HEAVY-DUTY VEHICLE EMISSIONS IMPACT STUDY

NCTCOG Public Meeting

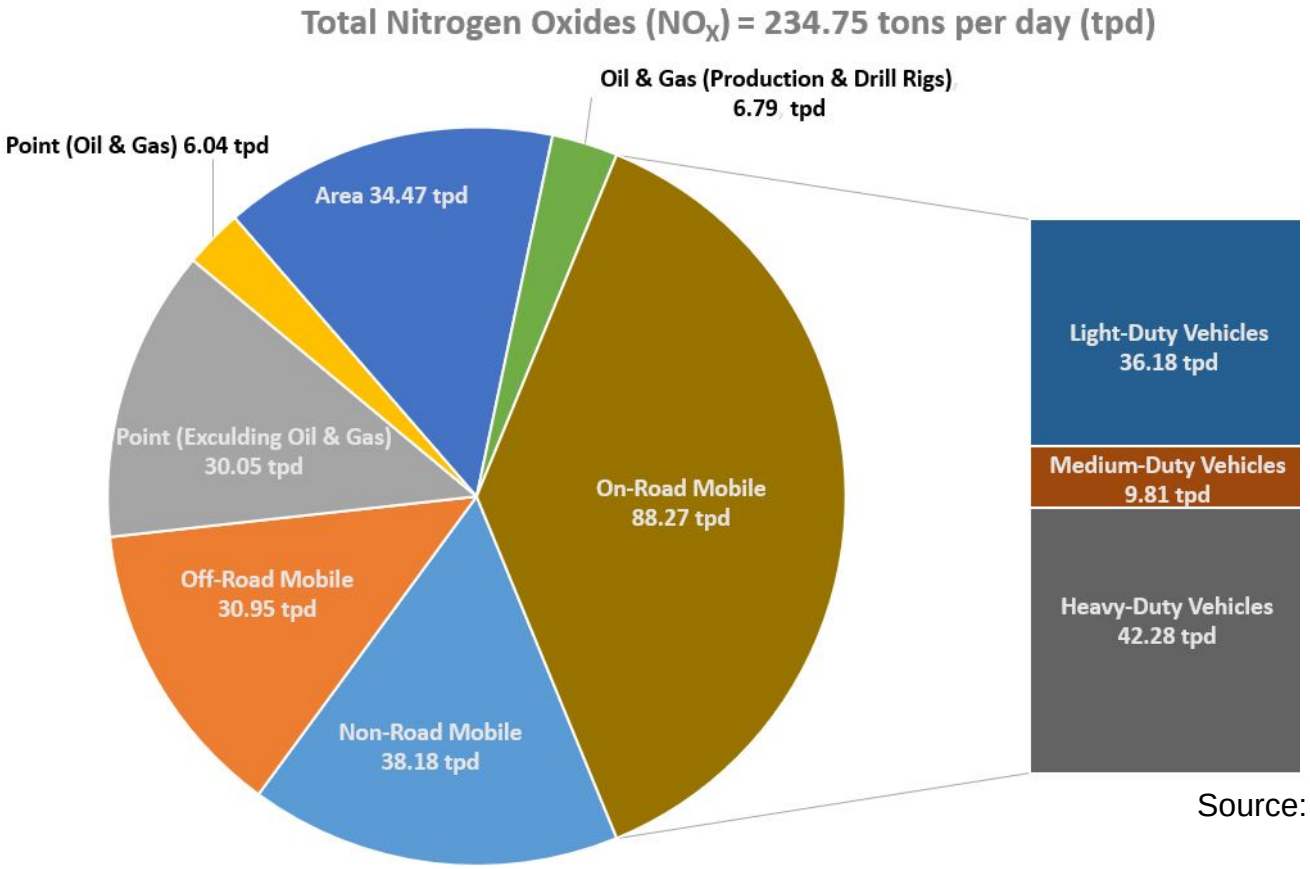
September 8, 2020

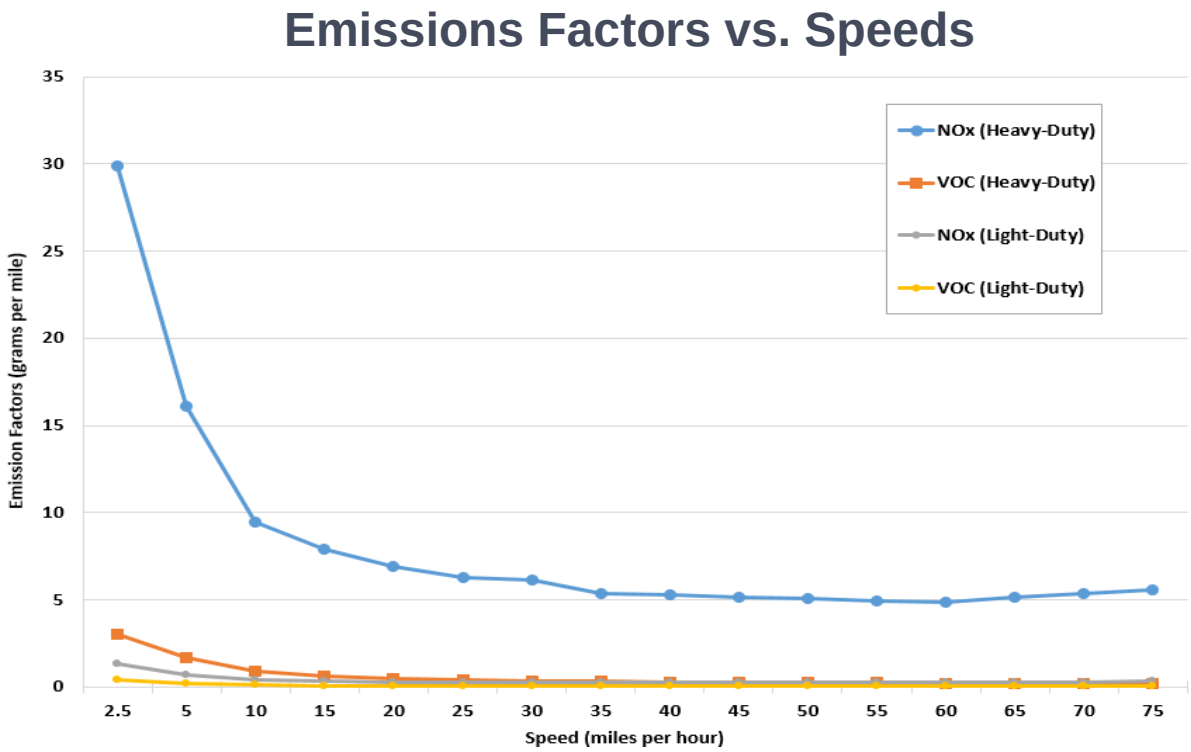
Jason Brown, Principal Air Quality Planner

North Central Texas Council of Governments

Regional Transportation Council

HEAVY-DUTY VEHICLE EMISSIONS IMPACT STUDY





Source: NCTCOG

Region Fails Federal Ozone Standards

Nitrogen Oxides (NO_X) Emissions Limited Area

Diesel Engine Higher NO_X Rates

Air Quality Planning Purposes

Improve Accuracy of Measurements

