



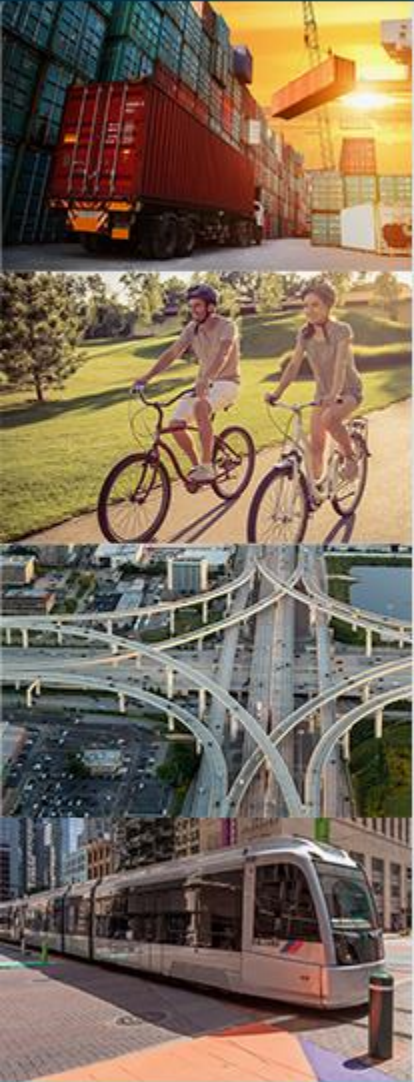
# CMAQ Emission Reduction Performance Measures



Andrew J. DeCandis  
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# Background



- Performance measures introduced in the 2015 FAST Act
- Intended to facilitate performance-based planning and assess the effectiveness of the CMAQ Program
- MPOs in nonattainment regions must develop CMAQ emission reduction targets
  
- First performance measure cycle: 2018-2021
- Second performance measure cycle: 2022-2025
- We are wrapping up the first cycle and beginning the second

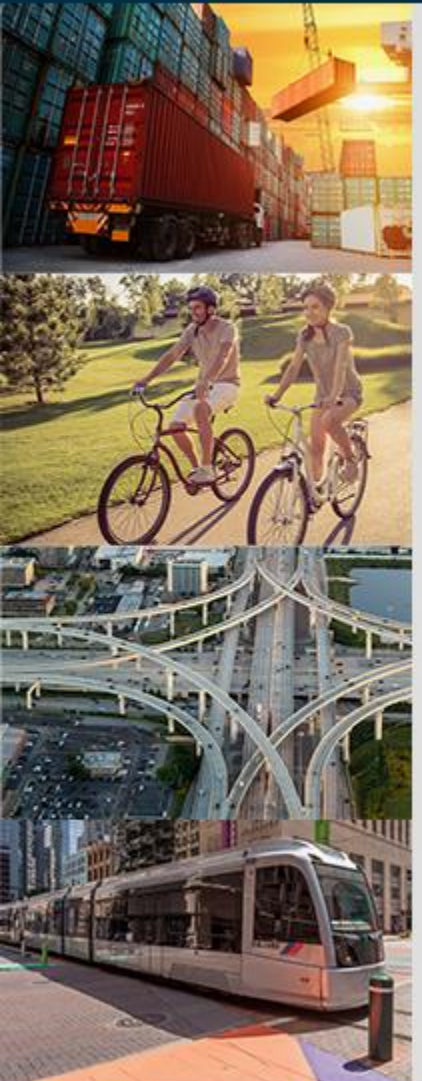
# Performance Measure Cycle Anatomy



- Statute indicates a four-year PM cycle
  - Year 0: Develop performance measures for two- and four-years ahead
  - Year 2: Revisit and reassess PM targets
    - Track progress on two-year targets
    - Revise four-year targets if necessary
  - Year 4/Year 0:
    - Track progress on final four-year targets from previous cycle
    - Develop new performance measures for two- and four-years ahead

# First Performance Measure Cycle

- Summation of two- and four-year TIP emissions reductions
- Projects that were not only programmed but delivered
- PAS – CMAQ Public Access System



NOx (kg/day)			
2018-2021 PAS Annual Totals		Two Year Total	Four Year Total
2018	838.520	953.35	1,383.04
2019	114.830		
2020	12.620		
2021	417.070		

VOC (kg/day)			
2018-2021 PAS Annual Totals		Two-Year Total	Four-Year Total
2018	40.450	68.65	98.86
2019	28.200		
2020	10.520		
2021	19.693		



# First Performance Measure Cycle



First PM Cycle Targets

	<b>NOx Targets (kg/day)</b>	<b>VOC Targets (kg/day)</b>
<b>Two-Year (2018-19)</b>	1419.426	169.301
<b>Four-Year (2018-21)</b>	1429.077	234.604

