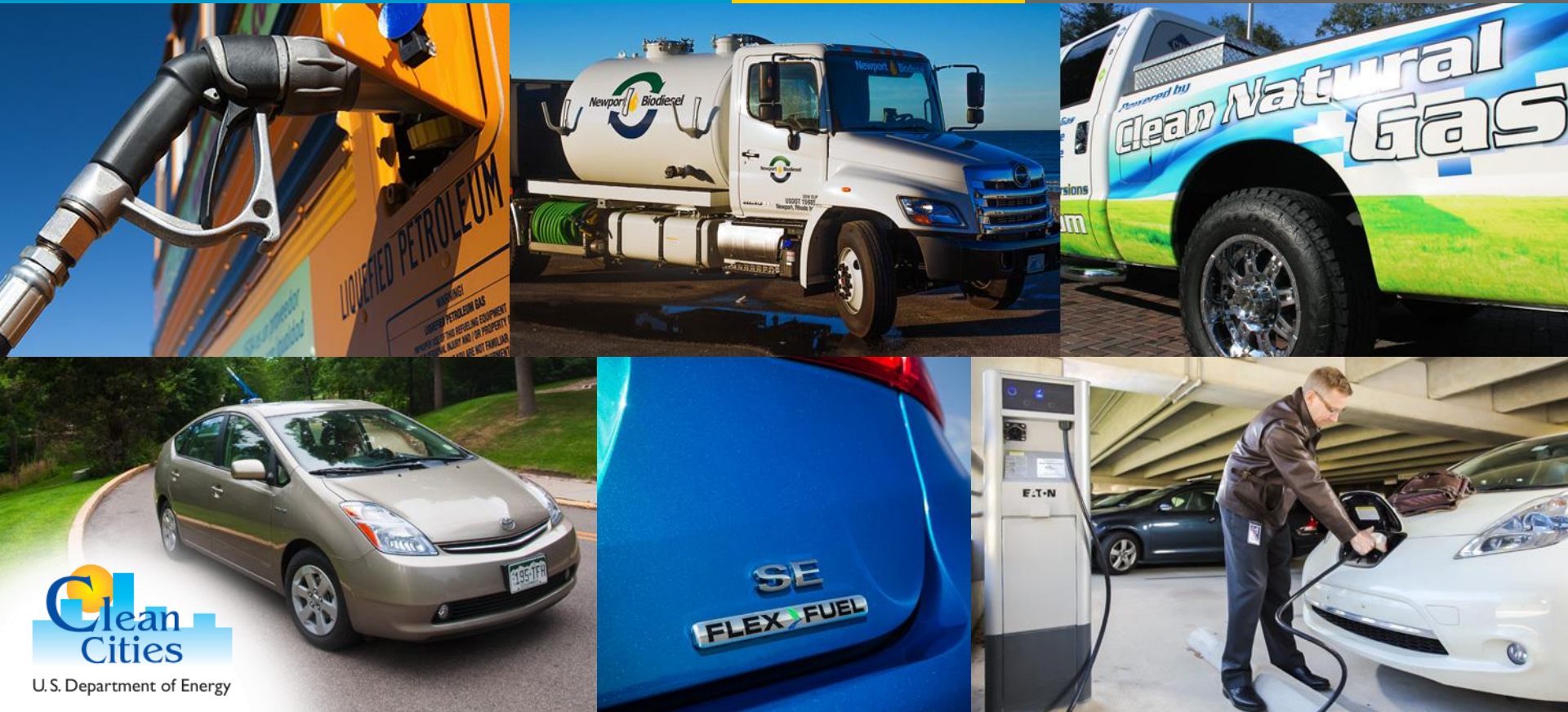


# Are We There Yet? The Current State and Impact of Alternative Fuels

U.S. DEPARTMENT OF  
**ENERGY**

Energy Efficiency &  
Renewable Energy



**Clean  
Cities**  
U.S. Department of Energy

**Texas Bets Big with Alternative Fuels**  
**Texas Energy Summit**

**November 14, 2017**

**Lori Pampell Clark**  
**NCTCOG Program Manager**  
**DFW Clean Cities Coordinator**

# Benefits of Alternative Fuels

**Lower Price Volatility**

**Increased Energy Security**

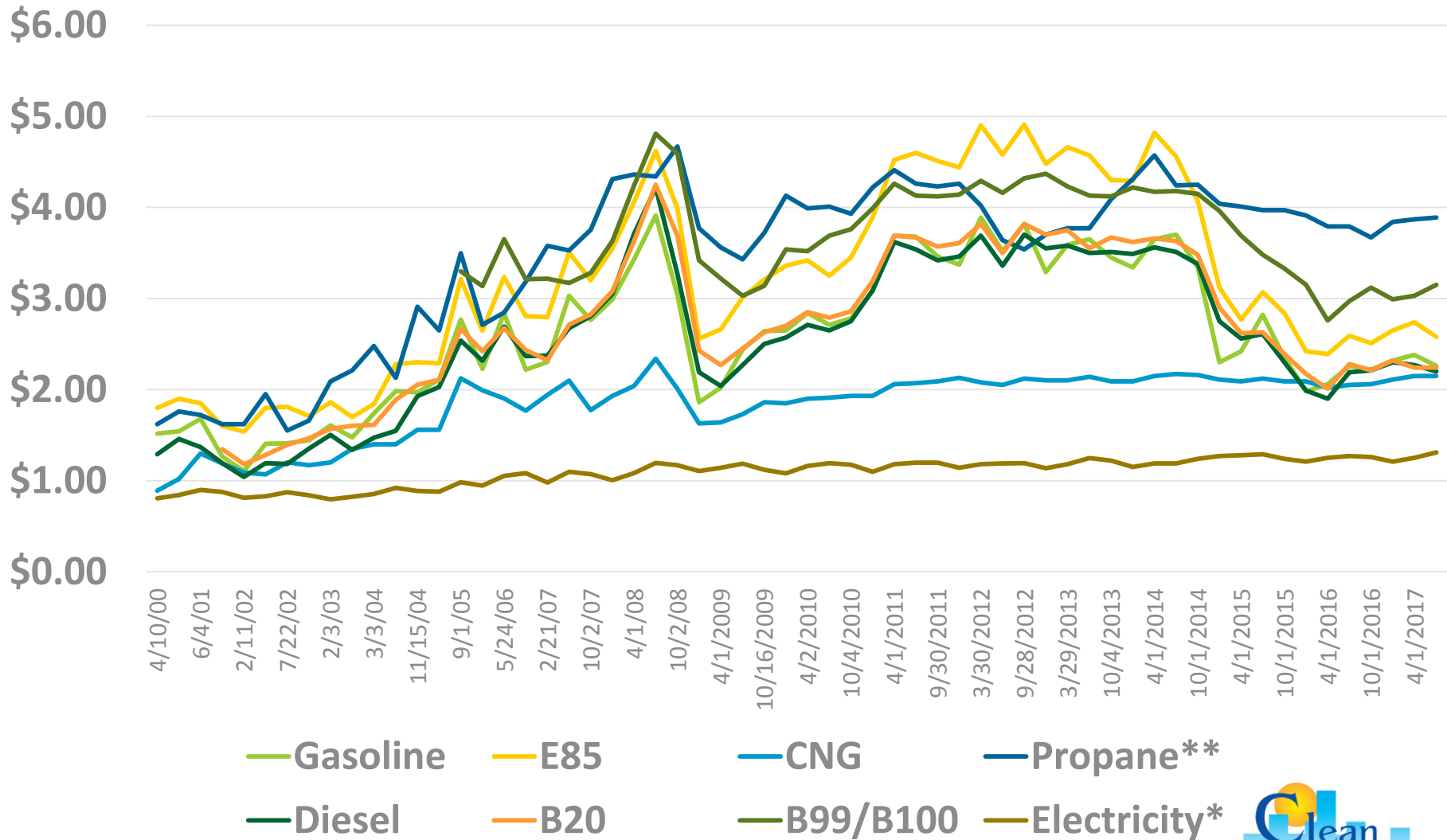
