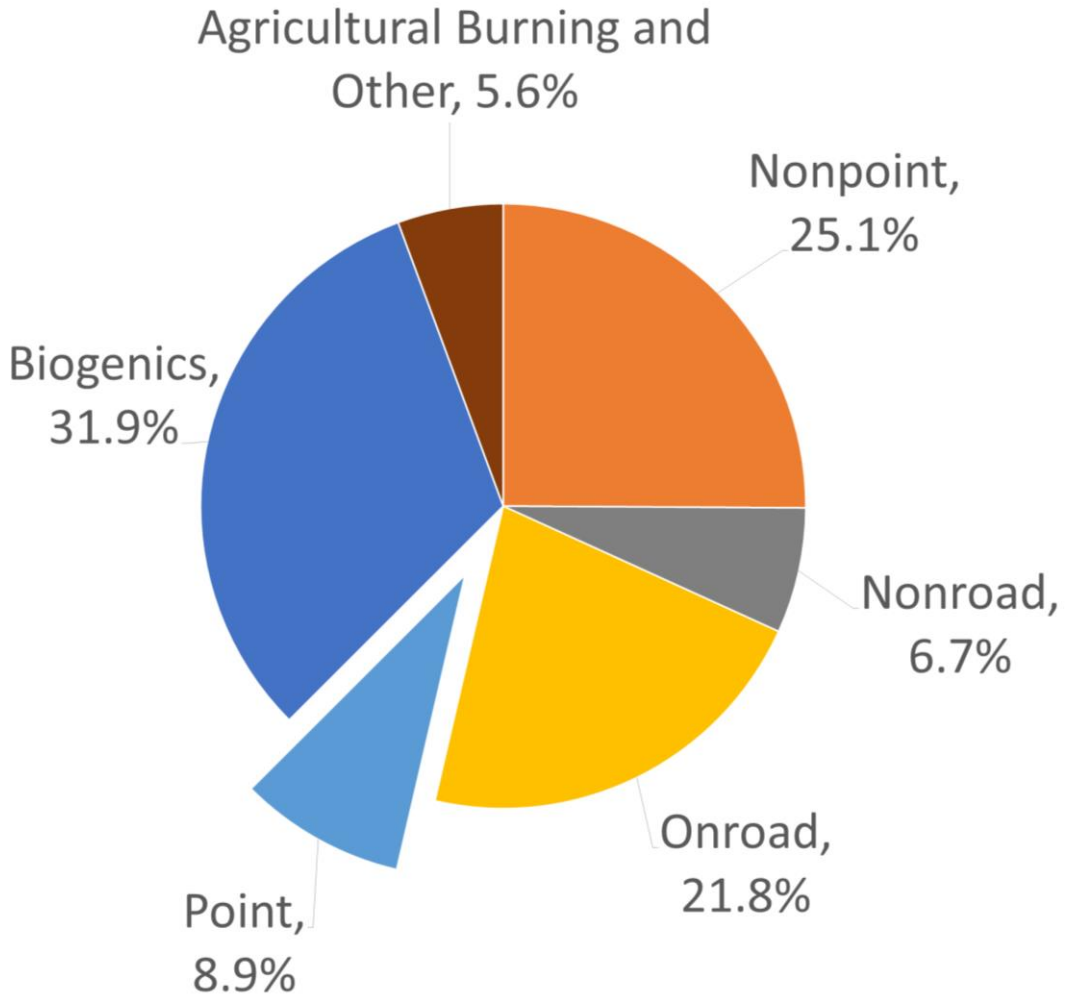
Program Refresh

- In 2017 the City of Wichita evaluated the Ozone Advance program to determine new emission reduction targets and strategies
- The evaluation began with an Emissions Inventory, completed by City staff
- The Emissions Inventory was intended to identify areas where emission reductions should occur and inform source-facing strategies