First PM Cycle Outcomes

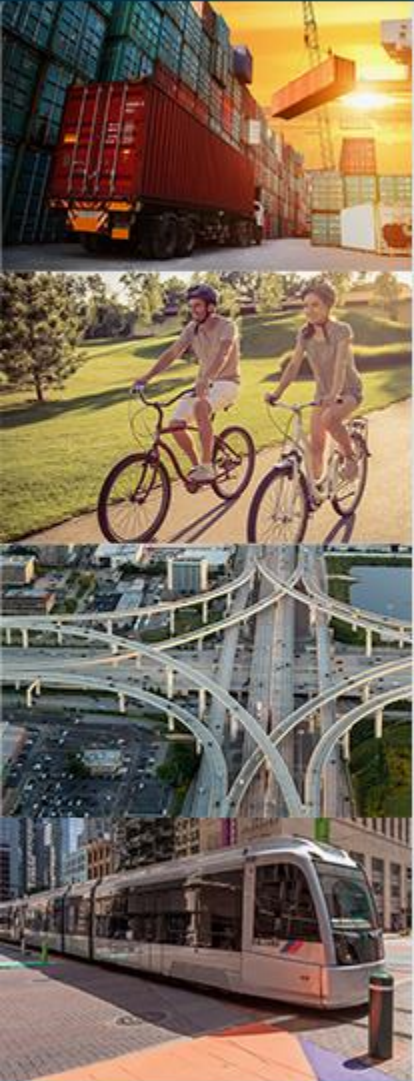
	<b>NOx Totals (kg/day)</b>	<b>VOC Totals (kg/day)</b>
<b>Two-Year (2018-19)</b>	953.35	68.65
<b>Four-Year (2018-21)</b>	1,383.04	98.86

Outcomes - Targets

	<b>NOx Difference (kg/day)</b>	<b>VOC Difference (kg/day)</b>
<b>Two-Year (2018-19)</b>	(466.08)	(100.65)
<b>Four-Year (2018-21)</b>	(46.04)	(135.74)

# Second Performance Measure Cycle

- Entering the second performance measure cycle: 2022-2025
- General process and goals remain the same as first cycle
- Staff has worked with TxDOT and other TX MPOs to review procedures
- Three components:
  - Baseline emissions reductions
  - Two-year emission reduction target
  - Four-year emission reduction target



# Second PM: Baseline



- Based on a four-Year average (2018-2021) of CMAQ emissions
- Sum of reported CMAQ emission reductions from 2018 to 2021 divided by four years.

2018-2021 Performance Baseline (kg/day)		
	NOx	VOC
2018	838.520	40.450
2019	114.830	28.200
2020	12.620	10.520
2021	417.070	19.693
<b>2018-2021 Total</b>	<b>1,383.040</b>	<b>98.867</b>
<b>2022 Baseline</b>	<b>345.760</b>	<b>24.717</b>

Sum 2018 to 2021 Values

Divide by four years

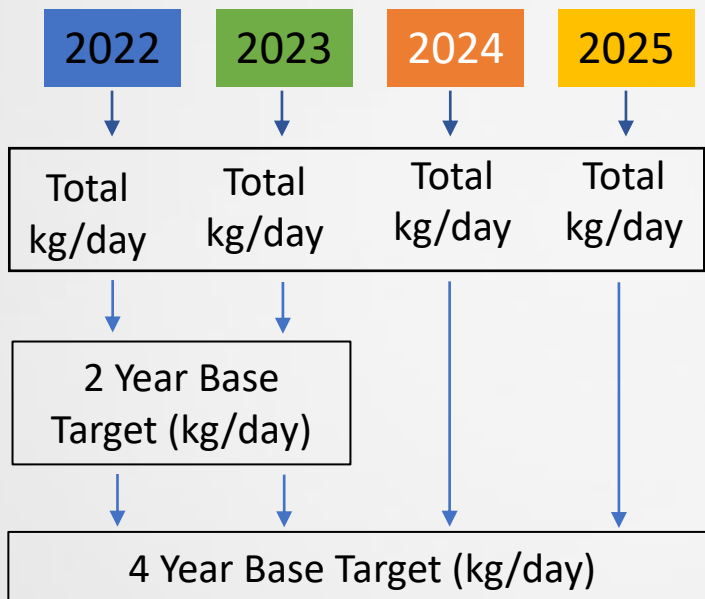


# Second PM: Target Development



- Next performance period will last from 2022 to 2025
- Have been developing a target methodology with statewide partners
- Takes programmed TIP into account as well as past performance