**Reduced Cost of Ownership**

**Reduced Emissions**



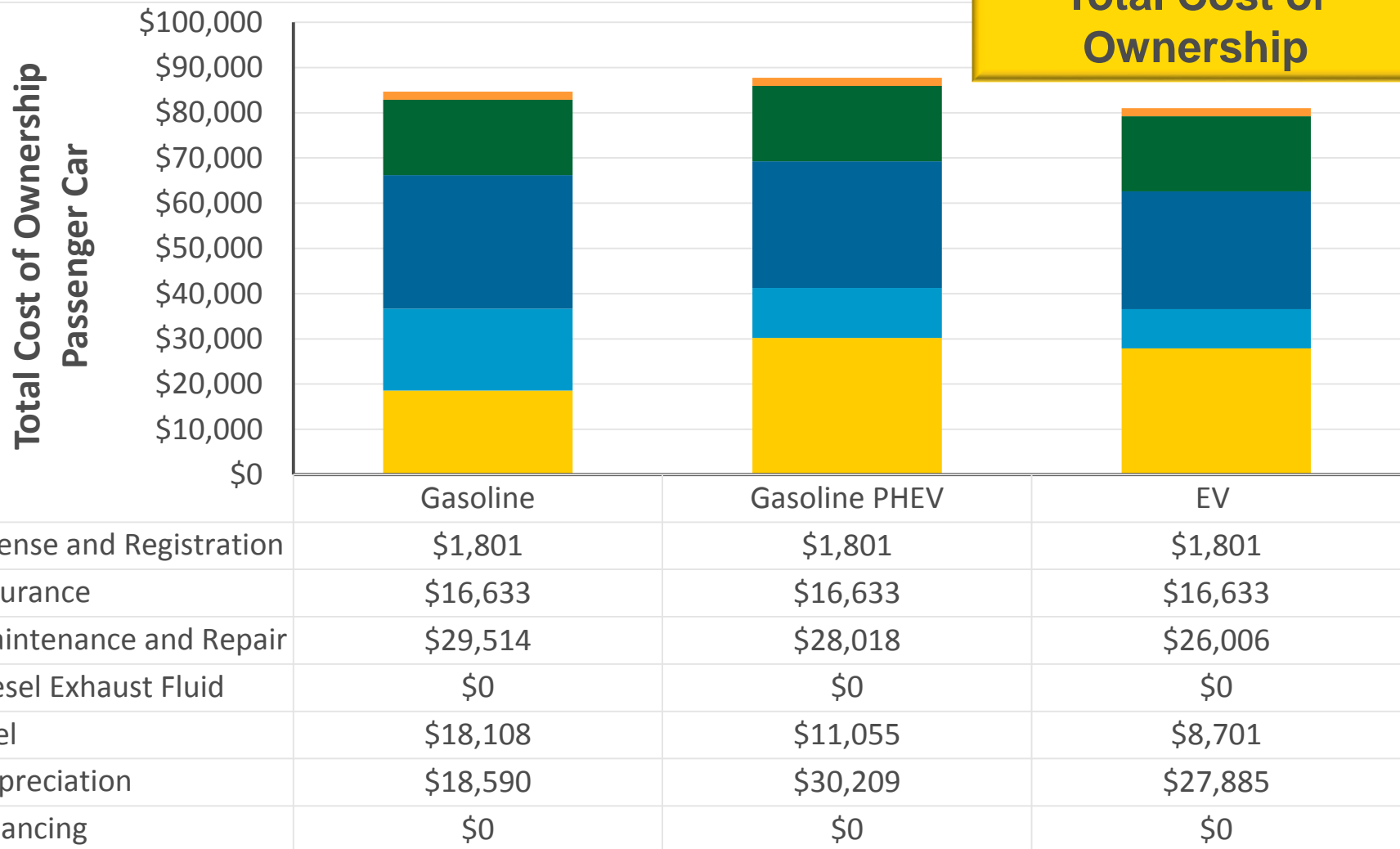
# Alternative Fuel Benefits – Lower Price Volatility

Average U.S. Retail Fuel Prices per Gasoline Gallon Equivalent



# Alternative Fuel Benefits – Lower Costs

**EV Has Lowest  
Total Cost of  
Ownership**

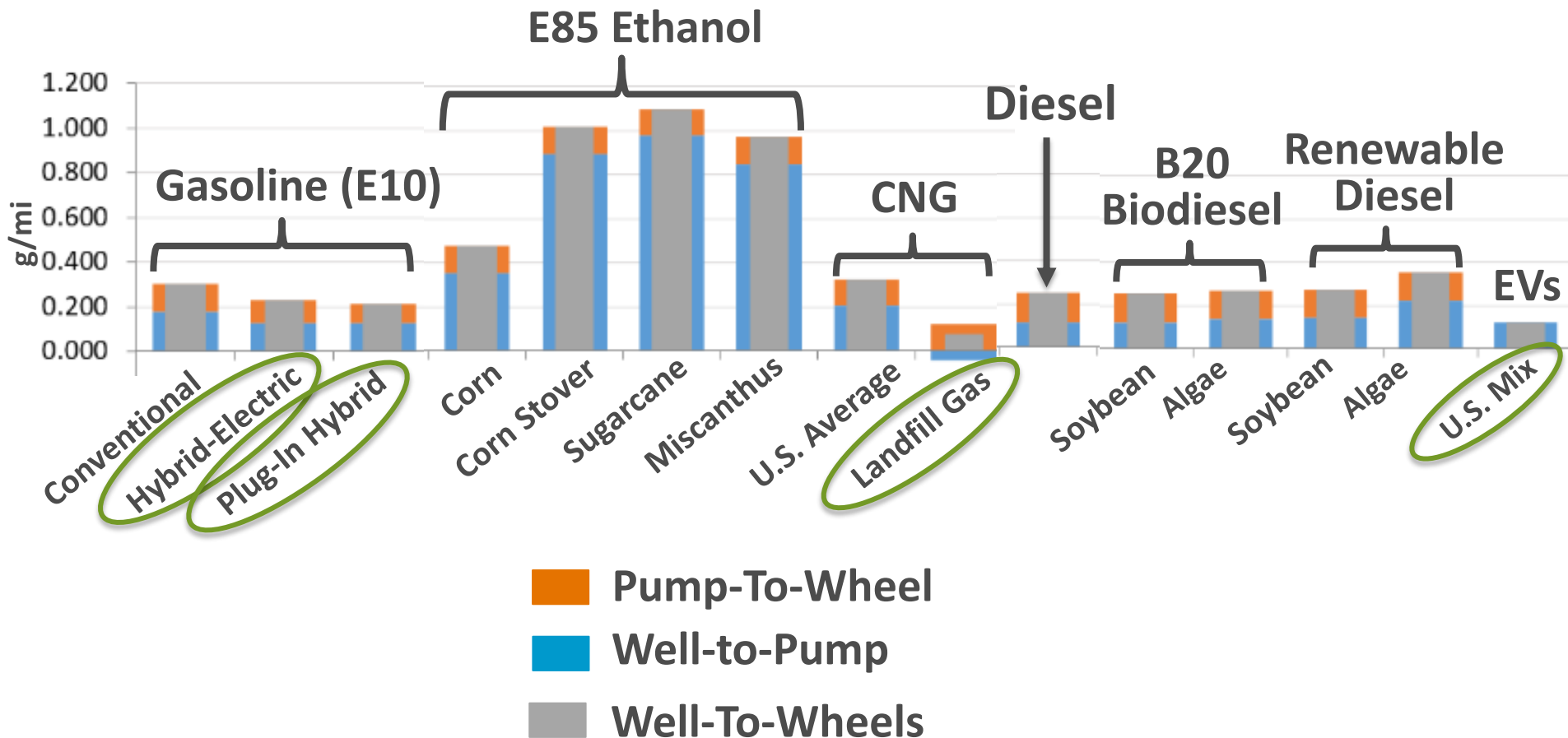


**Source:** Argonne National Laboratory Alternative Fuel Life-Cycle Environmental and Economic Transportation (AFLEET) Tool; <https://greet.es.anl.gov/afleet>

