

Inspection and Maintenance Program for the St. Louis Area – 2019 Revision

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Overview

- History of the I/M program in St. Louis
- Ozone Standard Boundary Designations (Historical and Current)
- Requirements to remove I/M programs
- Maintenance plan revisions
- Technical analysis

History of the I/M Program

- Original St. Louis I/M Program began in 1984
 - Franklin, Jefferson, St. Charles, and St. Louis counties and the City of St. Louis
- Four major revisions: 1990, 1995, 1999, and 2007 - Gateway Vehicle Inspection Program (GVIP)
- GVIP – Decentralized on-board diagnostics test required every two years for 1996 and newer (gas) and 1997 and newer (diesel) vehicles with gross vehicle weight rating 8,500 pounds or less

Ozone Standard Boundary Designations (Historical and Current)

St. Louis (MO) Ozone Nonattainment Areas

1979, 1997, and 2008
ozone standards

- Franklin, Jefferson, St. Charles, and St. Louis counties and City of St. Louis
- The full area has been redesignated to attainment for all three historical ozone standards

2015 ozone standard

- St. Charles and St. Louis counties, City of St. Louis and Boles Township in Franklin County
- Does not include Jefferson County or any area in Franklin County except for Boles Township

Requirements to Remove I/M Programs

40 CFR 51 Subpart S – Inspection and Maintenance Program Requirements

- Removal after attainment - requires EPA approval of a demonstration that emissions related to the removal of I/M would not negatively impact future maintenance of the ozone standard

Clean Air Act Section 110(I)

- EPA cannot approve any plan revision that would interfere with attainment or reasonable further progress of any national ambient air quality standard

Maintenance Plan Revisions

- Missouri has four EPA-approved maintenance plans for the five-county St. Louis (MO) area:
 - 1997 annual fine particulate matter (PM_{2.5}) standard
 - 1979, 1997, and 2008 ozone standards
- All these approved plans relied on an I/M program
 - The department is proposing to revise our PM_{2.5} and ozone maintenance plans concurrently with this I/M SIP revision
 - The revisions do not address the 2015 ozone standard

Technical Analysis

- Appendix 3 of proposed SIP revision includes the Clean Air Act Section 110(I) demonstration for removal of I/M in Franklin and Jefferson counties
- Evaluates the impact of removal on current national ambient air quality standards

Technical Analysis - Continued

- The department modeled numerous scenarios with the latest version of EPA's mobile source emissions model (MOVES 2014b).
- For the 2015 ozone standard, the scenarios included –
 - 2017 Baseline Scenario
 - 2020 and 2030 Scenarios with I/M
 - 2020 and 2030 Scenario without I/M
- Ozone scenarios evaluated July weekday ozone precursor emissions (NO_x and VOC) for all on-road mobile sources.

Technical Analysis - Continued

Monitoring Site	County	2015-17 Ozone Design Value (ppb)	2016-18 Ozone Design Value (ppb)
Arnold West	Jefferson	68	69
Pacific	St. Louis	64	66

- With the exception of Boles Township, Jefferson and Franklin County were designated attainment under the 2015 ozone standard
 - Attainment: Areas that meet the standard and are not contributing to nearby areas that do not meet the standard
- Both 2015-2017 and 2016-2018 design values in Jefferson County comply with the standard
- 2017 emission levels are adequate to remain in compliance with the standard

Technical Analysis - Continued

Franklin and Jefferson County Modeled Onroad Mobile Source Emissions (Tons/O₃ Season day)

Area	2017 Baseline	
	NO _x	VOC
Franklin	4.52	1.64
Jefferson	6.86	2.94
Combined	11.38	4.58

Technical Analysis - Continued

Franklin and Jefferson County Modeled Onroad Mobile Source Emissions (Tons/O₃ Season day)

Area	2020				2030			
	Scenario 1 - with I/M		Scenario 2 - without I/M		Scenario 1 - with I/M		Scenario 2 - without I/M	
	NO _x	VOC	NO _x	VOC	NO _x	VOC	NO _x	VOC
Franklin	3.24	1.33	3.40	1.48	1.80	0.95	1.89	1.06
Jefferson	4.93	2.41	5.20	2.69	2.74	1.72	2.87	1.91
Combined	8.17	3.74	8.60	4.17	4.54	2.67	4.76	2.97
Difference from Scenario 1			0.43	0.43			0.24	0.37