## PROJECT BENEFITS FOR PLANNED TIP PROJECTS





# 2022-2025 Base Targets

- Gather emission reductions from programmed TIP projects for 2022-2025
- Sum for two- and four- year periods

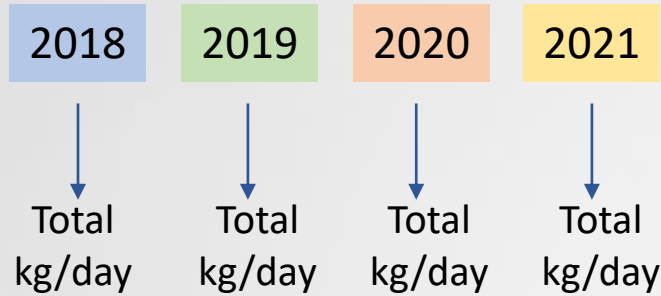
Year	# of TIP Projects	CMAQ Funding	NOx Reductions (kg/day)	VOC Reductions (kg/day)
2022	6	\$ 19,000,000	160.920	34.380
2023	20	\$ 260,617,576	174.309	71.588
2024	7	\$ 81,631,068	61.911	51.517
2025	8	\$ 174,538,467	514.170	104.430
<b>2-Year Base Target</b>			<b>335.229</b>	<b>105.968</b>
<b>4-Year Base Target</b>			<b>911.310</b>	<b>261.915</b>

# Second PM: Target Development



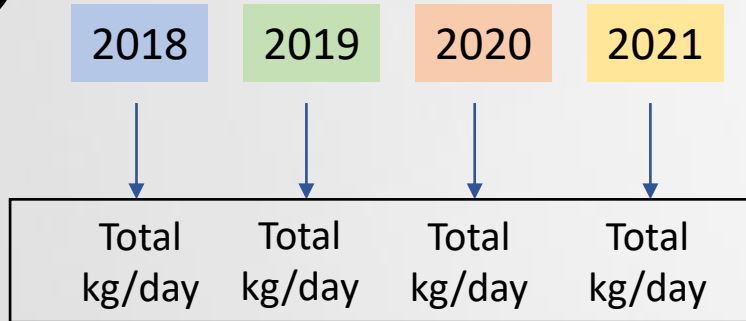
1

CMAQ PROJECT BENEFITS REPORTED TO FHWA IN FY



2

CMAQ PROJECT BENEFITS ESTIMATE IN 2018 TIP



3

Calculate Total 4 Year Emissions Benefits for UPACS and TIP Projects (kg/day)

4

$$\text{Project Success Rate} = \frac{\text{4-Year Delivered NOx Total}}{\text{4-Year Expected NOx Total}}$$

5

2 Year Base Target (kg/day)

X

Project Success Rate

=

2-Year Target

4 Year Base Target (kg/day)

X

Project Success Rate

=

4-Year Target



# 2022-2025 Success Rate



- Calculate the historical ratio (“Success Rate”) of planned TIP projects
  - Divide total 2018 to 2021 realized TIP emission reductions by
  - 2018 estimates of TIP emission reductions from 2018 to 2021
- The result of this calculation can be described as a “success rate” for the conversion of planned TIP emission reductions into funded projects

Year	NOx		VOC
	2018 TIP Estimates (kg/day)	2022 UPACS Reductions (kg/day)	
2018	453.741	838.520	
2019	985.805	114.830	
2020	433.621	12.620	
2021	230.000	417.070	
<b>Total</b>	<b>2,103.167</b>	<b>1,383.040</b>	
	NOx Success Rate = 0.66		

# 2022-2025 Final Targets

- Multiply the base targets by the NOx “Success Rate” to get the final 2022-2025 targets

Year	NOx Reductions (kg/day)	VOC Reductions (kg/day)
2-Year Base Target	335.229	105.968
4-Year Base Target	911.310	261.915
	x	x
NOx Success Rate	0.66	0.66
	=	=
<b>2-Year Final Target</b>	<b>221.251</b>	<b>69.939</b>
<b>4-Year Final Target</b>	<b>601.465</b>	<b>172.864</b>



# Conclusion



	NOx (kg/day)	VOC (kg/day)
2022 Baseline	345.760	24.717
Two-Year Target	221.251	69.939
Four-Year Target	601.465	172.864

- H-GAC staff requests TAQ Subcommittee recommend forwarding the baseline and target recommendations to TAC and TPC
- Final TPC approval request on September 30, 2022
- Anticipated submission to TxDOT by October 1, 2022

# Questions?

Andrew DeCandis  
andrew.decandis@h-gac.com