# Alternative Fuel Benefits – Air Quality

## Well-to-Wheels Emissions Impacts – Nitrogen Oxides (NO<sub>x</sub>)

*Representative Results Based on Today's Fuel and Vehicle Technologies*



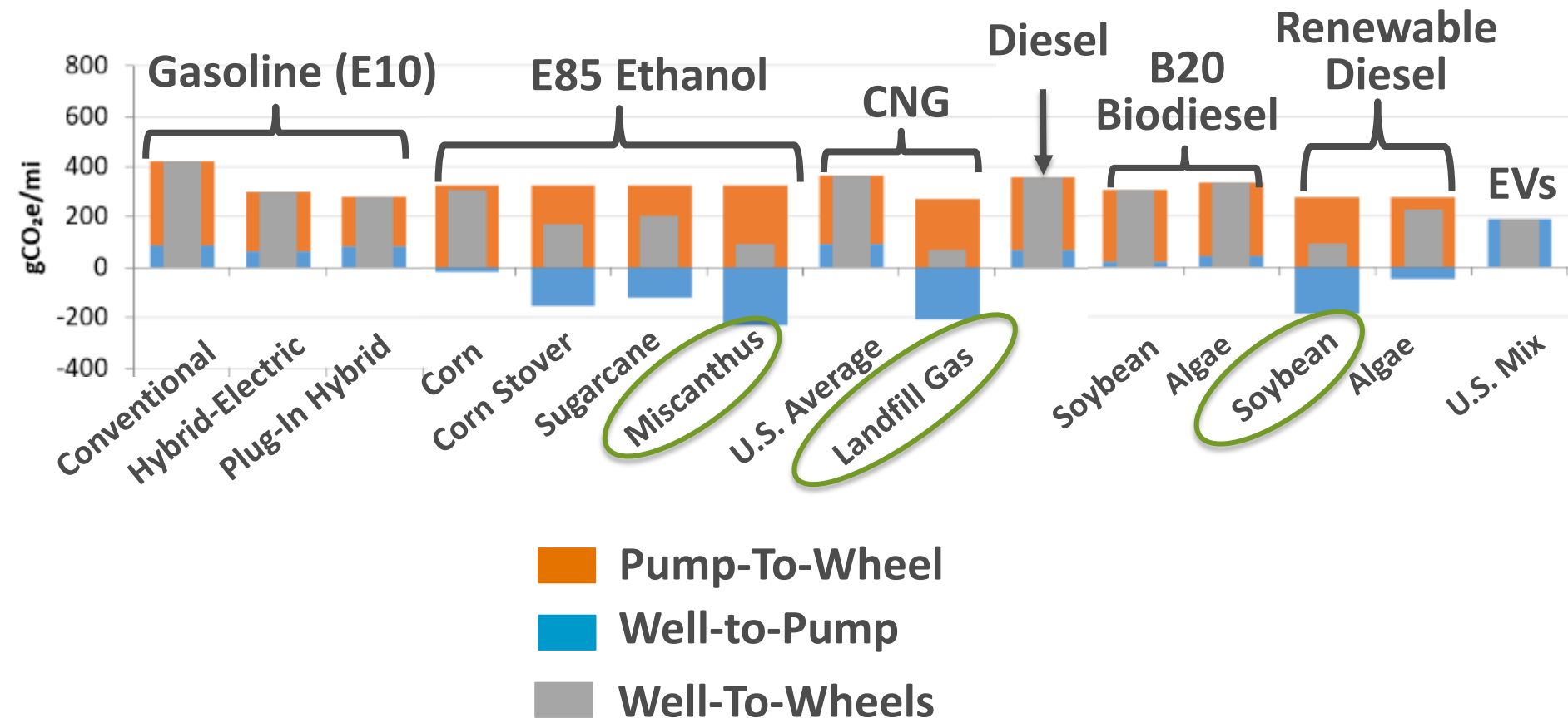
Source: Argonne National Laboratory, Greenhouse Gases, Regulated Emissions, and Energy use in Transportation Model, Well-to-Wheel Calculator

<https://greet.es.anl.gov/results>

# Alternative Fuel Benefits – Air Quality

## Well-to-Wheels Emissions Impacts – Greenhouse Gases

*Representative Results Based on Today's Fuel and Vehicle Technologies*



Source: Argonne National Laboratory, Greenhouse Gases, Regulated Emissions, and Energy use in Transportation Model, Well-to-Wheel Calculator

<https://greet.es.anl.gov/results>



# Still Not Convinced? Follow the Leaders



## Clean Cities National Clean Fleets Partnership

- Helps Large Private Fleets Significantly Cut Petroleum Use
- Provides Tools, Expertise and Technical Support to Incorporate Alternative Fuels and Fuel-Saving Measures
- Positions Partners as Pace-Setters for Others to Follow

More Than 25 Partners



More up-to-date information may be available. See the Clean Cities website:

<https://cleancities.energy.gov/fleets>



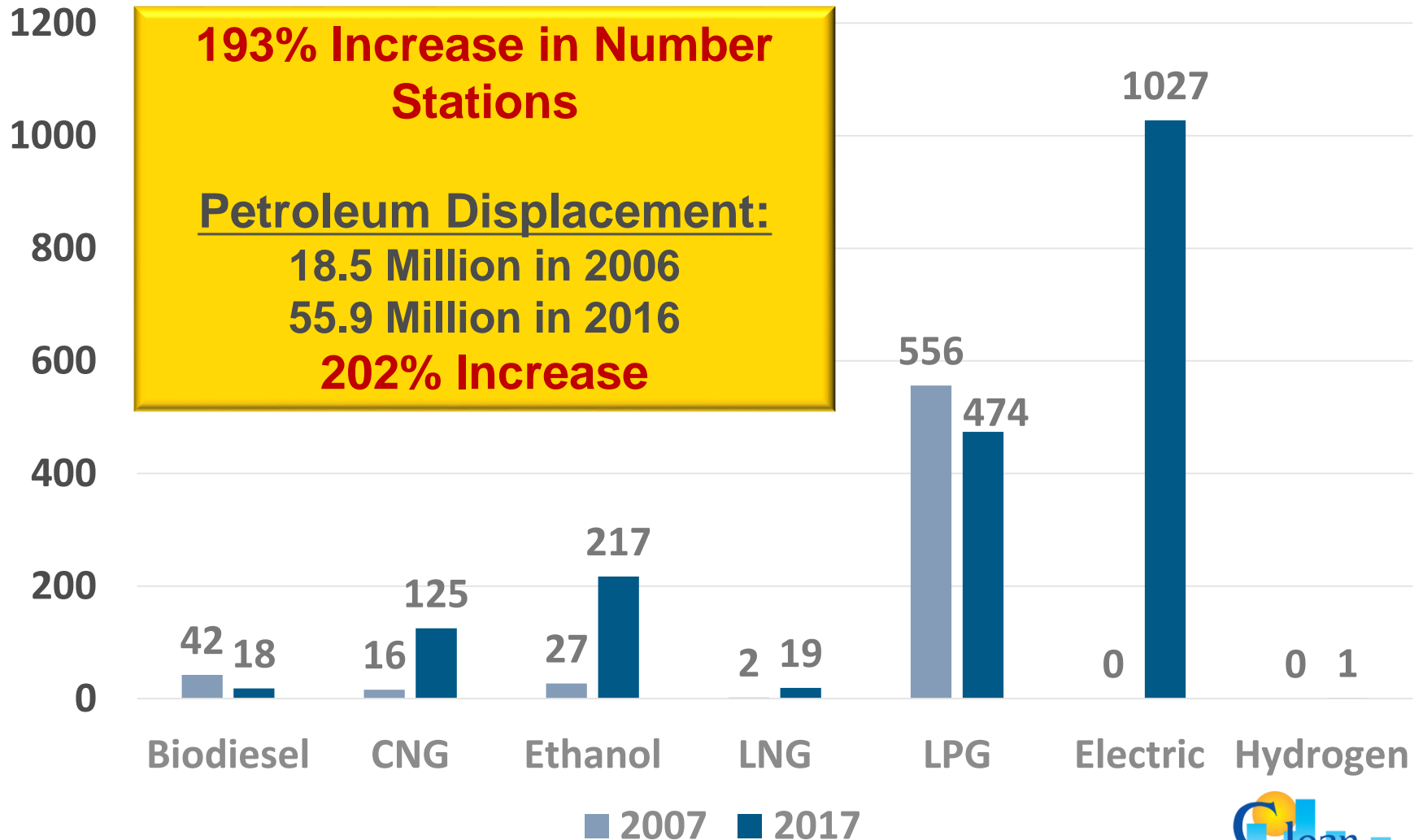
U.S. Department of Energy

# WHERE ARE WE NOW AND WHERE ARE WE GOING??



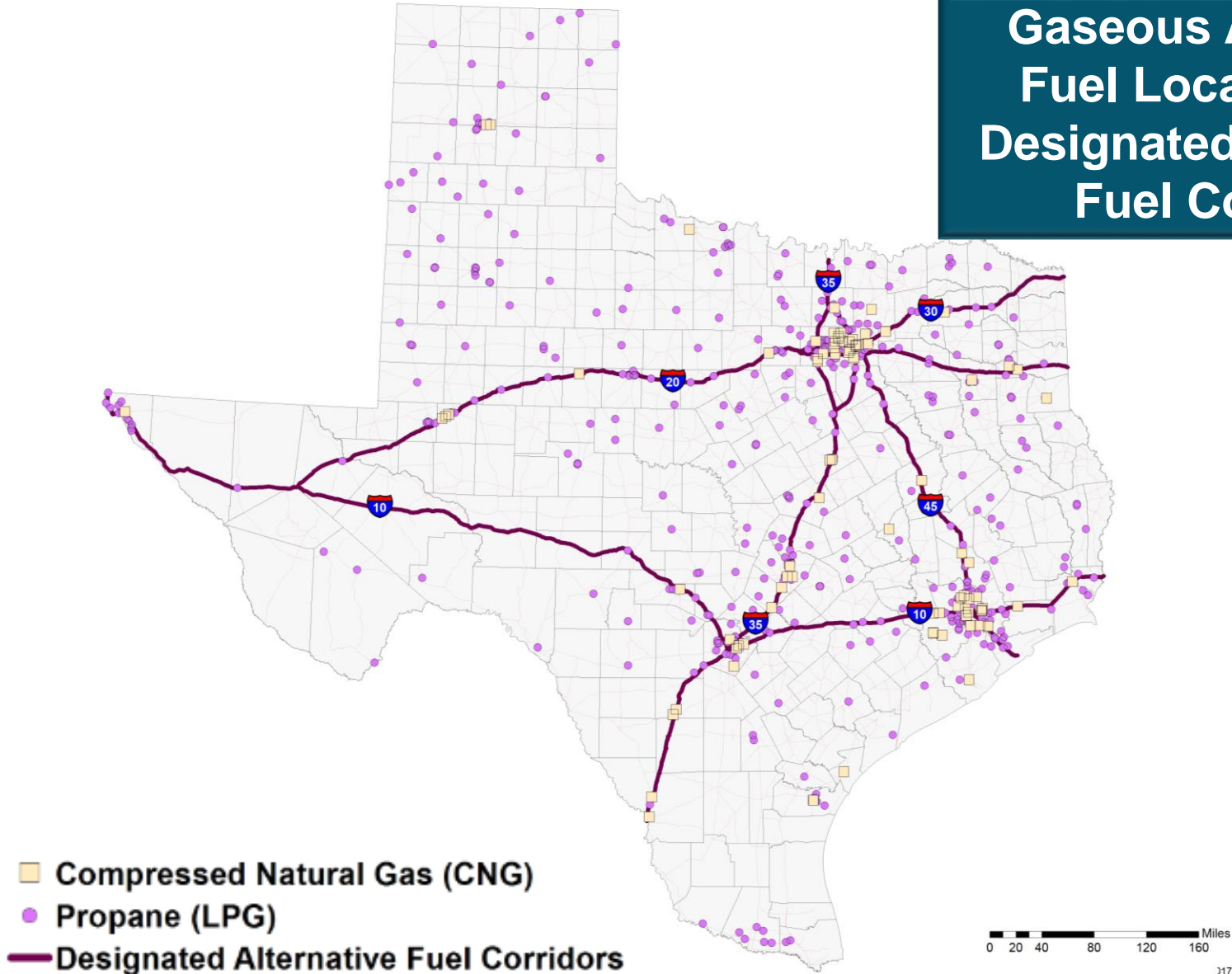
# Texas Coalitions' Impact Over Last Decade