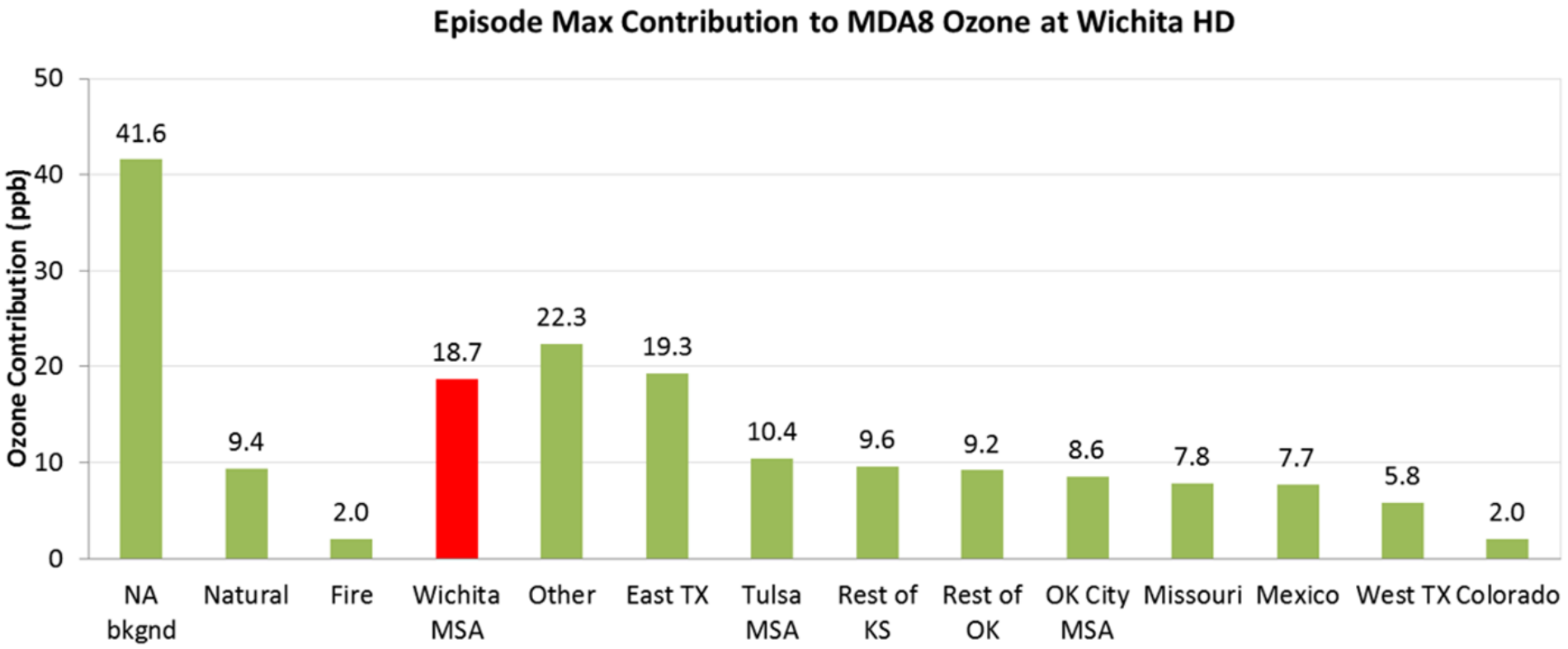
Emissions Inventory Findings Summary

2014 Total Emissions—by pollutant	83,411,000 tons
NOx Emissions *Nitrogen Oxides*	30,531,000 tons
VOC Emissions *Volatile Organic Compounds*	52,881,000 tons

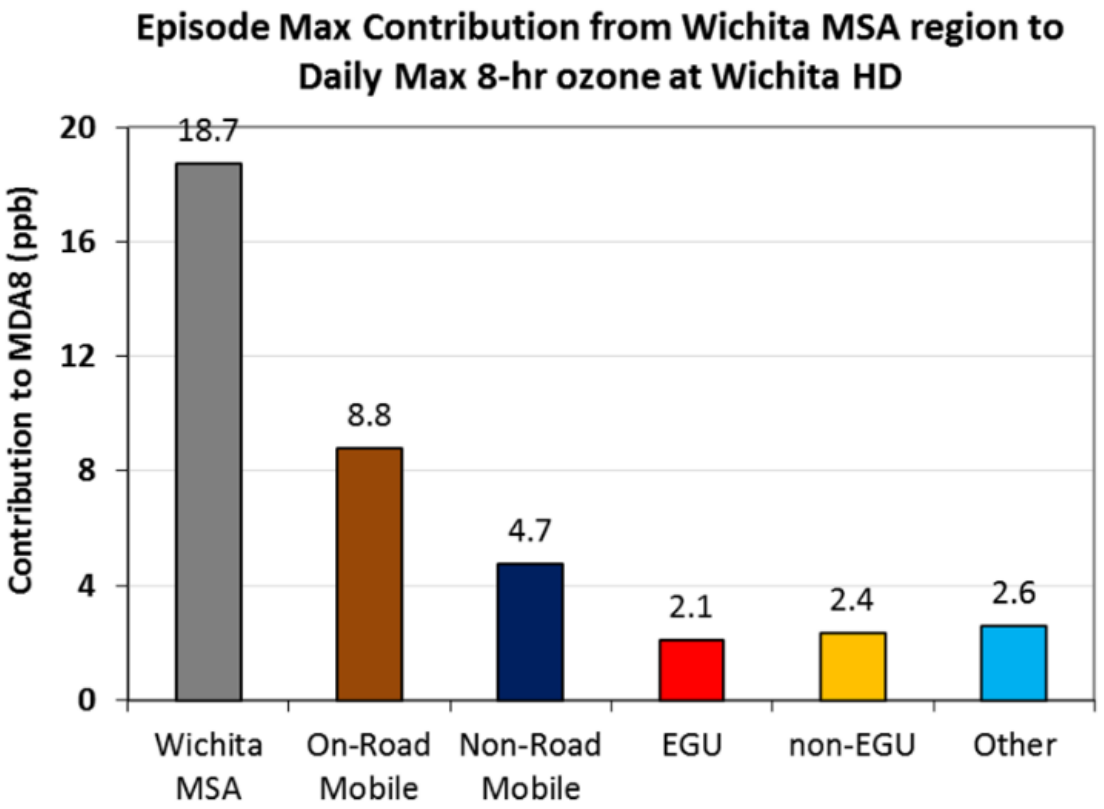
2014 Total Emissions—by source	83,411,000 tons
Anthropogenic – 62.5% *Man-Made Sources*	52,132,000 tons
Outside our Control – 37.5% *Biogenic, agricultural burns, and unidentifiable sources*	31,279,000 tons

