

# Clean Vehicle Solutions for Refuse Haulers Webinar

**February 27, 2018, 1:30-2:30 pm**

Hosted by Dallas Fort Worth Clean Cities Coalition



**Dallas-Fort Worth  
CLEAN CITIES**

**FOR AUDIO PLEASE CALL INTO THE CONFERENCE LINE**

**1-800-250-3900 Pin: 442318#**

# Agenda



- **Fleet Partnership Success Story:** City of Fort Worth, Texas & Waste Management
- **Fleet Success Story:** City of Denton, Texas
- **Purchasing Opportunities:** Metropolitan Area Planning Council
- **Funding Opportunities:** North Central Texas Council of Governments

# City of Fort Worth & Waste Management of Fort Worth

Robert Smouse – City of Fort Worth  
Code Compliance – Solid Waste Services Assistant Director

Houston Chambliss – Waste Management  
Fort Worth General Manager

# Back Ground Support for Greener Fort Worth

- Mayor Mike Moncreif signed the U.S. Mayors Climate Protection Agreement in 2007
- Sustainable Development Task Force 2009
- Sustainability Action Plan – 2010

# Greening Efforts & Aims

- Promoting alternative transportation, including public transit and bicycling
- Improving energy efficiency in City facilities and their operations
- Using alternative fuel and fuel-efficient vehicles
- Encouraging businesses to adopt green practices in our community
- Increasing the diversion rate from the landfill
- Improved Planning and Development standards

## Specific Actions for a Greener Fort Worth

- Comprehensive Solid Waste Management Plan 2013
- Residential Collection Agreement Renewal 2013
  - Support with CNG Collection Vehicles
  - Support with City's CNG Slow-fill Fueling Station

# Advancing Cleaner Solid Waste vehicles

## 3. CNG Vehicles

Contractor agrees to convert its entire fleet of diesel powered collection vehicles that service the City under this Contract to compressed natural gas (CNG) not later March 31, 2016.

## 4. New Facility

Contractor agrees to construct or move to a new collection and fleet maintenance facility within the City limits not later than March 31, 2016.

# WM – Corporate Involvement & Experience

- 1995, The first 14 natural gas trucks, launched in Palm Desert California.
- 1997, 8 trucks deployed in Lancaster PA
- 2000, 120 LNG truck project in partnership with PGE.
- 2001-2006, 405 natural gas trucks deployed in SoCal South Coast Air district.
- 2007, WM CEO David Steiner commits to increasing fuel efficiency and reducing emissions by 15% by the year 2020.
- 2009, 122 natural gas trucks deployed in the City of Seattle, the largest single municipal refuse launch in US history. Trademarked “Clean N Green”
- 2011, 1000 trucks in operation, Formalization of the WM CNG team, commitment to build \$250MM in Stations over the next 5 years.
- 2012, efficiency and emission goal accomplished
- 2013, 50 stations completed and 3000 NGV’s in operation.



# WM Natural Gas Program Awards

- Multiple “Green Fleet” Awards
- 2011, NGVA Global, Industry Achievement Award
- 2013, State of Washington, 5 Star Evergreen Award
- 2014, NGVA Global, International Champion Award
- 2017, ACT Expo, The “In it for the Long Haul” Award



# WM's Natural Gas Fleet Facts (Q2 2017)

- Natural gas vehicles: 6,000
- NG fueling stations: 100
- Stations open to public: 25
- 2017 Greenfield Stations 20
- 47 MM gals of Diesel displaced in 2016
- Over \$1 Billion invested in NGVs and infrastructure
- 3 Renewable Natural Gas (RNG) production facilities
- RNG fuels 40% of NGV Fleet, reducing GHG's by 80+%



# WM – Fort Worth Project Details & Funding

- WM of Fort Worth was the 106<sup>th</sup> CNG site for Waste Management
- 25 of the 106 CNG sites are open to the public across North America
- WM has the largest fleet of heavy duty Natural Gas trucks in North America
- 6,525 Natural Gas trucks operating in communities across North America
- 43% of Waste Management's fleet runs on Natural Gas

# WM – Fort Worth Project Details & Funding

- 21.3 Million spent on new CNG trucks
- 9.425 Million spent on new facility
- 3.72 Million spent on CNG fueling equipment, plumbing, and “K” rails