Technical Analysis - Continued

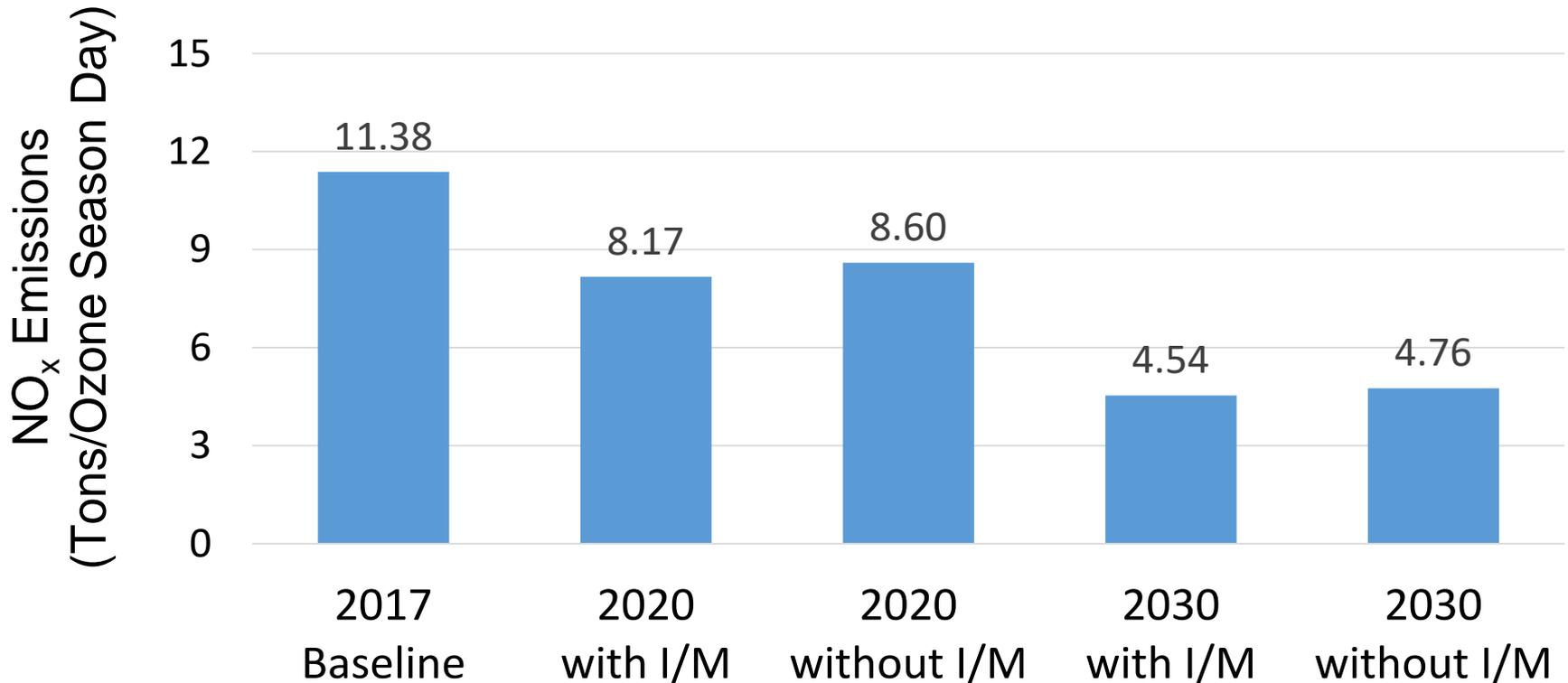
Comparing On-road Emissions 2017 (Actual) vs. 2020 and 2030 (Without I/M)*

Area	2020		2030	
	NO _x	VOC	NO _x	VOC
Franklin	-1.11	-0.16	-2.63	-0.59
Jefferson	-1.66	-0.25	-3.99	-1.03
Combined	-2.78	-0.41	-6.62	-1.62

* A negative value indicates a decline in emissions between 2017 and the year listed