## Number of Alternative Fuel Stations



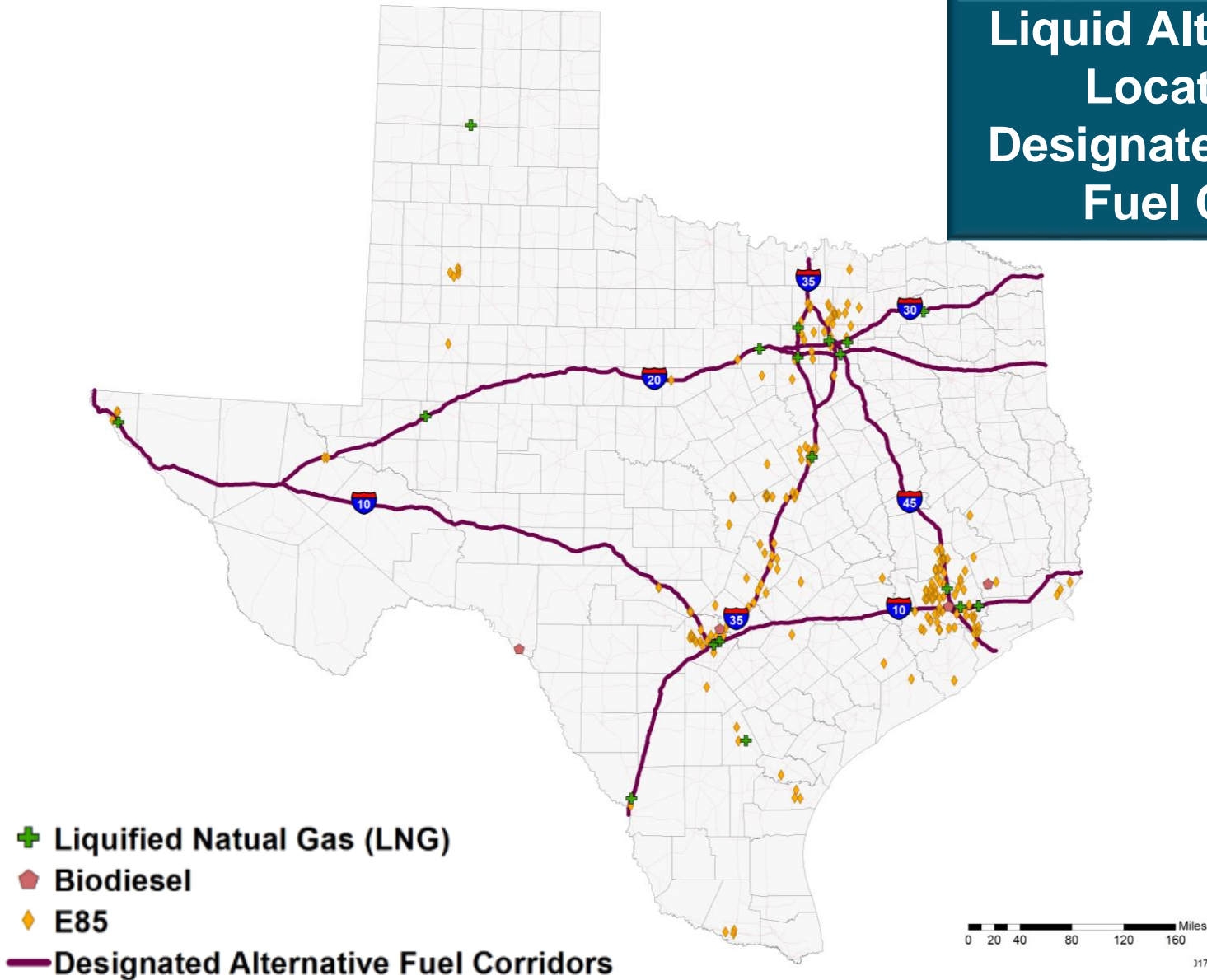
# Existing Alternative Fuel Network in Texas

## Gaseous Alternative Fuel Locations and Designated Alternative Fuel Corridors



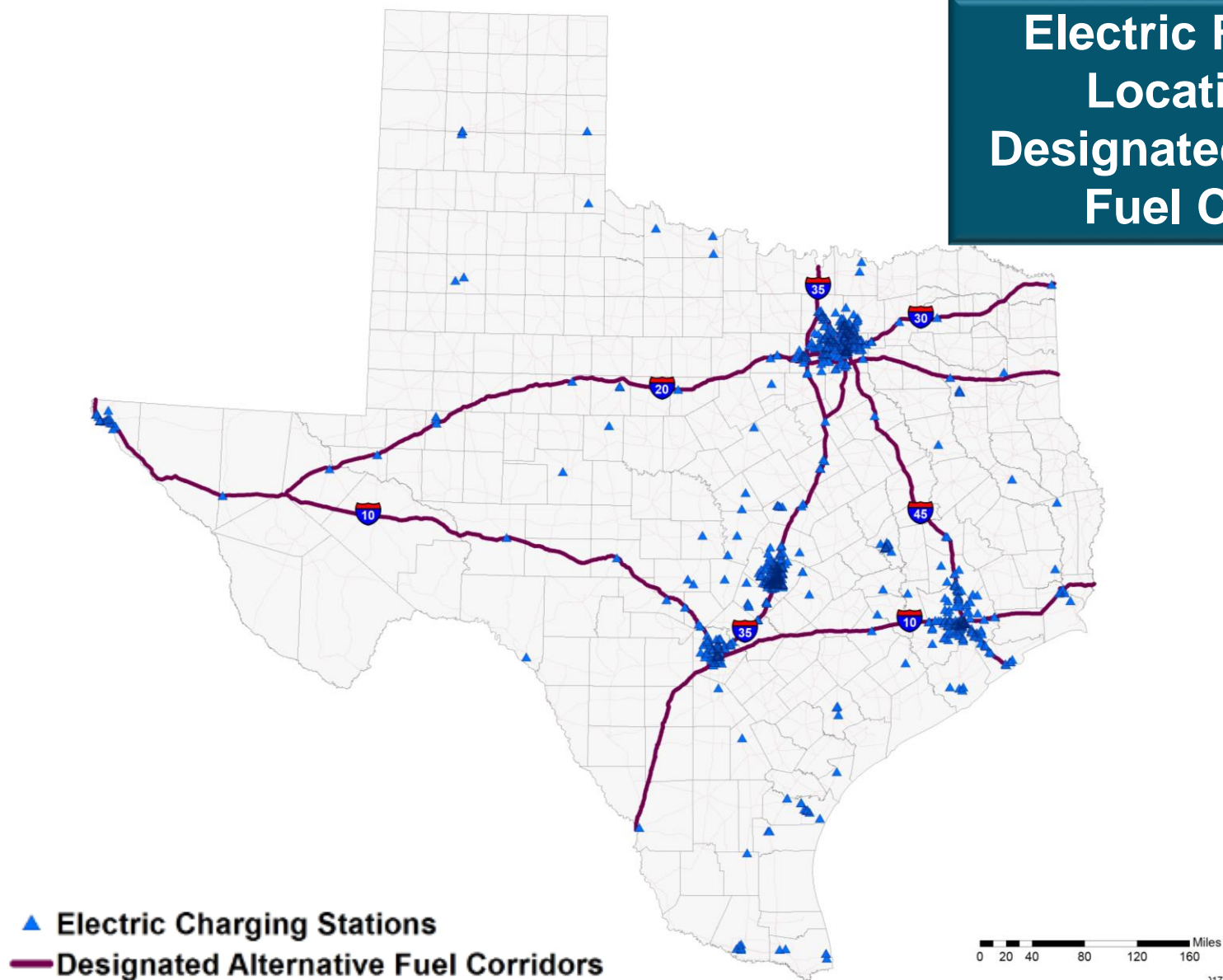
# Existing Alternative Fuel Network in Texas