# WM – Fort Worth Project Refueling Infrastructure Details



Clean Energy®

ET

environmental

Vision • Solutions • Value™



TruStar  
Energy CNG



J.R. Leonard  
Construction Company  
CNG SERVICES GROUP



Trillium CNG

A Love's Company



insite  
services

gna

GLADSTEIN,  
NEANDROSS  
& ASSOCIATES

CLEAN TRANSPORTATION & ENERGY CONSULTANTS

MOMENTUM



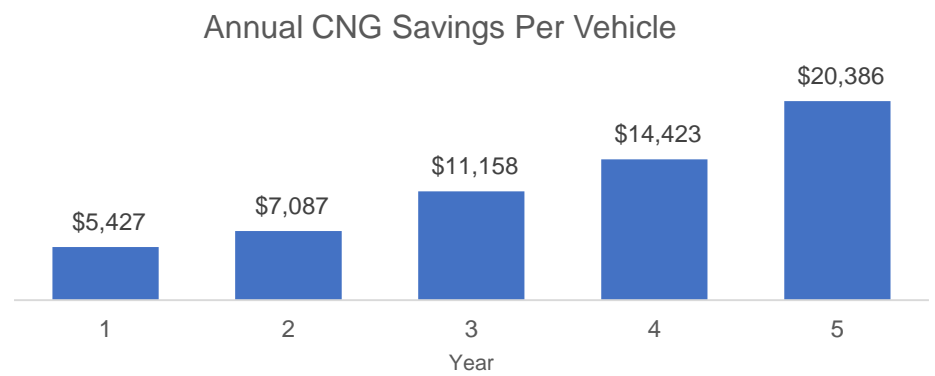
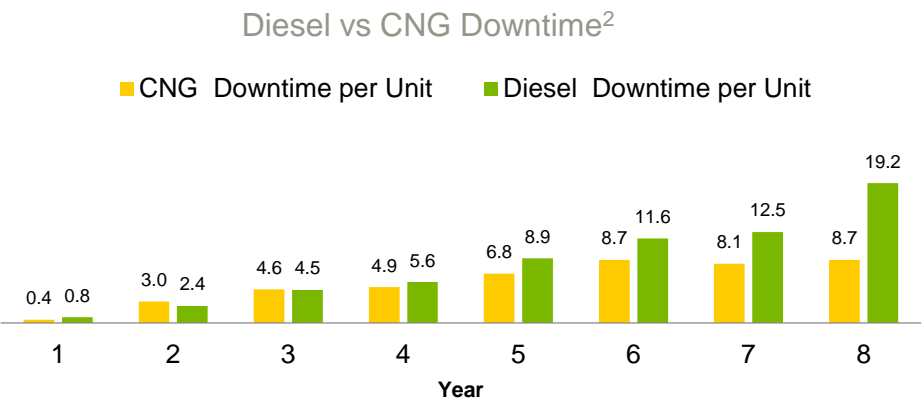
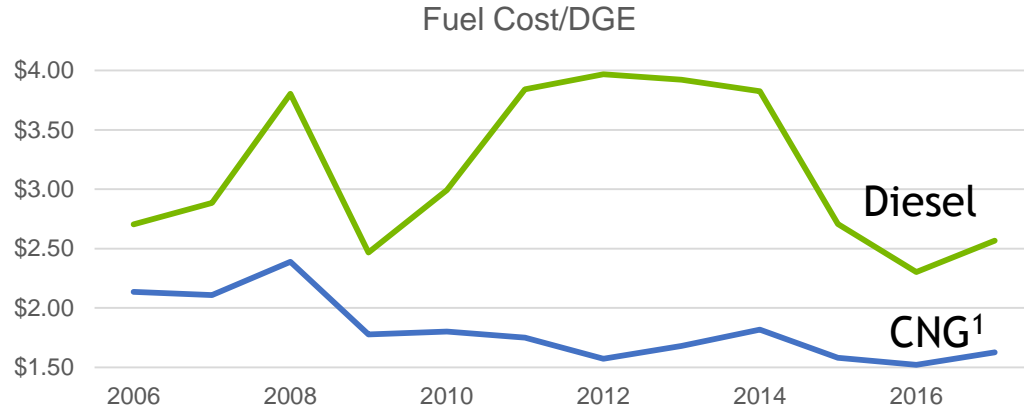
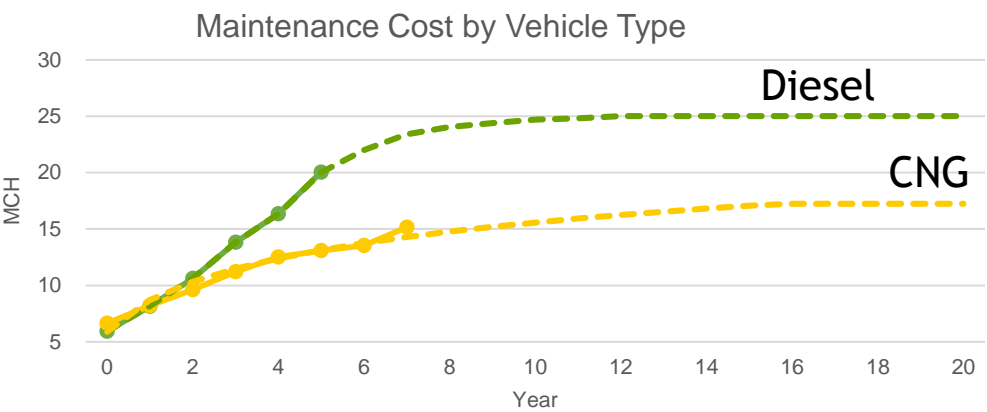
# WM – Fort Worth Project Maintenance Facilities

- To retrofit existing shop with 10 bays would cost approx. \$500k for code compliance, gas detection, etc.
- Additional technician training is required, before the operation is converted to CNG





# WM – Fort Worth Project (Improvements Seen, Experience & Tips for Success)



1. Fuel efficiency penalty applied based on on-highway fuel efficiency penalty(15% penalty x 1/3 of miles)  
2. Excludes downtime items that are vehicle-agnostic (i.e. flat tires, hydraulics, etc.)