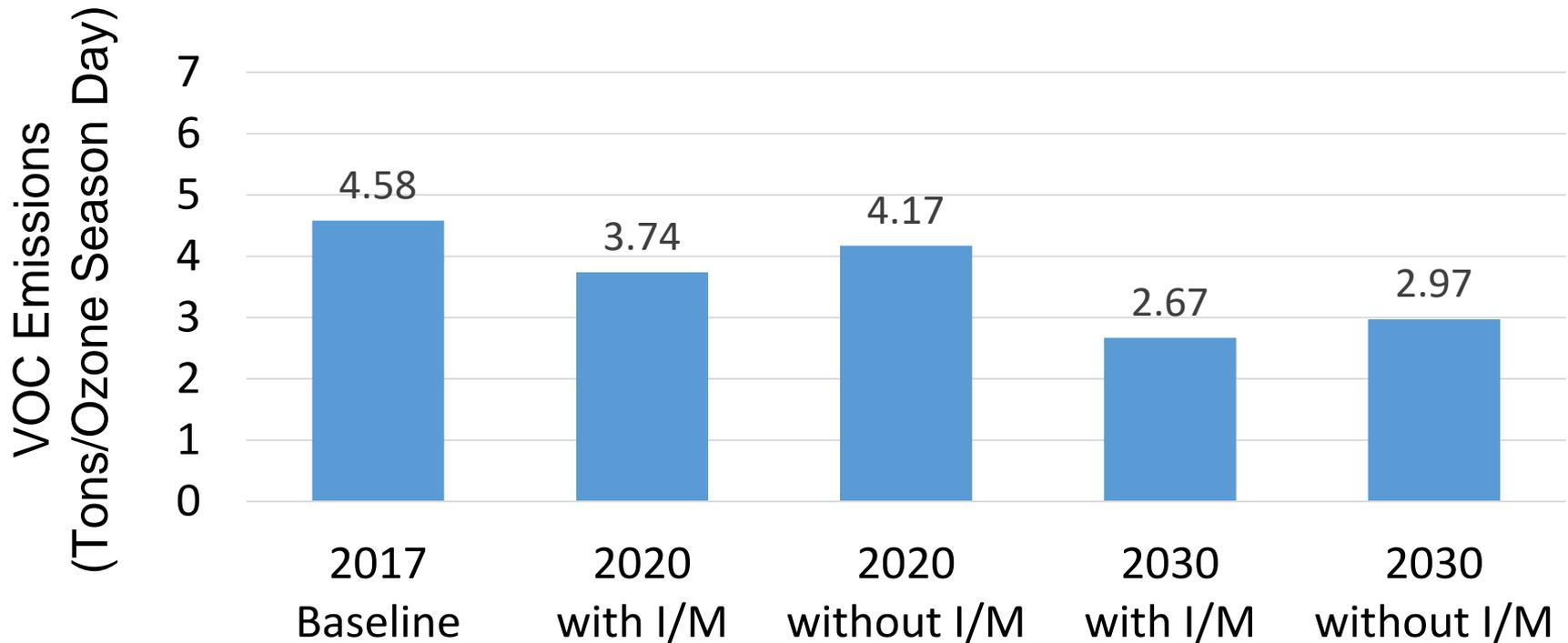
Technical Analysis - Continued

Modeled Onroad NO_x Emissions - Franklin and Jefferson Counties



Technical Analysis - Continued

Modeled Onroad VOC Emissions - Franklin and Jefferson Counties



Technical Analysis - Continued

Boles Township (Franklin County)

- Boles Township is part of the St. Louis marginal nonattainment area under the 2015 ozone standard
- According to the 2010 Census, Boles Township represented approximately 18 percent of Franklin County's total population
- Analysis assumes 20 percent of onroad emissions from Franklin County are attributed to Boles Township

Technical Analysis - Continued

St. Louis (MO) Nonattainment Area Modeled Onroad
Mobile Source Emissions (Tons/O₃ Season Day)

Area	2017 Baseline	
	NO _x	VOC
Boles Township (Franklin – Partial)	0.90	0.33
St. Charles	10.96	4.75
St. Louis County	32.69	12.96
St. Louis City	5.43	2.43
Total	49.98	20.47