# Liquid Alternative Fuel Locations and Designated Alternative Fuel Corridors



# Existing Alternative Fuel Network in Texas

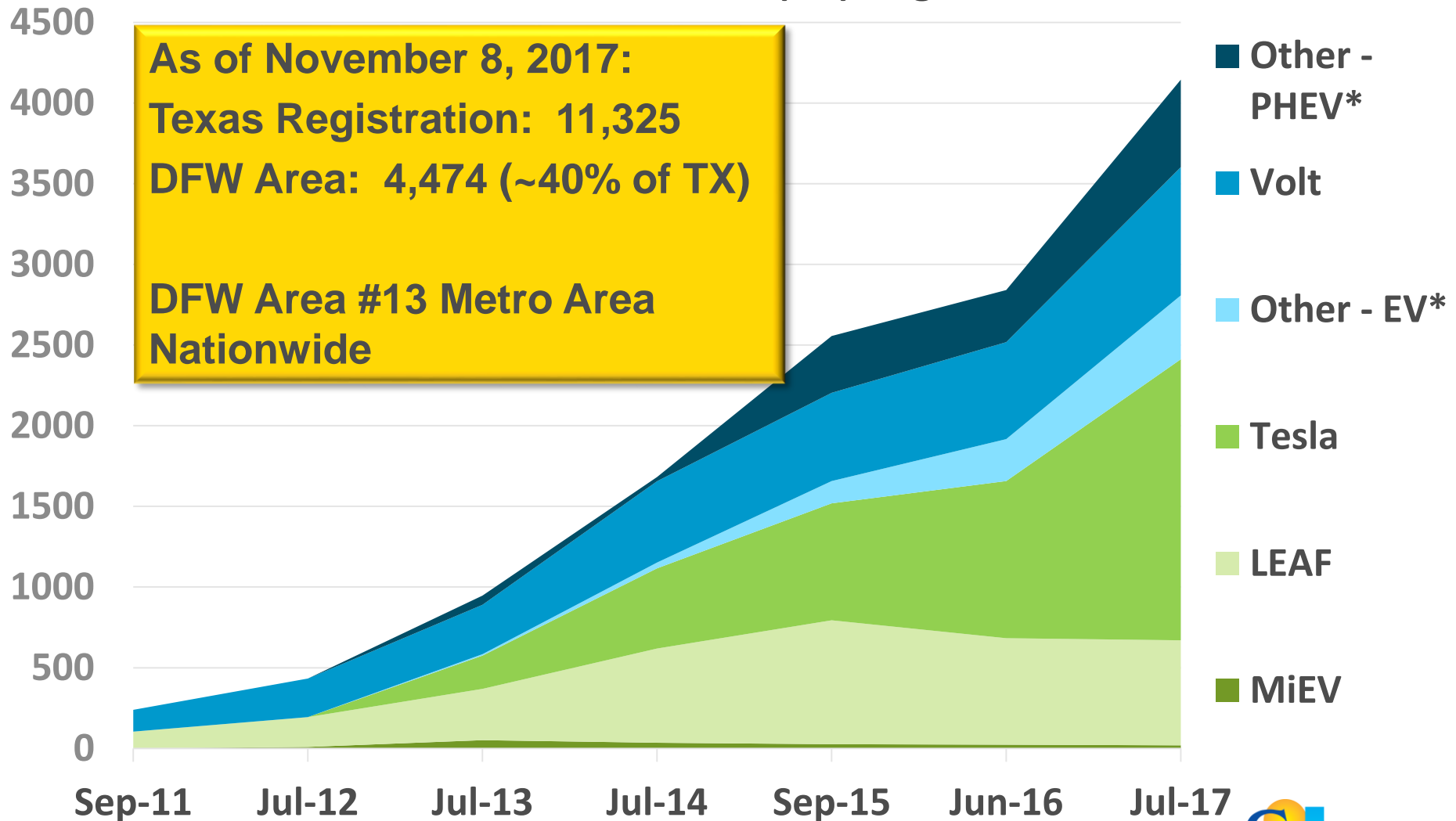
## Electric Recharging Locations and Designated Alternative Fuel Corridors



# Trending Now: Electric Vehicles

## North Texas Electric Vehicle (EV) Registration Trends

**As of November 8, 2017:**  
**Texas Registration: 11,325**  
**DFW Area: 4,474 (~40% of TX)**  
**DFW Area #13 Metro Area**  
**Nationwide**



\*Based on VIN Decoding of DMV Registration Data. "Other EV" includes BMW i3, Chevrolet Bolt & Spark EV, Fiat 500e, Fisker Karma, Ford Focus Electric, and Mercedes

<sup>13</sup> B250e; "Other PHEV" includes BMW i8, Ford C-Max Energi & Fusion Energi

# Texas' Top 5 in EVs



Cities	Number
Austin	1,496
Houston	1,043
Dallas	666
San Antonio	540
Plano	265

Makes/Models	Number
Tesla Model S	3,333
Chevrolet Volt	2,337
Nissan LEAF	1,580
Tesla Model X	1,221
Ford Fusion	1,000

Counties	Number
Travis	1,827
Harris	1,651
Dallas	1,636
Collin	971
Tarrant	939

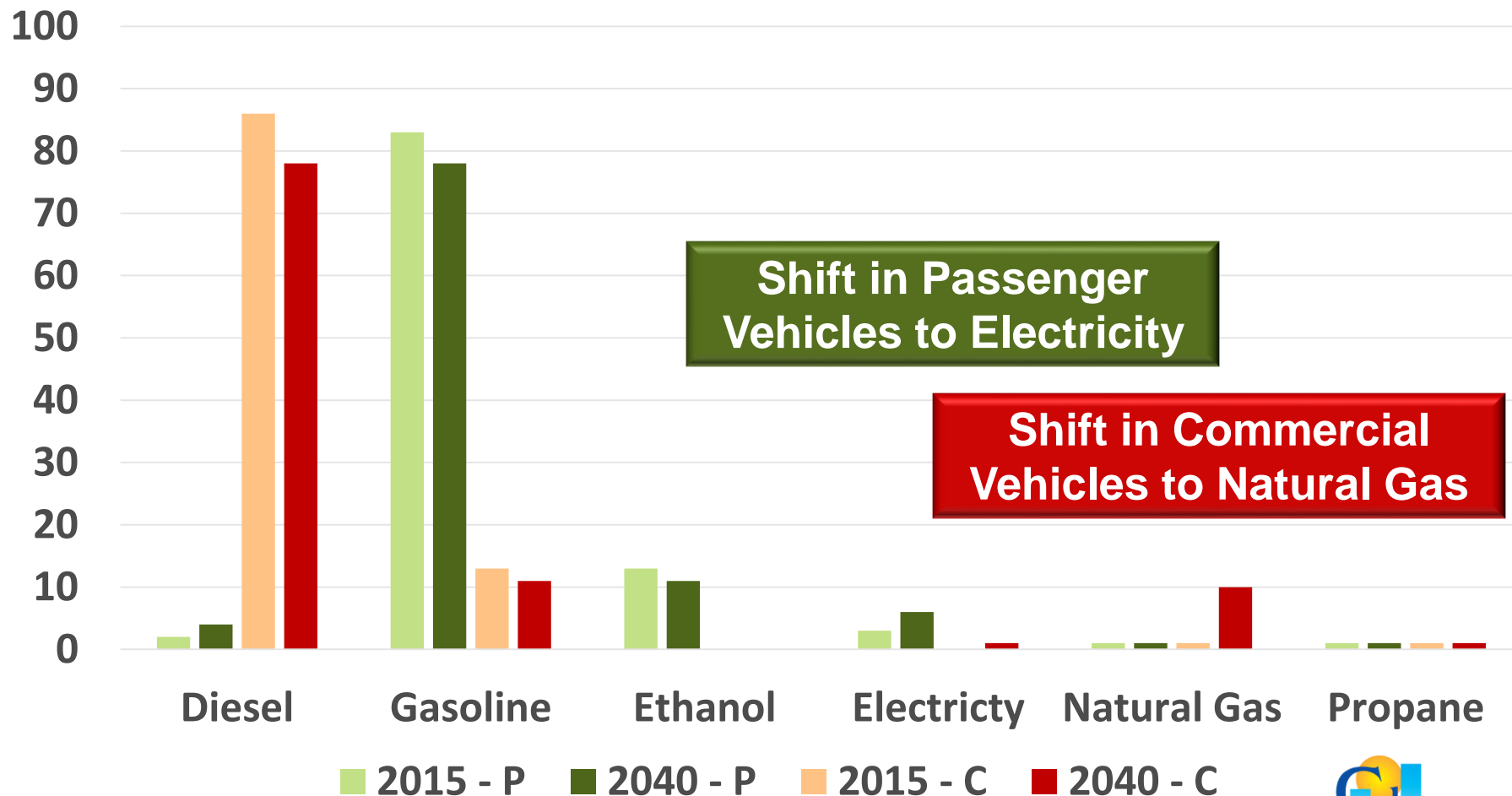


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# GAINING MOMENTUM.....AND HOW DO WE GO FURTHER?