# WM – Fort Worth Project (Future Plans)



- We are transitioning large districts with over 75 trucks first and then the balance of the 425 sites that are capable.
- We have developed fueling capabilities for our smaller sites down to as few as 16 trucks.

The alternative fuel and fleet industry recognizes that natural gas will be the best option for heavy duty vehicles for the foreseeable future





# Future Actions for CNG Fuel & Vehicles

- Address Maintenance Limitations
- Heavy Equipment Vehicles
  - Illegal Dump
  - Transportation & Public Works
- Medium to Light Duty Vehicles
  - Animal Control
  - Code Enforcement
  - Environmental Management
  - Litter Abatement

# Questions?





# City of Denton Alternative Fuels History

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TERRY KADER, CPFP  
FLEET SUPERINTENDENT

# Biodiesel Production

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## Biodiesel Plant Located in City landfill

- Opened in March 2005
- Operated by BDI – Bio Diesel Industries of Greater Dallas Fort Worth
- World's first Biodiesel plant powered by landfill methane
- Produced B100 until around 2009
- Biodiesel plant now operated by American Bio Source - production to begin this year



# Biodiesel Use

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## First Used in the Landfill Operation

- Landfill Compactor – B99 direct from production plant - 2005
- Equipment bids specified B20 compatibility
- B20 used in all Landfill Equipment and Solid Waste Trucks - 2011



# Alternative Fuel History

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# Alternative Fuel Site

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Constructed in March 2011

- \$1.2 million
- American Reinvestment and Recovery Act - \$600K

Products Supplied

- Biodiesel – B20 Blend
- Ethanol E85
- Diesel Exhaust Fluid

Constructed Compressed Natural Gas Station

- \$2.6 Million
- Opens – March 2018





# CNG Refuse Vehicles

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## First Purchase – 2014

## Support Vehicles

- 5 - ¾ ton GM Pickups

## Refuse Trucks

- 1 – Knuckle Boom Brush Truck
- 4 – Roll Offs
- 5 – Rear Loaders
- 6 – Front Loaders
- 9 – Automated Side Loaders



# Benefits

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## Biodiesel

- Clean Fuel Systems
- Increased Lubricity
- Lower Cost
- Sustainability

## CNG

- Lower Cost Fuel
- Reduced Emissions
- Quiet Engine Operation
- Engine Maintenance – No DPF Issues



# Challenges

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## Biodiesel

- Initial Fuel Filter Changes
- Cold Weather Operation

## CNG

- Fueling Infrastructure Cost
- Timing – Vehicle Purchases vs Fueling Infrastructure
- Engine Maintenance and Tank Inspections
- Technician Training
- Facility Modifications
- Specific Engine Oil



# Annual Alternative Fuel Use

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## Biodiesel – B5 and B20 combined

- 350,000 gallons
- 230 vehicles

## Ethanol

- 15,000 gallons
- 285 vehicles

## CNG

- 41,000 DGE
- 30 Vehicles



# Questions ???

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# **Clean Technology for Refuse Haulers**

## **Purchasing Opportunities to Green Your Fleet in 2018!**

Megan Aki

Metropolitan Area Planning Council (MAPC)