Strategy and Policy Opportunities

AIR QUALITY PROGRAMS AND STRATEGIES

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Clean Cities
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CLEAN CITIES

Regional Freight Advisory Committee

Regional Emissions Enforcement Program

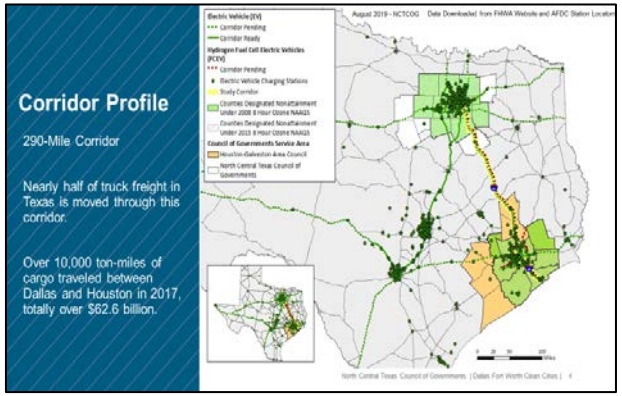
FREIGHT
NORTH TEXAS

HEAVY DUTY DIESEL VEHICLE INSPECTION AND MAINTENANCE WORKING GROUP

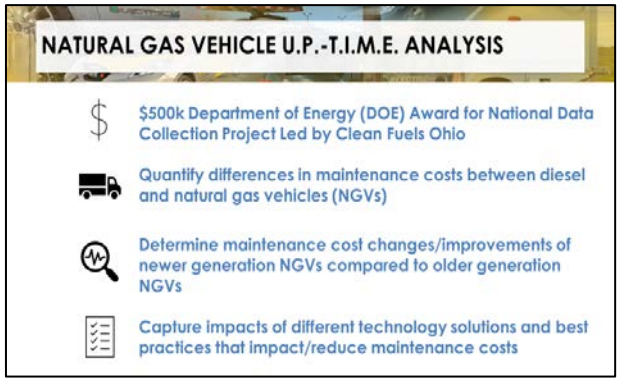
HDDVIMWG@nctcog.org
www.nctcog.org/HDDVIMWorkingGroup