# Alternative Fuel Sales Forecast

## Percent of U.S. New Vehicle Sales Passenger Vehicles (P) and Commercial Vehicles (C)



Source : Texas Transportation Institute; Alternative Fuel Vehicle Forecasts Final Report, April 2016. <https://static.tti.tamu.edu/tti.tamu.edu/documents/PRC-14-28F.pdf>

# Keys to Further Adoption

**Additional Refueling Infrastructure**

**Cost Reduction**

**State/Local Regulations**



# Local Partnerships: Clean Cities Coalitions



Nearly 100  
Local  
Coalitions

15,000  
Stakeholders  
52% Private  
48% Public

Nearly  
500,000  
Alternative  
Fuel Vehicles  
(AFVs)

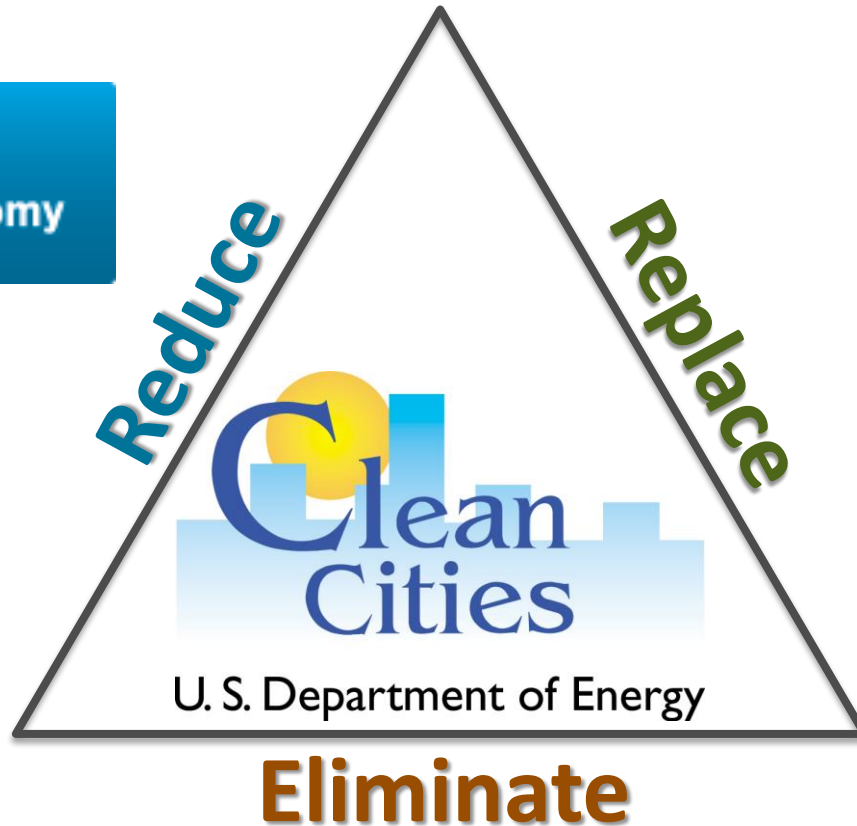


Dallas-Fort Worth  
CLEAN CITIES



U.S. Department of Energy

# Clean Cities Portfolio



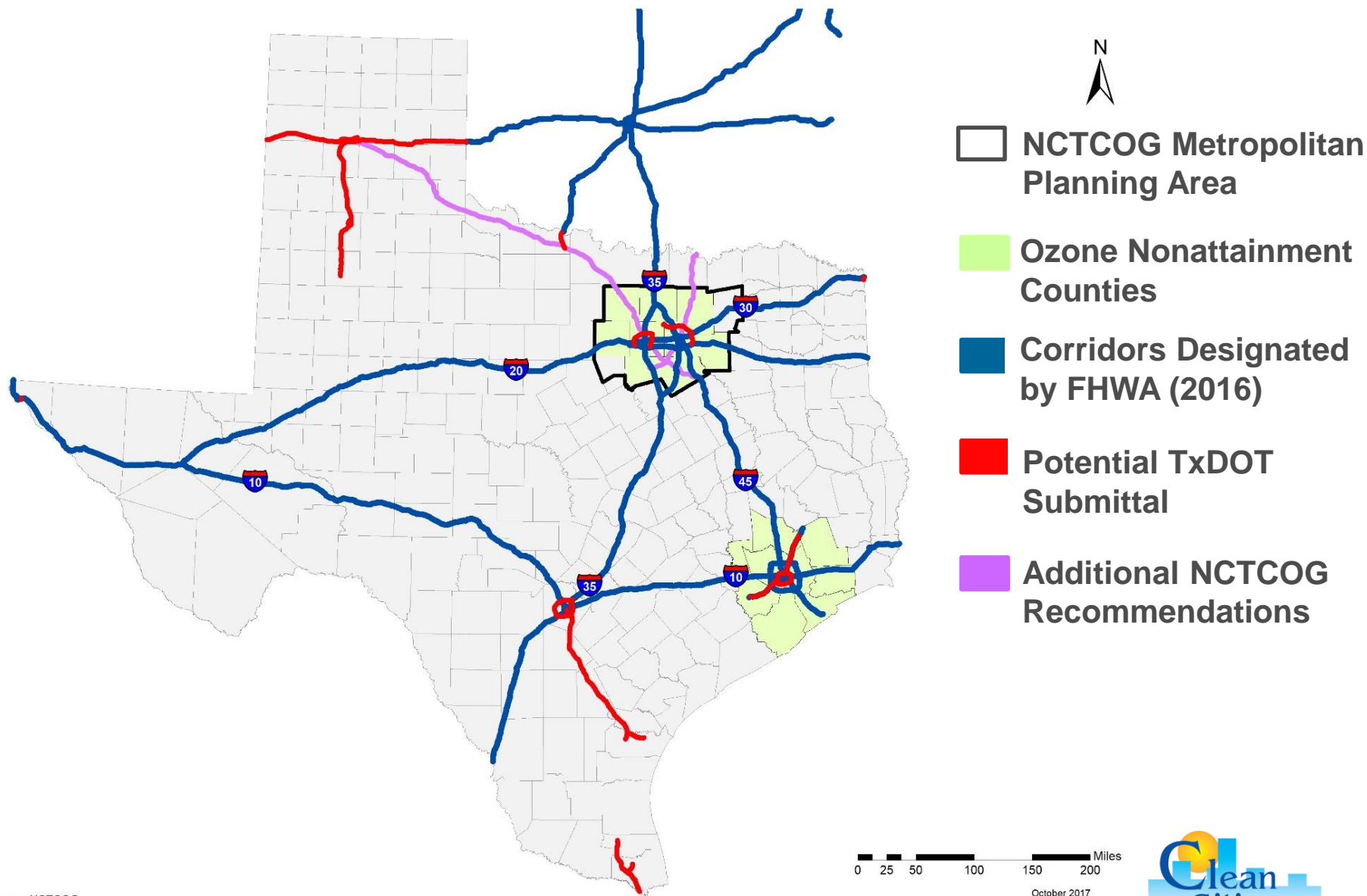
# Clean Cities: Making Connections



**Clean Cities coalitions are locally based with the ability to tap national resources.**



# Potential New Alternative Fuel Corridors



Data Source: NCTCOG



U.S. Department of Energy

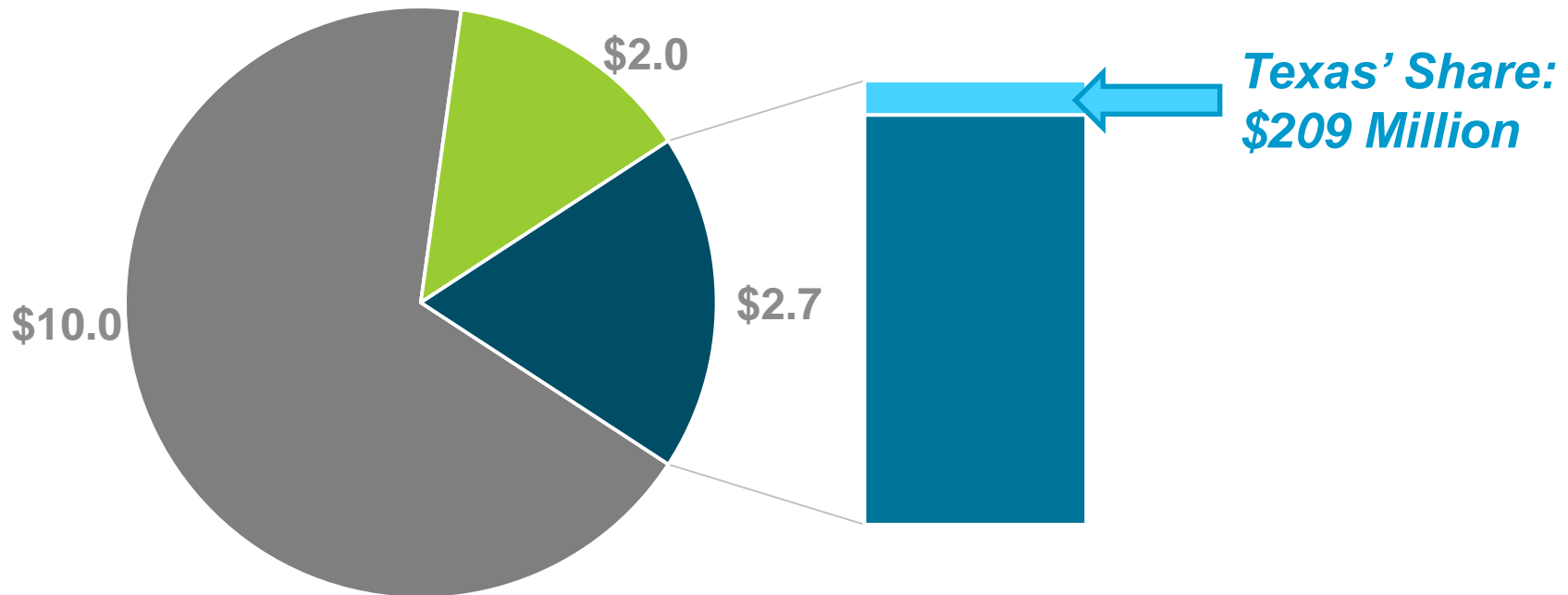
# Volkswagen Settlement = New Investments

**Total Settlement to Date: \$14.7 Billion**

**Zero Emission Vehicle (ZEV) Investment - Managed by Electrify America**

**Environmental Mitigation Trust (EMT) - Distributed to States**

*Settlement Breakdown (\$ in Billions)*



- Vehicle Buyback and Modification
- ZEV Investment
- Environmental Mitigation Trust

# Incentives for Alternative Fuel Vehicles

Fuel Type	Who	Amount	Incentive Program