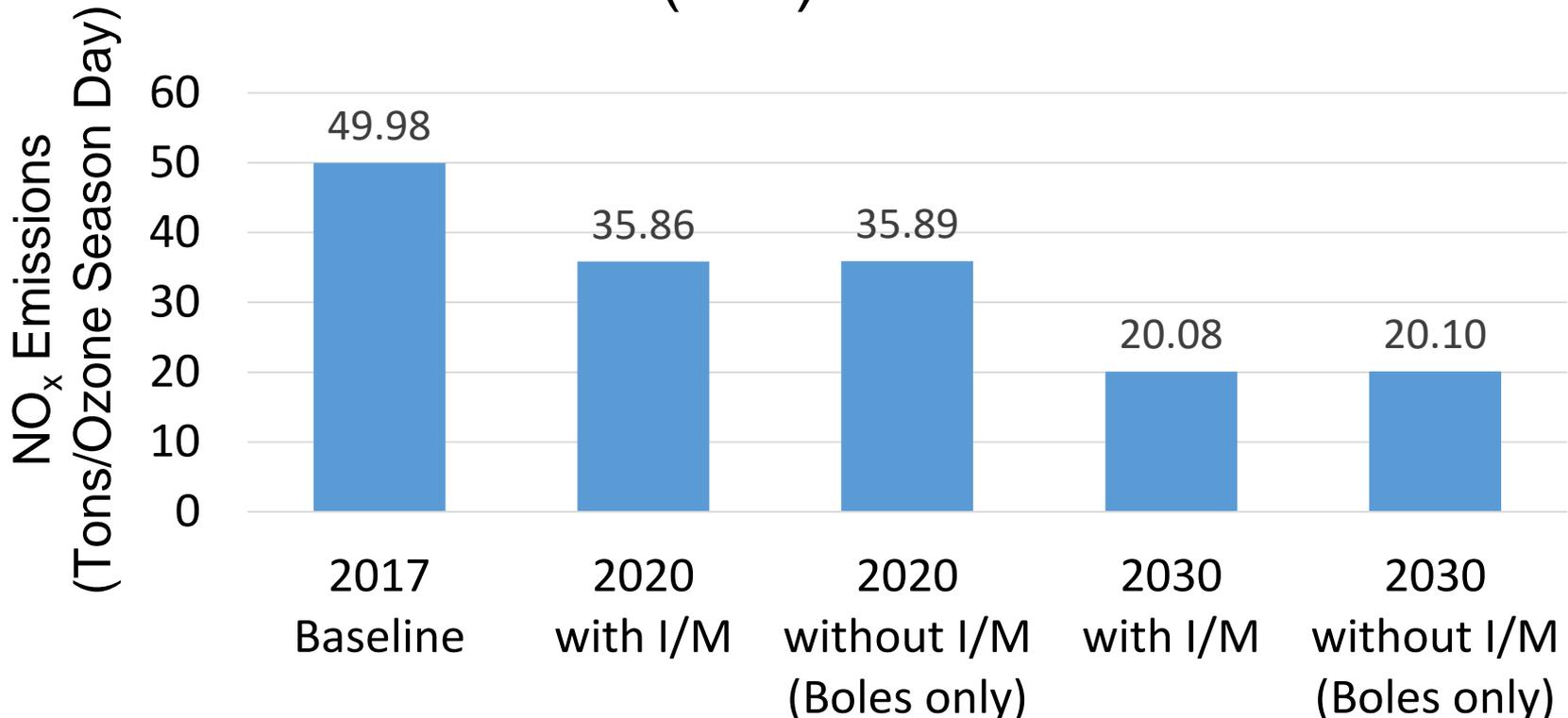
Technical Analysis - Continued

St. Louis (MO) Nonattainment Area Modeled Onroad Mobile Source Emissions (Tons/O₃ Season Day)

Area	2020				2030			
	Scenario 1 – with I/M		Scenario 2 – without I/M (Boles only)		Scenario 1 – with I/M		Scenario 2 – without I/M (Boles only)	
	NO _x	VOC	NO _x	VOC	NO _x	VOC	NO _x	VOC
Boles Township	0.65	0.27	0.68	0.30	0.36	0.19	0.38	0.21
St. Charles	7.88	3.89	NA	NA	4.38	2.75	NA	NA
St. Louis	23.43	10.52	NA	NA	13.16	7.33	NA	NA
St. Louis City	3.90	1.98	NA	NA	2.18	1.36	NA	NA
Combined	35.86	16.66	35.89	16.69	20.08	11.63	20.10	11.65
Difference from Scenario 1			0.03	0.03			0.02	0.02