Recent Public Updates

I45 Zero-Emission Corridor Plan



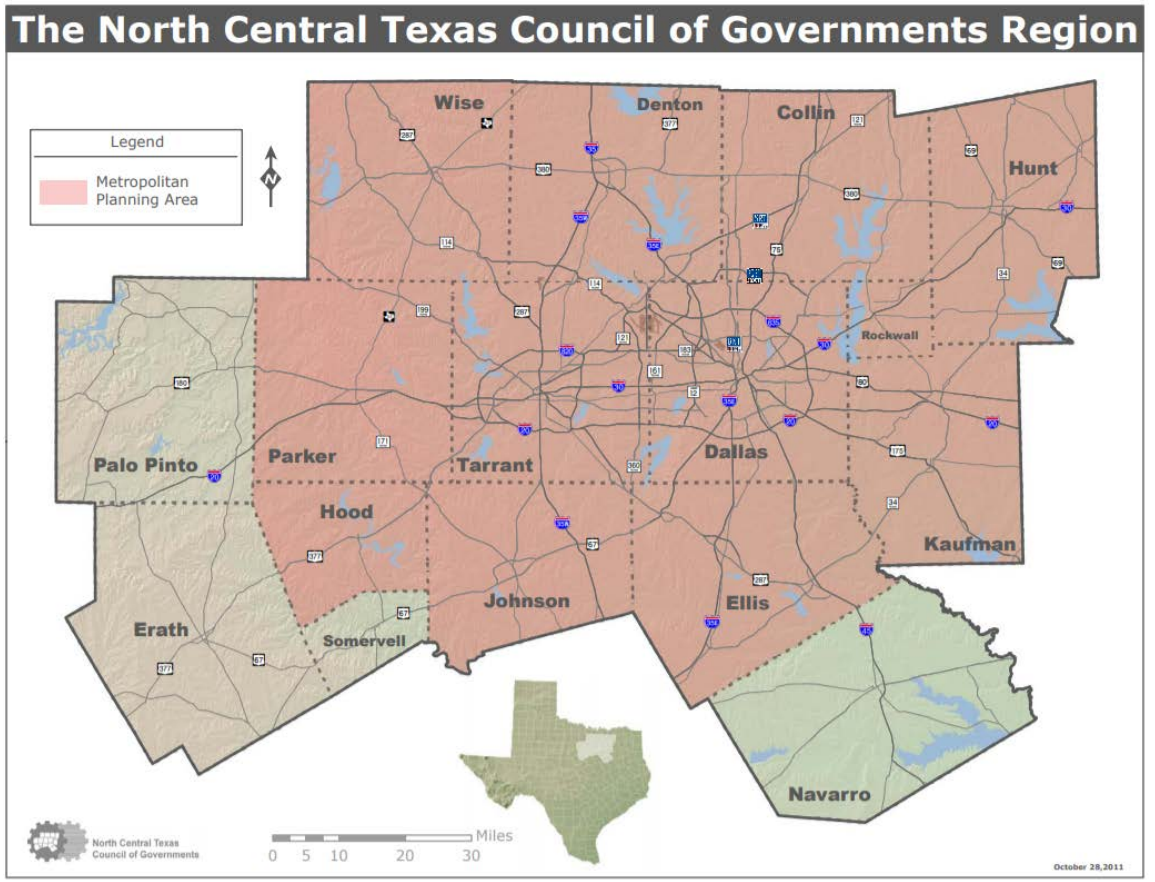
Natural Gas Vehicle U.P.-T.I.M.E.