EV, Hybrid, Natural Gas	Consumers	\$3,500	<a href="#"><u>AirCheckTexas Drive a Clean Machine Program</u></a>
EV	Anyone	Up to \$7,500	<a href="#"><u>Qualified Plug-In Electric Drive Motor Vehicle Tax Credit</u></a>
EV, Natural Gas, Propane	Anyone	\$2,500	<a href="#"><u>Light-Duty Motor Vehicle Purchase or Lease Incentive Program</u></a> <i>Coming Soon</i>
Natural Gas, Propane	Fleets	Varies Based on Vehicle Details	<a href="#"><u>Texas Natural Gas Vehicle Grant Program</u></a>
EV, Hybrid, Natural Gas, Propane, Hydrogen	Fleets	Up to 80% of Incremental Cost	<a href="#"><u>Texas Clean Fleet Program</u></a>
Any	Fleets	Various	Various “Clean Diesel” Programs from EPA or TCEQ TERP

# Incentives for Alternative Fuel Infrastructure

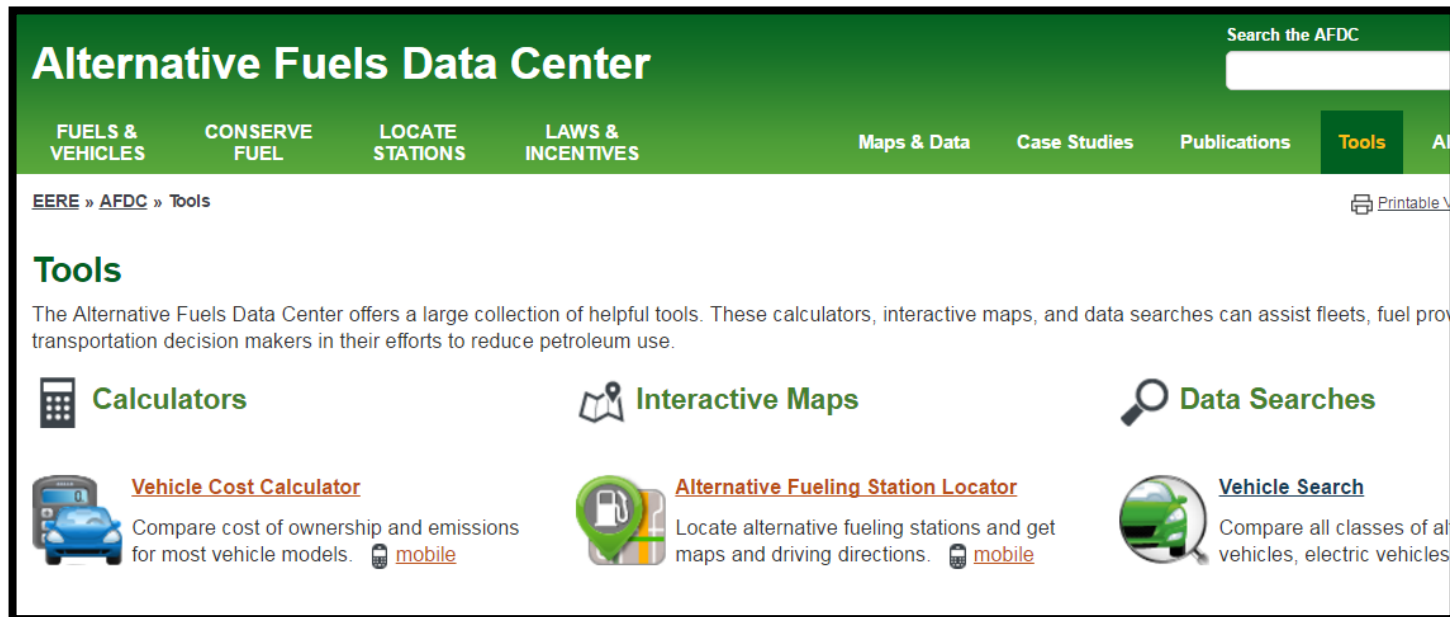
Fuel Type	Amount	Incentive Program
Any	Up to 50% Project Cost	<a href="#"><u>Alternative Fueling Facilities Program</u></a>
Electric	Up to 100% if Government-Owned; 80% if Non-Government Owned	Volkswagen Settlement Environmental Mitigation Trust???? <i><b>Texas Plans To Be Determined</b></i>

# National Resources on Alternative Fuels

## Alternative Fuels Data Center (US Department of Energy)

[www.afdc.energy.gov](http://www.afdc.energy.gov)

- Technical Data
- Case Studies and Publications
- Tools



# For More Information

**Lori Clark**

**Program Manager &**

**DFW Clean Cities Coordinator**

**817-695-9232**

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



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U.S. Department of Energy