February 27, 2018



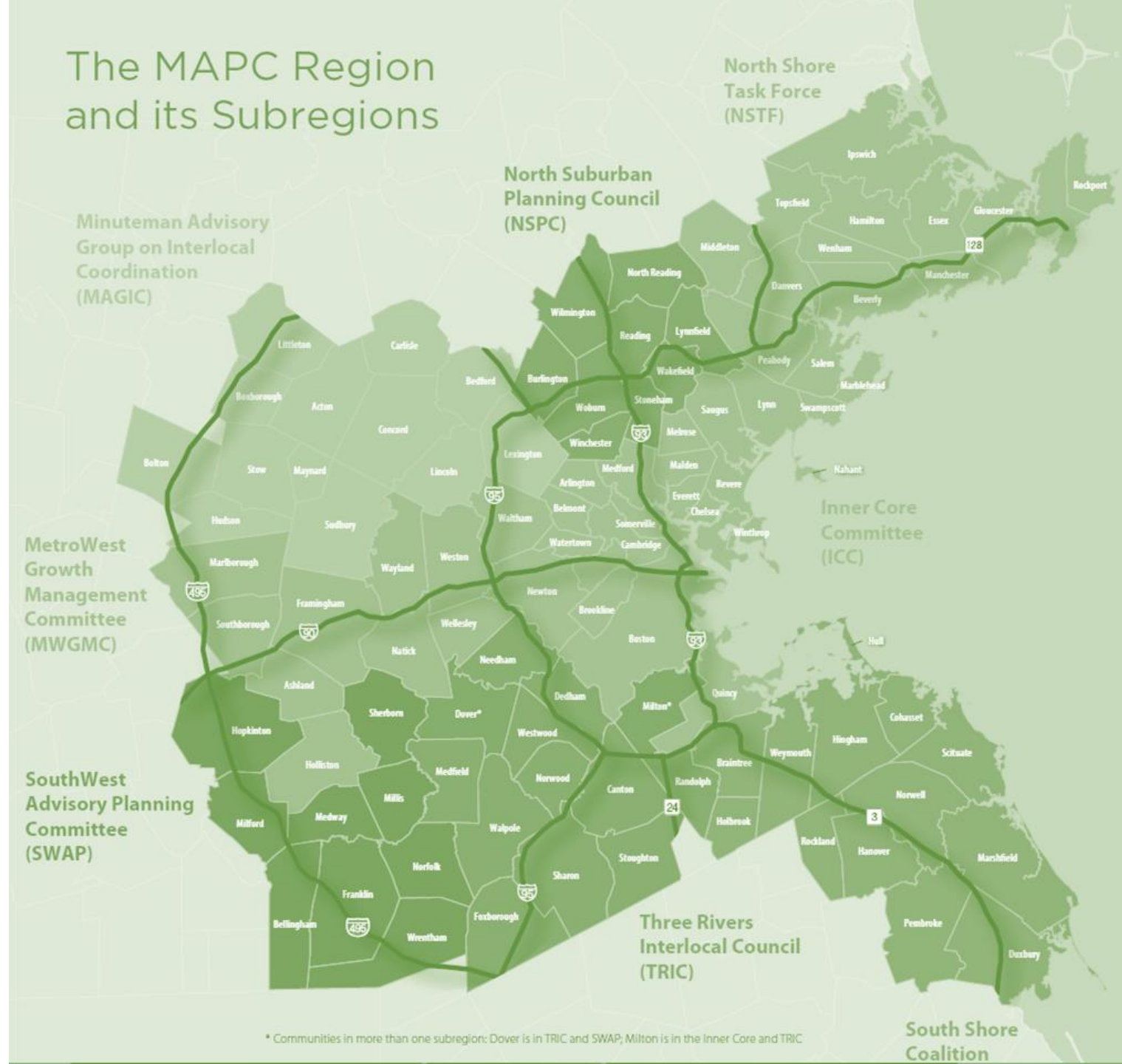
# ABOUT MAPC

Regional Planning Agency

**101** cities and towns

**90+** employees

Wide range of planning expertise



\* Communities in more than one subregion: Dover is in TRIC and SWAP; Milton is in the Inner Core and TRIC



# MAPC: CLEAN ENERGY

## Regional Energy **Projects**

- ESCO Procurement
- Regional Solar Initiative
- LED Streetlight Purchasing Program
- Community Electricity Aggregation
- Green Mobility Program
- Energy Resiliency

## Climate and Energy **Planning**

- Connecting municipalities with incentives + plug-and-play programs
- Community energy and climate baselining, planning, and strategizing
- Outreach programming and education
- Net Zero Planning

## Energy **Technical Assistance**

- Grant Writing
- Green Communities Designation
- Methane Leaks
- Solar Permitting and Zoning
- State and Local Policy
- Net Zero Guidance & Education





# FLEETS FOR THE FUTURE



Accelerate the deployment of **alt. fuel vehicles (AFVs)** by reducing their incremental costs and building fleet capacity to plan procurements.

Propane, electric, and natural gas vehicles and infrastructure.

# **Massachusetts Statewide Contracts**

**Alternative Fuel Options on VEH102**

# STATEWIDE CONTRACTS

OSD maintains contracts procured for specific commodities and services which may be used by any executive department or eligible entity.

These contracts follow “Best Value Procurement.”

## MGL Chapter 30B

- Cities and towns and others must follow M.G.L. c. 30B, although they may purchase from OSD statewide contracts.
- per M.G.L. c. 7, §22A and M.G.L. c. 30B, §1(c).



# ELIGIBLE ENTITIES

## PUBLIC ENTITIES NATIONWIDE

Municipalities

State agencies

Ind. public authorities/quasi-public agencies

Public libraries

Public schools


Public higher ed.

Public hospitals

Public purchasing cooperatives

Non-profit certified orgs.  
working with Massachusetts

## VEH102: Statewide Contract for Advanced Vehicle Technology



CLIPPERCREEK, INC.

VERDEK


GraybaR

EVSE LLC  
Smart Charging Solutions For Electric Vehicles  
A subsidiary of General Motors