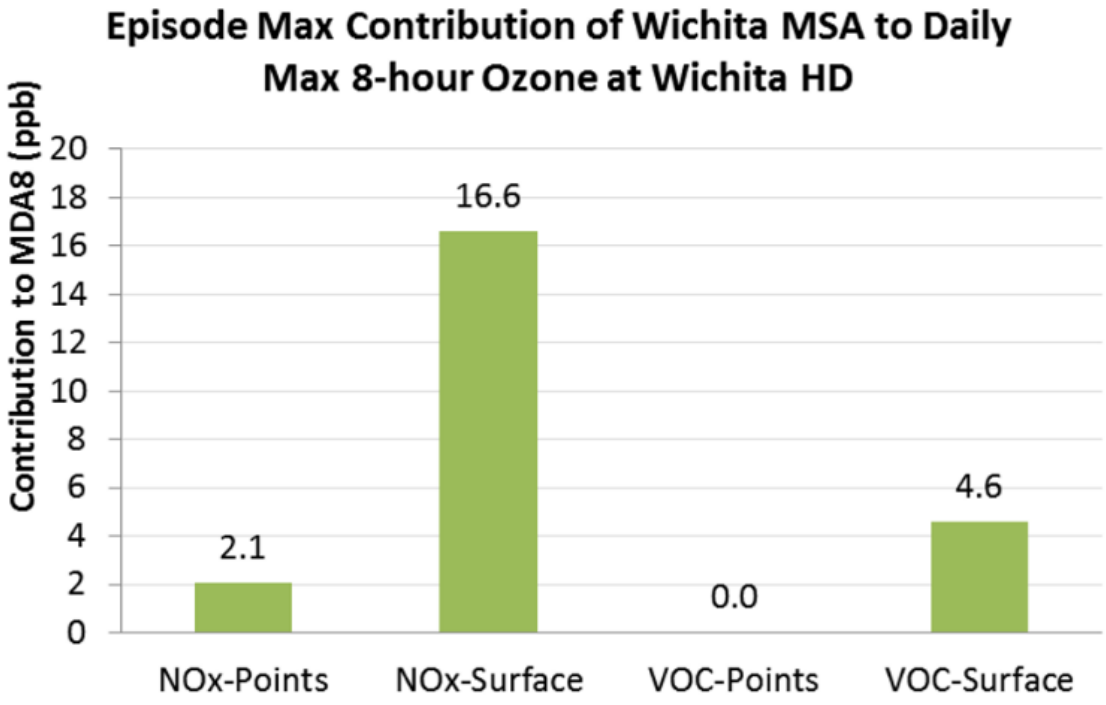


Results: Maximum Impact on Wichita Ozone by Region



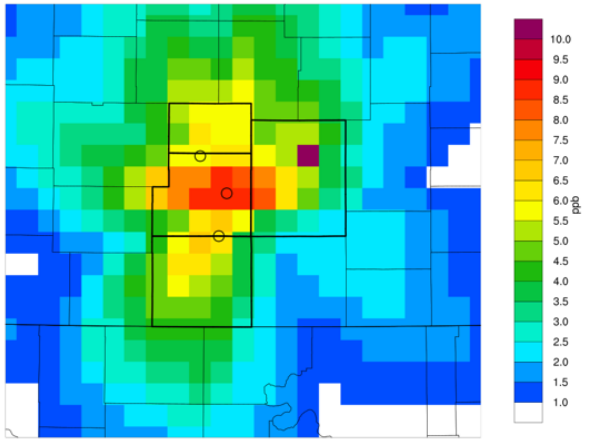
Results: Contribution of Local Emissions





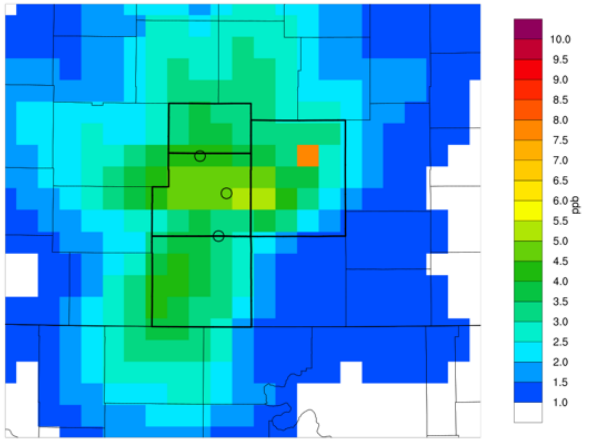
Episode Maximum Contribution to MDA8 Ozone