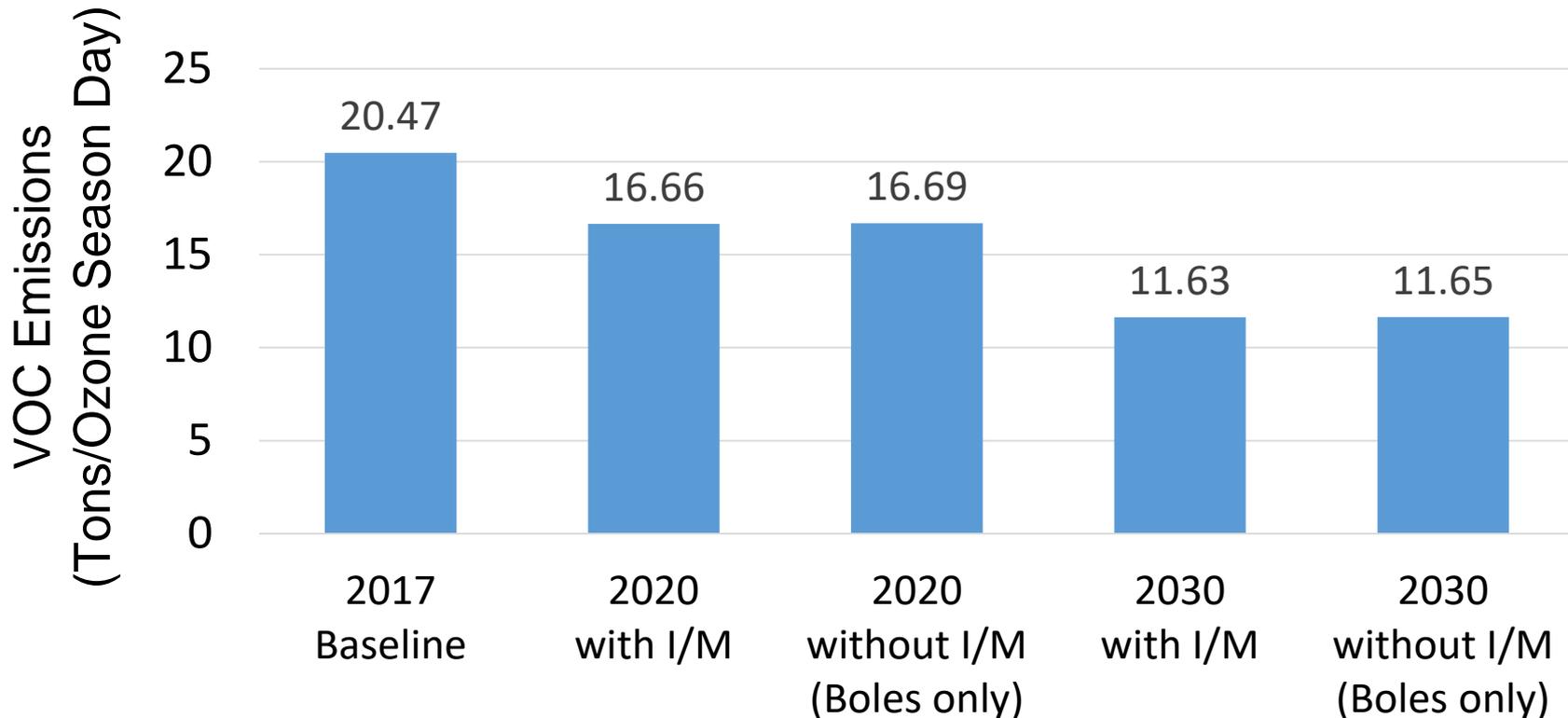
Technical Analysis - Continued

Modeled Onroad NO_x Emissions - St. Louis (MO) Nonattainment Area



Technical Analysis - Continued

Modeled Onroad VOC Emissions - St. Louis (MO) Nonattainment Area



Technical Analysis - Conclusion

- Area designated attainment using 2017 air quality data (except Boles Township)
- Projected 2020 and 2030 onroad emissions expected to decrease from 2017 actual emissions without I/M
- The emission benefit of I/M in Boles Township represents less than 0.2 percent of the total onroad emissions in the Missouri portion of the nonattainment area
- Removal of I/M in Franklin and Jefferson counties will not interfere with attainment or reasonable further progress for the 2015 ozone standard