VOLTREK  
POWERING YOUR JOURNEY™


WattZilla  
Dual 80 amp EV charging station

**Category 1**  
CHARGING STATIONS



enow

**Category 2**  
IDLE REDUCTION



Magmotor


VERDEK

National Fleet  
HYBRIDS

XLhybrids

**Category 3**  
AFTERMARKET CONVERSIONS

## VEH102: Statewide Contract for Advanced Vehicle Technology



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Magmotor

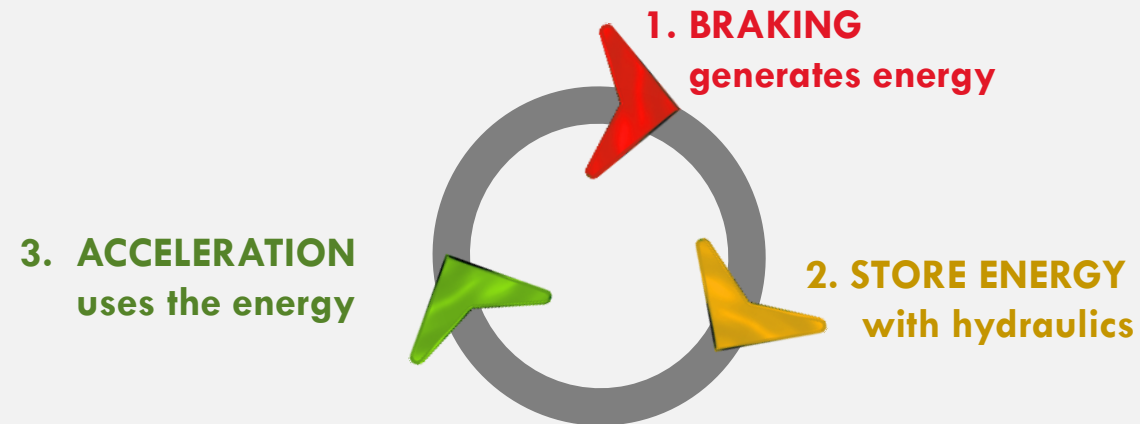
VERDEK

National Fleet  
HYBRIDS

XLhybrids

**Category 3**  
AFTERMARKET CONVERSIONS

## Hydraulic Hybrid Energy Recovery System (ERS)



Source: National Fleet Hybrids





Up to 30% **INCREASE**  
in fuel economy

Up to 30% **REDUCTION**  
in CO<sub>2</sub> emissions

Up to 50% **REDUCTION**  
in NO<sub>x</sub> emissions



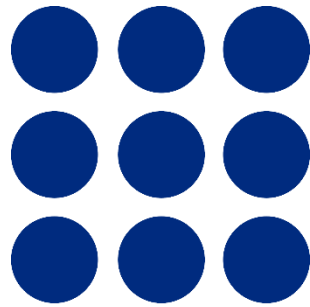
**Refuse Haulers 26k-50k GVWR range**  
*Flexible makes/models*



# **MAPC's Green Mobility Group Purchasing Program**

**Upcoming Opportunities & Next Steps**

# GROUP PURCHASE BENEFITS



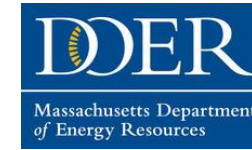
Access bulk discounts.



Save time & money.



Lead by example.



## Accelerated Time-Based Discounts

**DAY 1 – DAY 30**  
**3%**

**DAY 31 – DAY 90**  
**1.5%**

**DAY 91 – DAY 180**  
**0%**

### Volume-Based Discounts

6+ vehicles  
20+ vehicles  
100+ vehicles

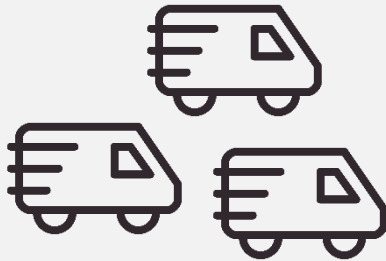
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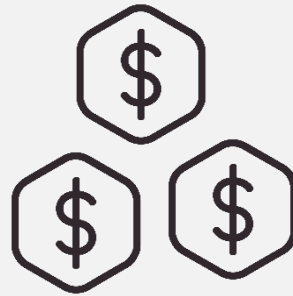
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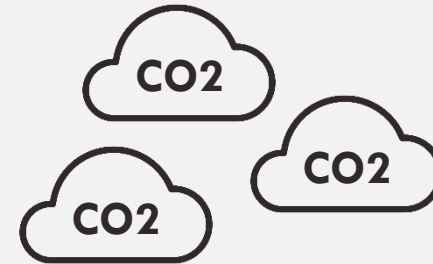
# ROUND 1 RESULTS (2017)



**28** vehicles  
**4** fleets

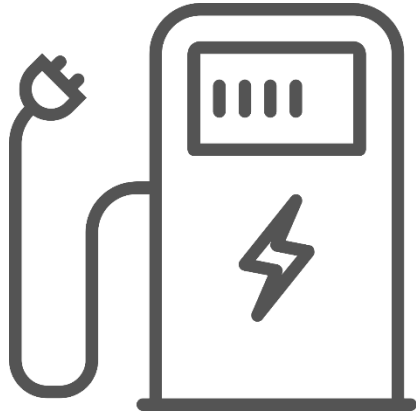


**11-19%** discounts  
**1-2k** per vehicle

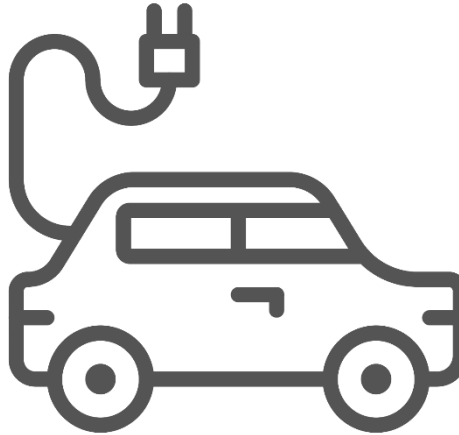


**25-30%** average fuel  
economy improvement

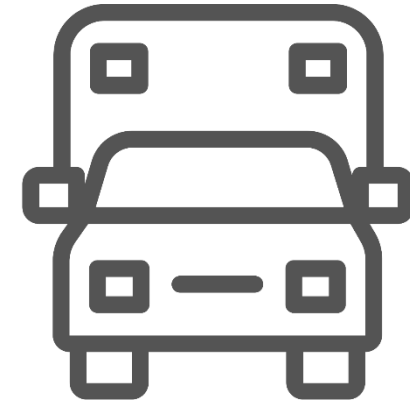
# UPCOMING ROUND 2 (2018)