On-Road Mobile



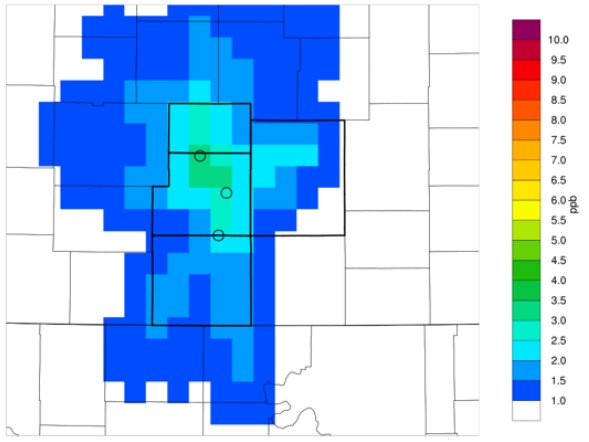
Max(81,114) = 10.8

Off-Road Mobile



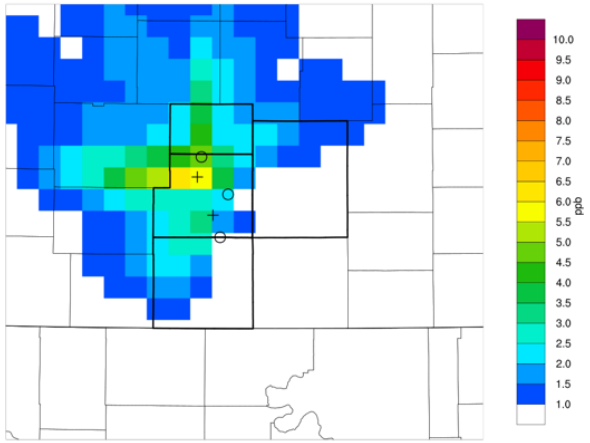
Max(81,114) = 7.9

Other Area Sources



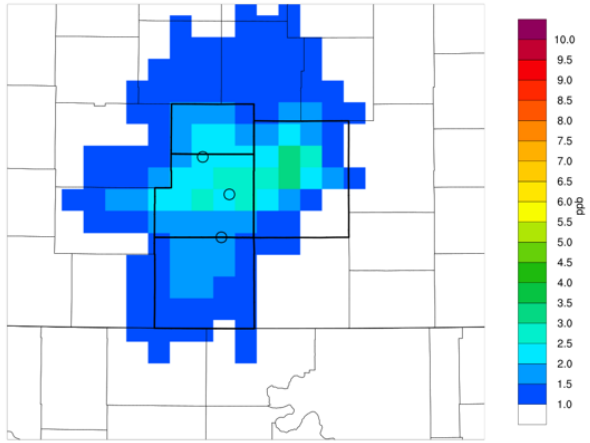
Max(77,113) = 3.3

EGU Point Sources



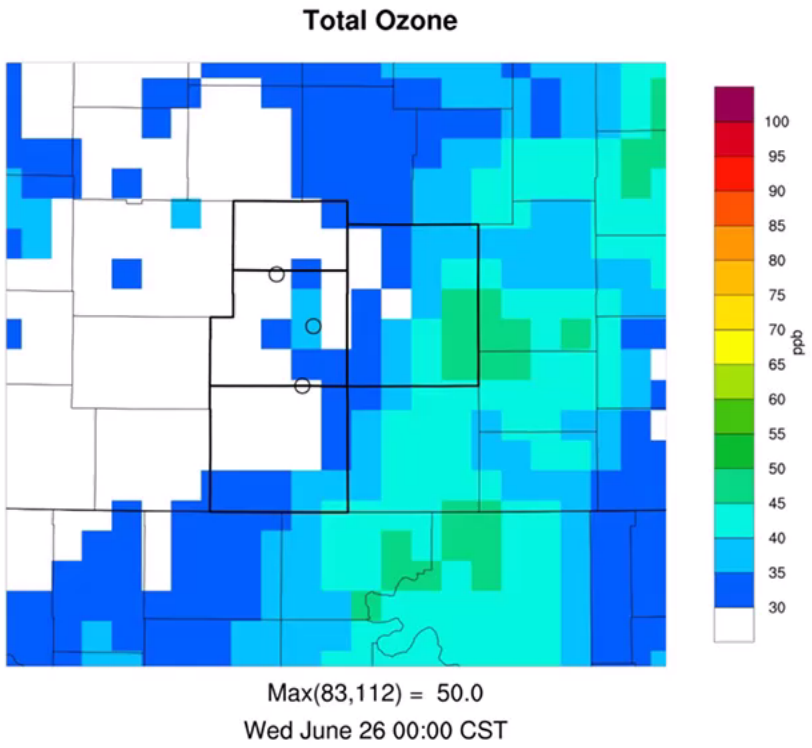