Funding Opportunities – www.nctcog.org/aqfunding

STUDY OBJECTIVES

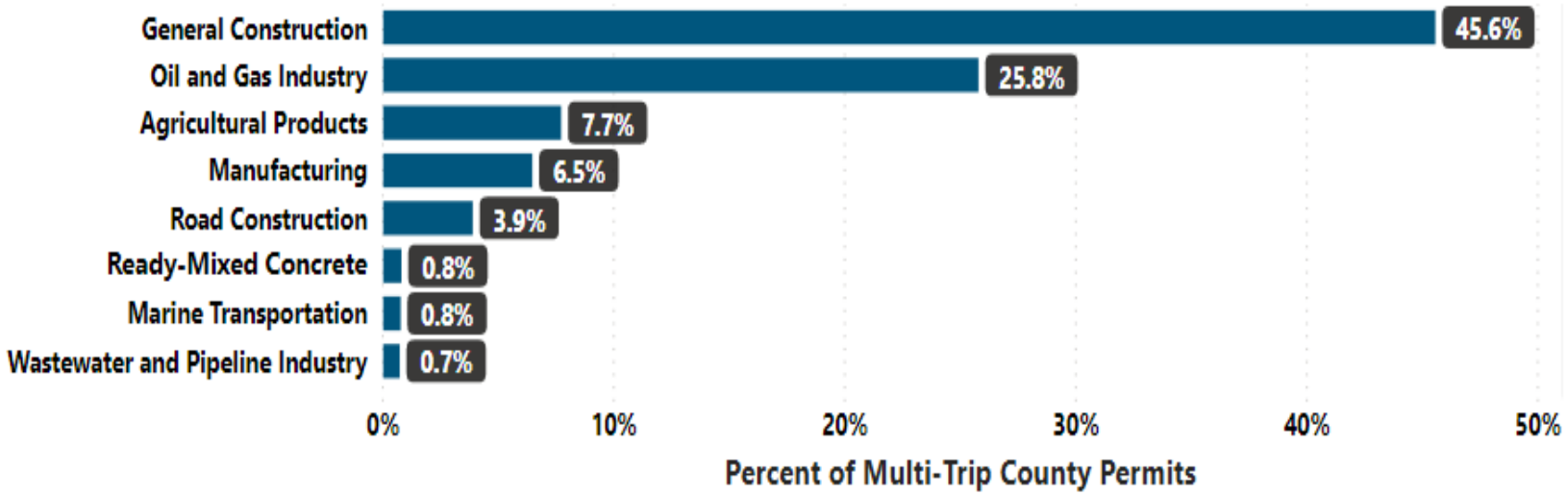
- Understand Oversize/Overweight (OS/OW) Heavy-Duty Vehicle (HDV) Activities
  - Vehicle Types
  - OS/OW Permit Types
  - Vehicle Activity
- OS/OW Emissions Characteristics
- Regional Impact of OS/OW Operations



DATA ANALYSIS – VEHICLE CHARACTERISTICS

Photos: Texas Department of Motor Vehicles

NCTCOG Region Single and Multi-Trips Permits by Year				
Year	Single Trip Routed Permits	Percent Total (%)	Multi-Trip Non-Routed County Permits	Percent Total (%)
FY2016	125,917	86	20,539	14
FY2017	142,213	82	30,923	18
FY2018	145,546	81	33,828	19



Source: Texas A&M Transportation Institute

DIESEL ENGINE EMISSIONS CONTROL TECHNOLOGY

Phasing In By Vehicle Model Year

2001 and Older
No Emissions Control Technology Required

2002 and Newer
Exhaust Gas Recirculation System (EGR)

2010 and Newer
Diesel Particulate Filter (DPF),
Selective Catalytic Reduction (SCR) and
Diesel Emissions Fluid (DEF)

EMISSIONS ANALYSIS – KEY RESULTS

Model Year	NOx Emissions Rates (g/mile)			
	Restricted Access (Freeways)		Unrestricted Access (Arterials)	
	Overweight	Normal	Overweight	Normal
2005	15.63	6.44	21.58	10.40
2009	4.67	2.39	8.35	2.97

Source: Texas A&M Transportation Institute

Photo: Texas Department of Motor Vehicles

Pre-SCR Equipped Vehicle (MY2005 and MY2009)

- Increase in load weight/size equate to **higher NO_x emissions.**
- Older vehicles have higher emissions (deterioration)

EMISSIONS ANALYSIS – KEY RESULTS

Model Year	NOx Emissions Rates (g/mile)			
	Restricted Access (Freeways)		Unrestricted Access (Arterials)	
	Overweight	Normal	Overweight	Normal
2014	1.50	2.93	6.79	4.90

Source: Texas A&M Transportation Institute

Photo: Texas Department of Motor Vehicles

SCR Equipped Vehicle

- Arterials: For lower speed/acceleration combinations **NO_x emissions increase as weight increases.**
- Freeways: For higher speed/acceleration combinations **NO_x emissions decrease as weight increases.**
  - Generally, for lower weight loads the **exhaust temperature is below** SCR effective temperature range, therefore **increased NO_x emissions.**

REGIONAL IMPACT OF OS/OW OPERATIONS

Ideas:

- **Permit Fee Structure or Requirements**

- **Enforcement**

- **Incentives – www.nctcog.org/aqfunding**

- **Coordinate with Federal and State Regulators, Local Stakeholders**

FOR MORE INFORMATION

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OS/OW Heavy-Duty Vehicles Impact Study Webpage
Final Study Report
Final Study Appendices