**Electric Vehicle  
Charging Stations**



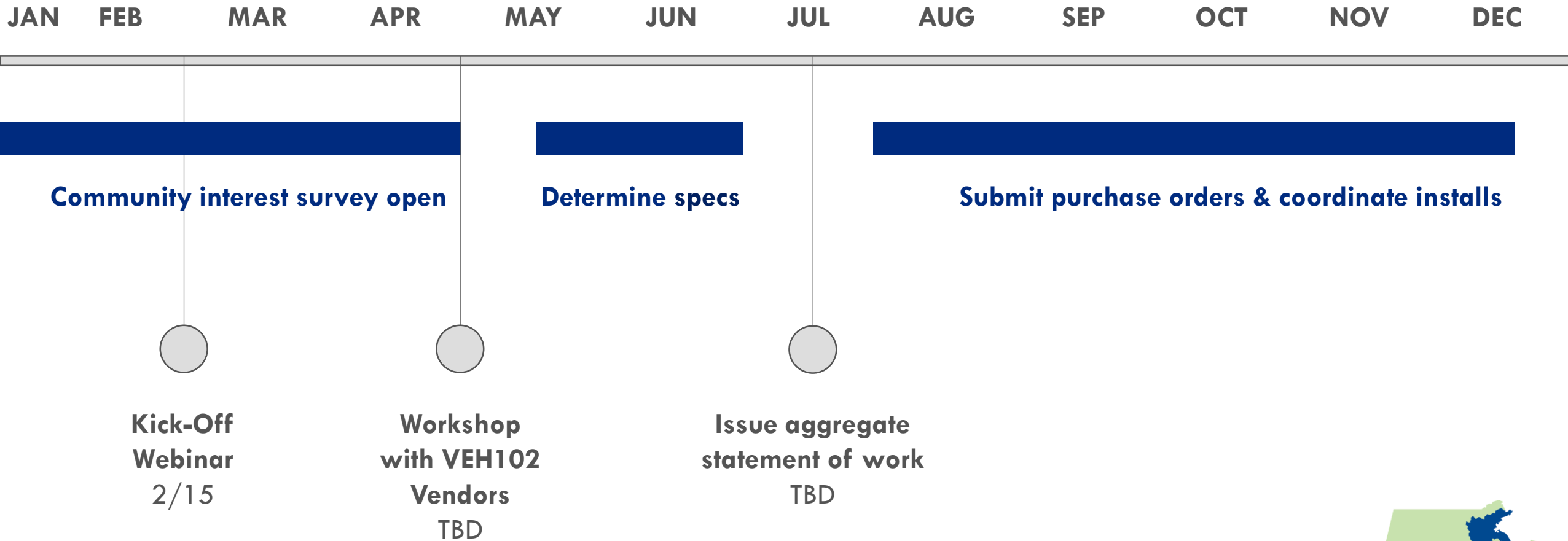
**Electric Vehicles**



**Aftermarket Conversion  
Technology**

# TIMELINE

*Exact timing subject to change, per community purchasing needs*



# Thank you!

If you're interested in participating in MAPC's Group Purchasing Program,  
fill our community interest survey at:

[www.surveymonkey.com/r/GreenMobility](http://www.surveymonkey.com/r/GreenMobility)

Megan Aki  
Clean Energy Analyst, MAPC  
**617-933-0795**  
**maki@mapc.org**

# Funding Opportunities for Vehicle and Fueling Infrastructure Projects

**DALLAS-FORT WORTH CLEAN CITIES WEBINAR:  
CLEAN VEHICLE SOLUTIONS FOR REFUSE HAULERS**

**February 27, 2018**



**Dallas-Fort Worth  
CLEAN CITIES**



**North Central Texas  
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# Major Funding Sources - Grants

## Texas Emissions Reduction Program (TERP)

Administered by the Texas Commission On Environmental Quality (TCEQ)