Max(75,113) = 6.0

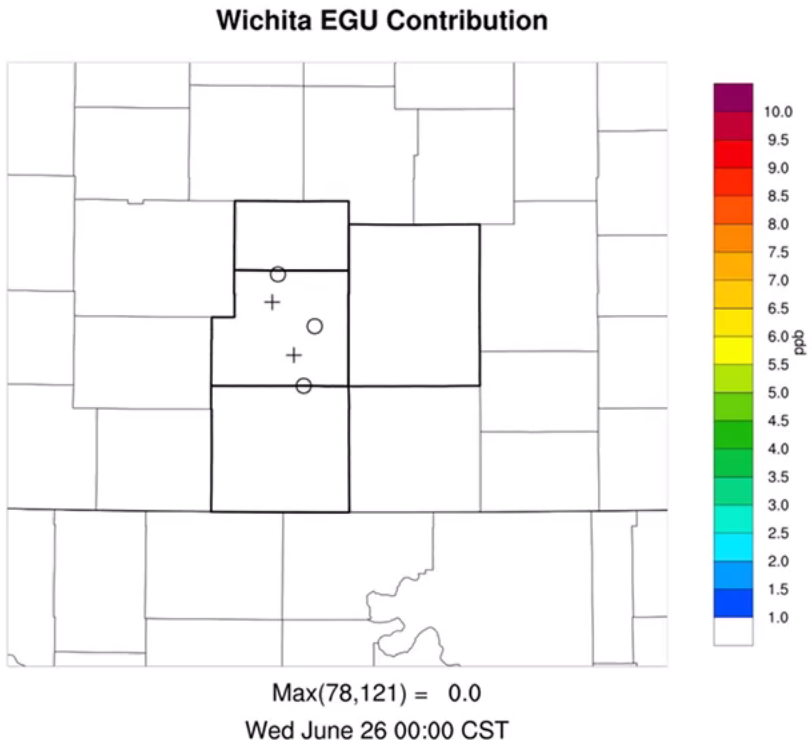
Non-EGU Point Sources

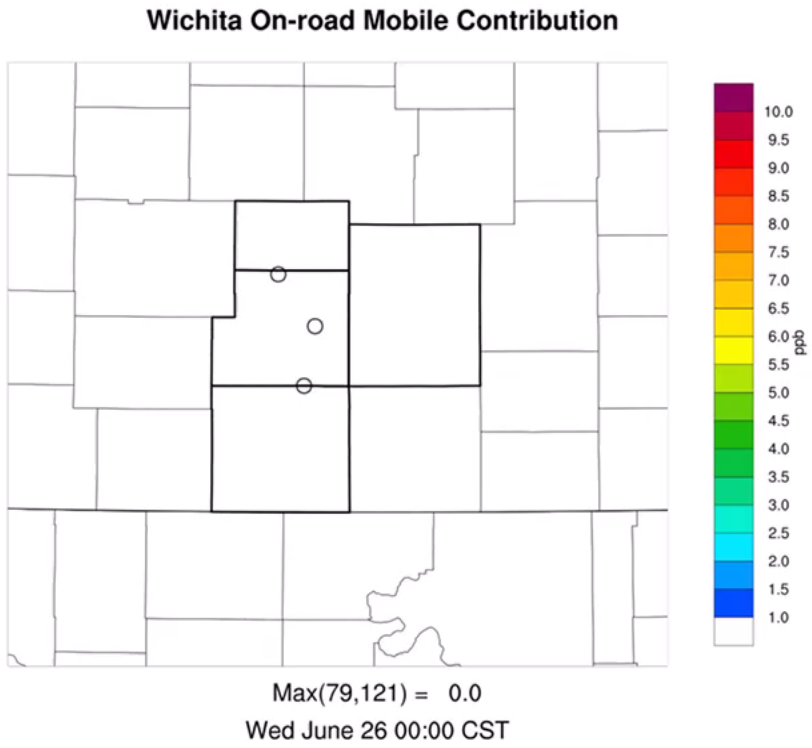


Max(80,113) = 3.3

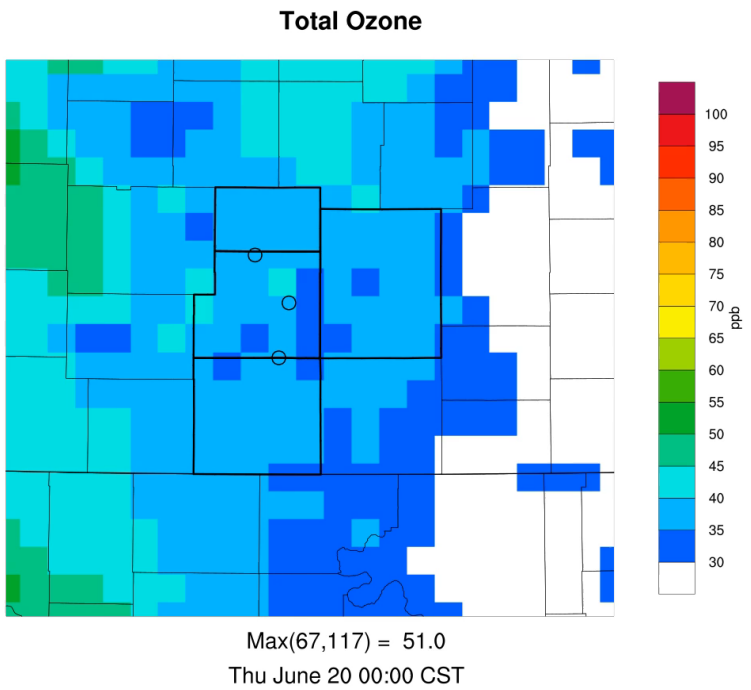
CAMx Ozone Model Animation: June 26th

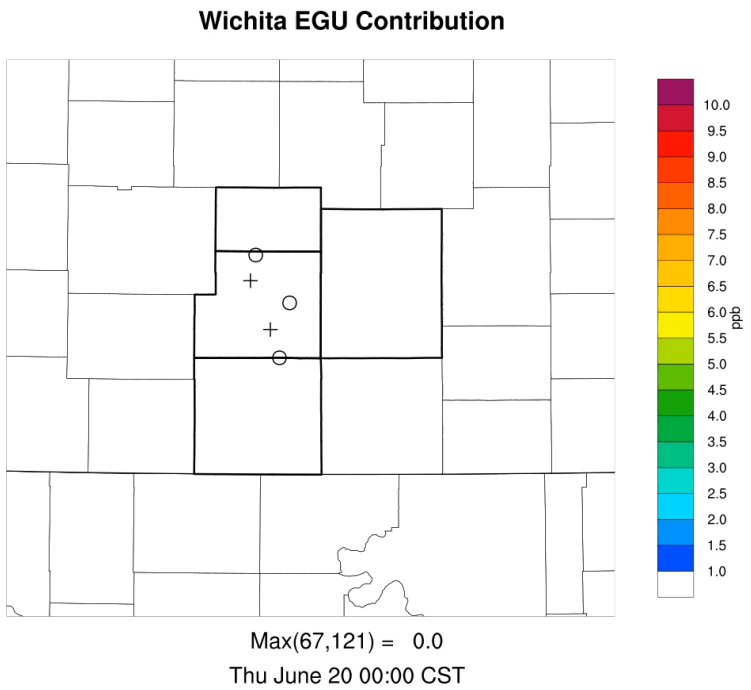