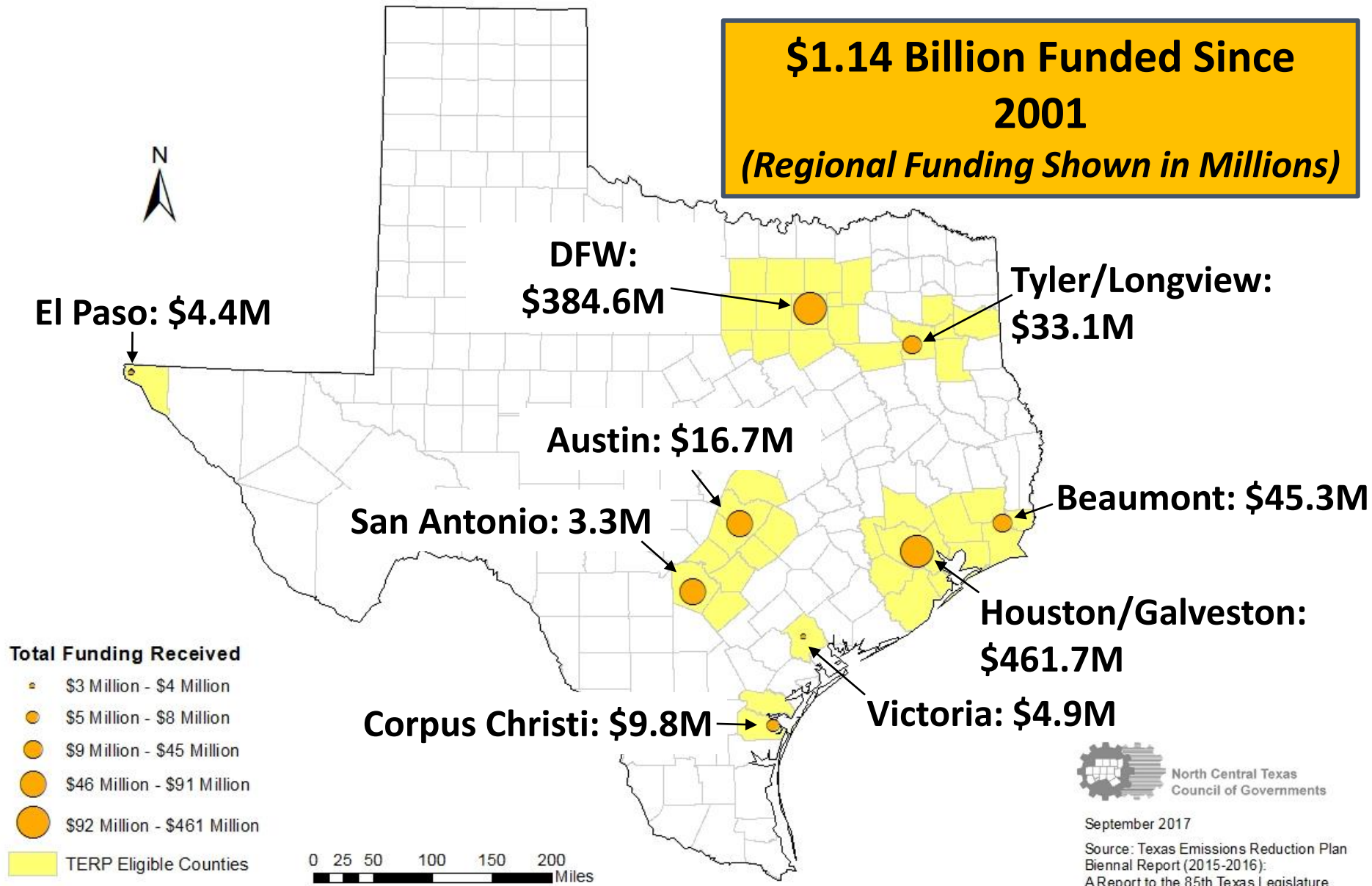
### Objectives Of TERP:

- Reduce Emissions From Pollutants
- Prevent Areas in the State from Violating National Ambient Air Quality Standards
- Advance Technologies that Reduce Nitrogen Oxides (NO<sub>x</sub>)
- Support the Increased Use of Alternative Fuels

Since 2001, TERP has Reduced Over 171,495 Tons NO<sub>x</sub>



# TERP Impact By Region





## Vehicle Funding: Medium/Heavy-Duty Vehicles

Program	Eligible Activities	Funding Threshold
TERP Clean Fleet Program* (Expected Spring 2018)	Replace at Least 10 Diesel Vehicles with Alternative Fuel or Hybrid	Maximum 80% of Total Vehicle Cost
TERP Natural Gas Vehicle Grant Program* (Expected Spring 2018)	Replace/Repower Heavy- or Medium-Duty Vehicle with Natural Gas	Maximum 90% of Incremental Cost of Natural Gas Vehicle
TERP Emissions Reduction Incentive Grant (Expected Spring 2018)	Replace/Repower/New Purchase/Retrofit Heavy-Duty Vehicles and Equipment	Maximum 80% of Eligible Costs

\*Program Changes Made In 2017 Legislative Session, Senate Bill 1731

# Potential Funding – Volkswagen Settlement

## TCEQ Now Accepting Comments on Environmental Mitigation Plan!

**If Any Projects are of Interest be Sure to Submit Comments**

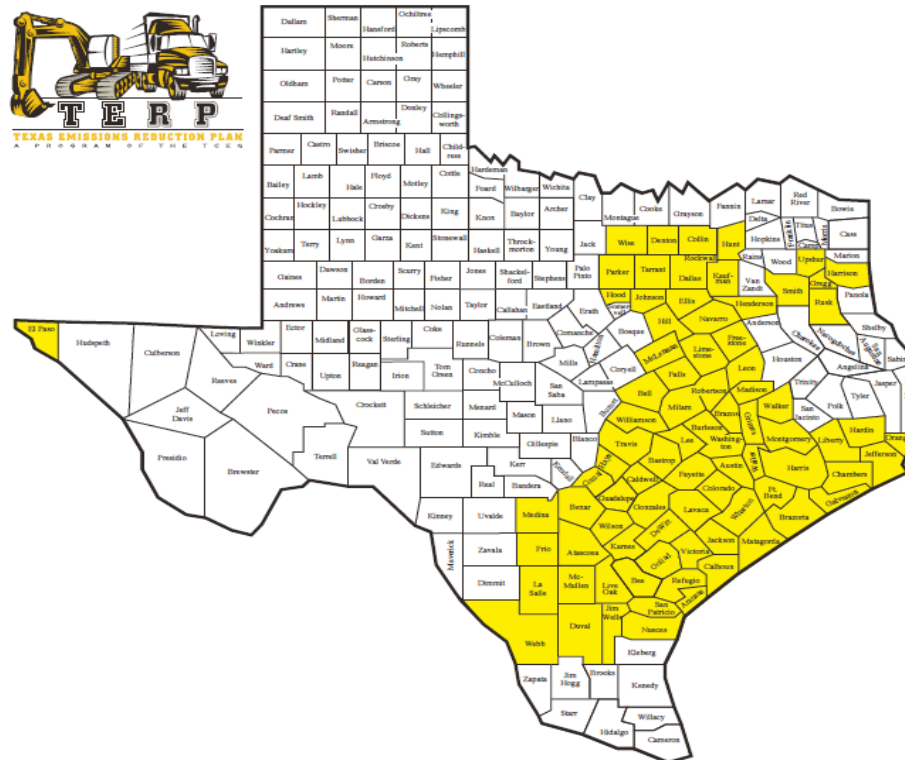
Eligible Vehicle/ Equipment Types	Eligible Activities	Maximum Funding Threshold
Class 8 Waste/Dump Trucks	Replace or Repower Existing Diesel Trucks/Equipment	40% for Repower 25% - 50% for Replacement 75% for All-Electric 100% if Government Owed

**Electric Vehicle Charging Infrastructure is Eligible for Funding As Part of a Project to Replace/Repower with Electric Vehicle/Equipment – if Needed**

# Infrastructure Funding

Program	Eligible Activities	Funding Threshold
<b>TERP Alternative Fueling Facilities Program</b> <b>(Deadline: March 29, 2018)</b>	<b>Install Alternative Fuel Infrastructure in the Clean Transportation Zone</b>	<b>Up to 50% of Project Cost, Limited to a Maximum of \$600,000</b>

## Clean Transportation Zone



# North Texas Clean Diesel Fleets 2018

**Expected to Open in March!**

## **Eligible Entities:**

**Local Governments**

**Private Companies who Contract with Local Governments**

**Must Adopt RTC Clean Fleet Policy or Similar**

<b>Eligible Activities</b>	<b>Maximum Funding Threshold</b>
<b><u>Replace On-Road Diesel Trucks*</u></b> <b>16,000 GVWR and Up;</b> <b>Model Year 1995-2006;</b> <b>(Also Model Year 2007-2009 if</b> <b>Replacing with Electric)</b>	<b>45% Cost if New is Electric</b>  <b>35% Cost if New is Powered by</b> <b>Engine Certified to CARB Optional</b> <b>Low-NO<sub>x</sub> Standards</b> <b>(Both Natural Gas and Propane</b> <b>Engines Currently Available)</b>  <b>25% Cost for All Others</b>

***CARB = California Air Resources Board***

# Have A Project Idea? Let Us Know!

NCTCOG Identifying Demand for Projects in DFW

[www.nctcog.org/airquality](http://www.nctcog.org/airquality)

Air Quality



## HOT TOPICS

Volkswagen Settlement

AirCheckTexas Drive a Clean  
Machine Program

Meetings, Events and  
Presentations

On Volkswagen Page:  
“Get Involved!: Potential Fleet Project”





# **Future Clean Diesel National Grants**

**NCTCOG Expects to Apply for 2018 Clean Diesel National Grant Round**

**Eligible Projects Types Include:**

**Exhaust Control Technologies**

**Engine Upgrades and Certified Remanufacture Systems**

**Verified/Certified Cleaner Fuel Use**

**Idle Reduction Technologies**

**Aerodynamic Technologies and Low Rolling Resistance Tires**

**Engine and Vehicle Replacements**

**Clean Alternative Fuel Conversion**

**If you are Interested in a Project Type Let us Know**

**We will Apply on Behalf of the Region and Could Include Your Project in Our Proposal**

# Sign Up For Email Updates!

Go to: [www.nctcog.org/aqfunding](http://www.nctcog.org/aqfunding)

See what NCTCOG Has Already Funded and Sign Up for Email Updates!



Funding Opportunity  
Archive



Sign-Up for Email  
Updates

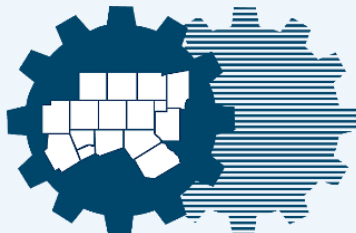
# Contact Information

**Allix Philbrick**  
**Air Quality Planner**  
**(817) 695-9249**

**[APhilbrick@nctcog.org](mailto:APhilbrick@nctcog.org)**

**[www.nctcog.org/aqfunding](http://www.nctcog.org/aqfunding)**

**[AQgrants@nctcog.org](mailto:AQgrants@nctcog.org)**



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