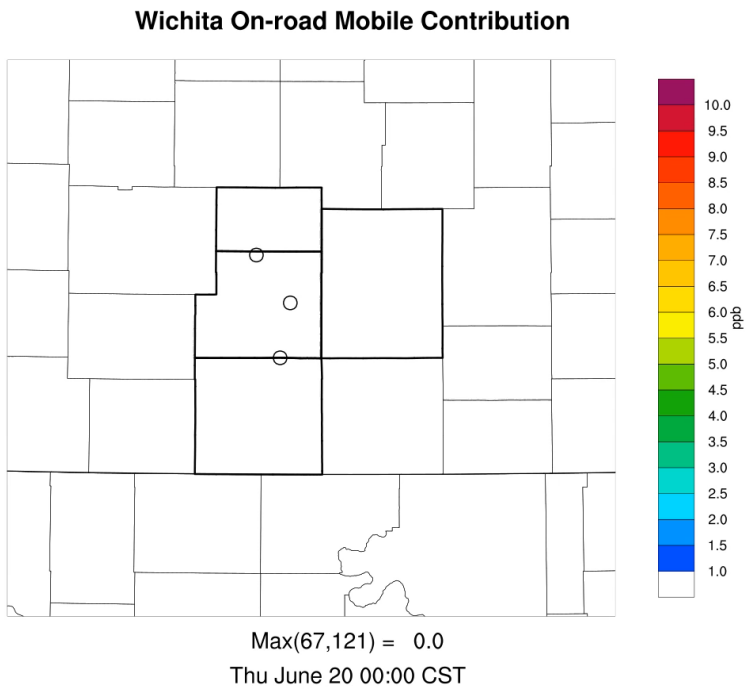




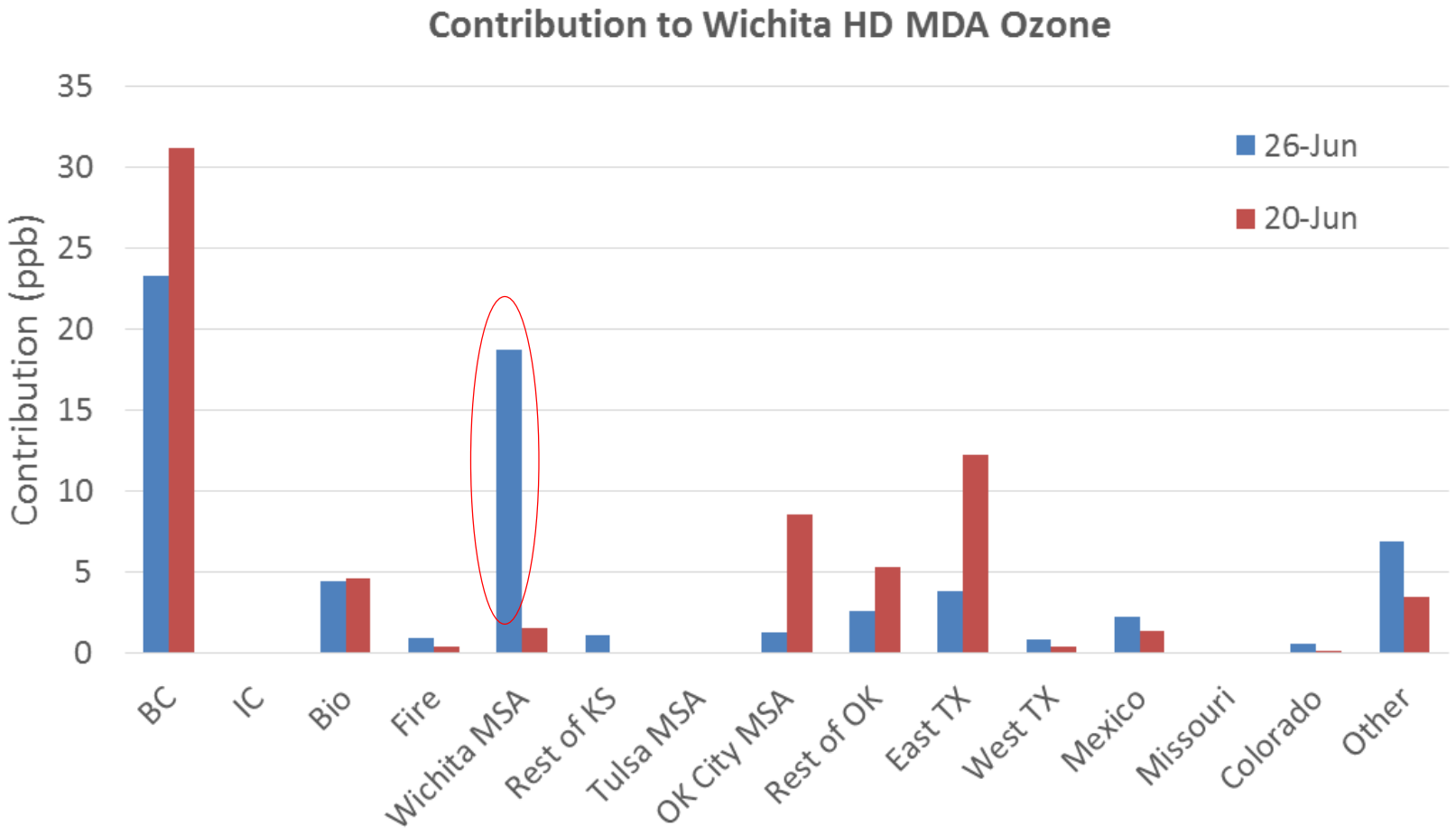
CAMx Ozone Model Animation: June 20th





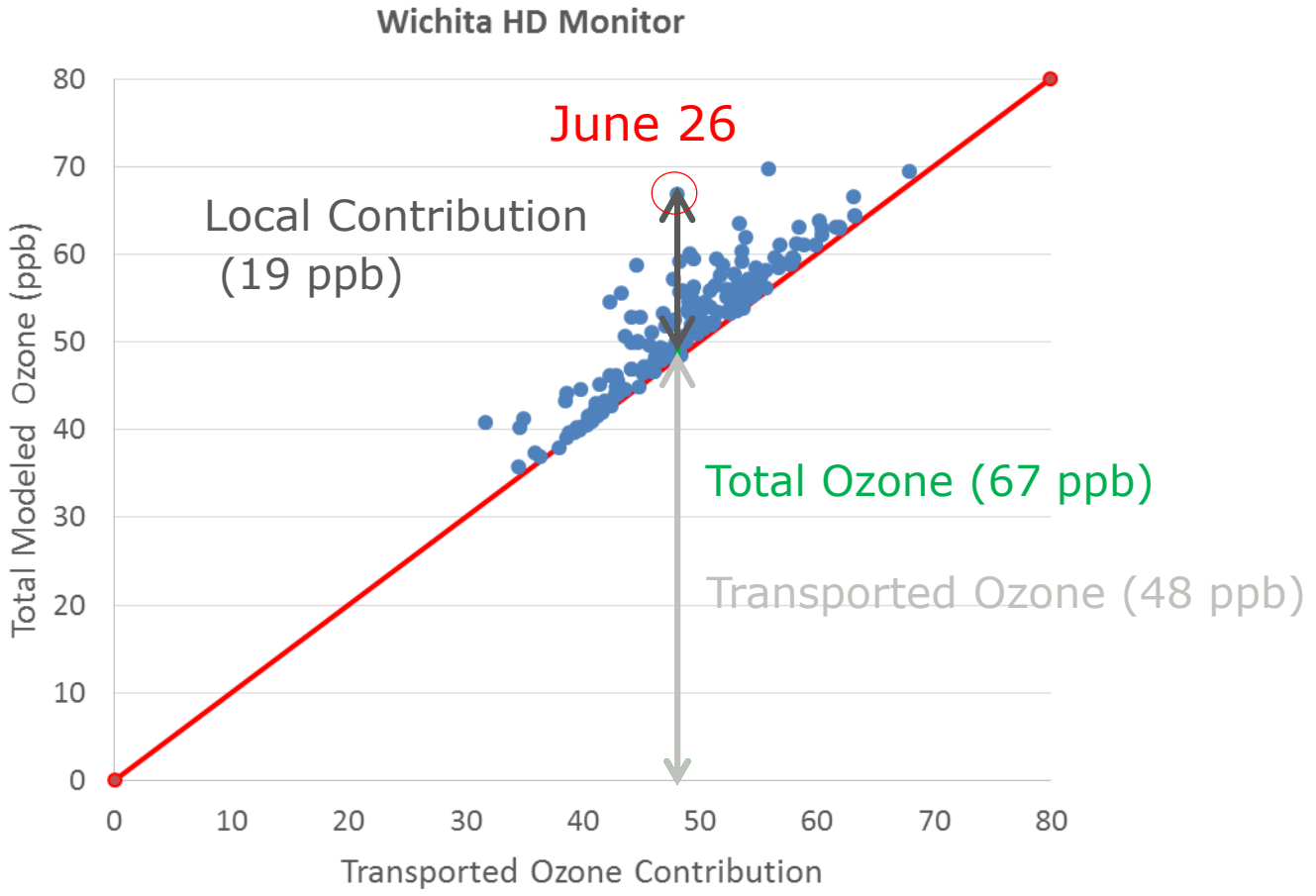


Comparison of Source Apportionment: June 26th vs 20th



Transport vs. Local Contribution

- June 26 has largest value of local contribution
- Some of the days with highest ozone have small (<5 ppb) local contribution
- Local emissions reductions will have a small impact on these days
- Modeling suggests Wichita can be brought to the brink of an exceedance through transport alone



City of Wichita Decision Support Tool

- Tool estimates effect of emissions reduction on ozone at Wichita monitors
  - Modeled (base) emissions shown in table
  - Enter reduced emissions in blue grid cells in either tons per day or tons per year
  - Tool calculates how ozone changes on 15 highest days at each monitors due to emissions reduction
- Calculation based on ozone model results

City of Wichita Decision Support Tool

Wichita MSA Emissions Reduction Selector

Emissions Units: tons per day (Select emissions units)

Wichita Emissions Source Category	Modeled Emissions (tons per day)		Controlled Emissions (tons per day)		Percent Reduction (%)	
	NOx	VOC	NOx	VOC	NOx	VOC
On-Road Mobile	27.7	14.3	22.2	14.3	20.0%	0.0%
Off-Road Mobile	23.9	9.8	23.9	9.8	0.0%	0.0%
Electricity Generating Units (EGU)	4.8	0.1	4.8	0.1	0.0%	0.0%
Other Points Sources (non-EGU)	9.6	9.9	9.6	9.9	0.0%	0.0%
Area Sources	12.4	40.7	12.4	40.7	0.0%	0.0%
Total Emissions	78.3	74.7	72.8	74.7	7.1%	0.0%

Cells for user input on emissions after controls are in place

4th high value of daily maximum 8-hour ozone (MDA8) value

Ozone Results

Wichita Health Department

Rank	Uncontrolled scenario		Controlled Scenario	
	Date	MDA8 Ozone (ppb)	Date	MDA8 Ozone (ppb)
1	5/31/2013	69.8	6/20/2013	69.3
2	6/20/2013	69.5	5/31/2013	68.9
3	6/26/2013	66.8	8/21/2013	66.3
4	8/21/2013	66.6	6/26/2013	65.1
5	6/11/2013	64.4	6/11/2013	64.3
6	6/22/2013	64.4	6/22/2013	64.3
7	8/22/2013	63.8	8/22/2013	63.5
8	6/18/2013	63.5	6/24/2013	63.0
9	6/21/2013	63.1	6/21/2013	62.9
10	6/24/2013	63.1	6/25/2013	62.8
11	8/20/2013	63.0	6/18/2013	62.8
12	7/8/2013	63.0	7/8/2013	62.8
13	6/25/2013	62.9	8/20/2013	62.6
14	7/25/2013	62.3	7/25/2013	62.1
15	7/23/2013	61.9	7/23/2013	61.3
Average of Top 15 Days (ppb)		64.5		64.1
Lower end of range (ppb)		61.9		61.3
Upper end of range (ppb)		69.8		69.3

City of Wichita Decision Support Tool Example Application

- How do Wichita MSA emissions affect MDA8 ozone on the highest days at Wichita HD?
- Zero out Wichita MSA emissions
- Several days drop out of top 15
  - June 26 has 19 ppb local contribution (episode max)
- 4th high MDA8 value lowered by 3.4 ppb
- Some of the highest days (June 20) have small local contribution

City of Wichita Decision Support Tool

Wichita MSA Emissions Reduction Selector

Emissions Units: tons per day (Select emissions units)

Wichita Emissions Source Category	Modeled Emissions (tons per day)		Controlled Emissions (tons per day)		Percent Reduction (%)	
	NOx	VOC	NOx	VOC	NOx	VOC
On-Road Mobile	27.7	14.3	0.0	0.0	100.0%	100.0%
Off-Road Mobile	23.9	9.8	0.0	0.0	100.0%	100.0%
Electricity Generating Units (EGU)	4.8	0.1	0.0	0.0	100.0%	100.0%
Other Points Sources (non-EGU)	9.6	9.9	0.0	0.0	100.0%	100.0%
Area Sources	12.4	40.7	0.0	0.0	100.0%	100.0%
Total Emissions	78.3	74.7	0.0	0.0	100.0%	100.0%

Cells for user input on emissions after controls are in place

4th high value of daily maximum 8-hour ozone (MDA8) value

Ozone Results

Wichita Health Department

Rank	Uncontrolled scenario		Controlled Scenario	
	Date	MDA8 Ozone (ppb)	Date	MDA8 Ozone (ppb)
1	5/31/2013	69.8	6/20/2013	67.9
2	6/20/2013	69.5	6/22/2013	63.3
3	6/26/2013	66.8	6/11/2013	63.2
4	8/21/2013	66.6	8/21/2013	63.2
5	6/11/2013	64.4	6/24/2013	62.0
6	6/22/2013	64.4	6/25/2013	61.9
7	8/22/2013	63.8	6/21/2013	61.6
8	6/18/2013	63.5	7/25/2013	60.5
9	6/21/2013	63.1	7/8/2013	60.5
10	6/24/2013	63.1	8/22/2013	60.2
11	8/20/2013	63.0	6/23/2013	59.8
12	7/8/2013	63.0	7/4/2013	58.9
13	6/25/2013	62.9	8/20/2013	58.5
14	7/25/2013	62.3	8/27/2013	58.2
15	7/23/2013	61.9	4/30/2013	58.1
Average of Top 15 Days (ppb)		64.5		61.2
Lower end of range (ppb)		61.9		58.1
Upper end of range (ppb)		69.8		67.9