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## ***VTO Deployment Overview***

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# VTO Deployment - Clean Cities program

## PRIMARY GOAL:

Mass market adoption of alternative fuel and advanced technology vehicles and smarter driving practices

## RESULTS

Reduced Greenhouse Gas Emissions

Reduced Petroleum Use in Transportation

Reduced Dependence on Imported Oil

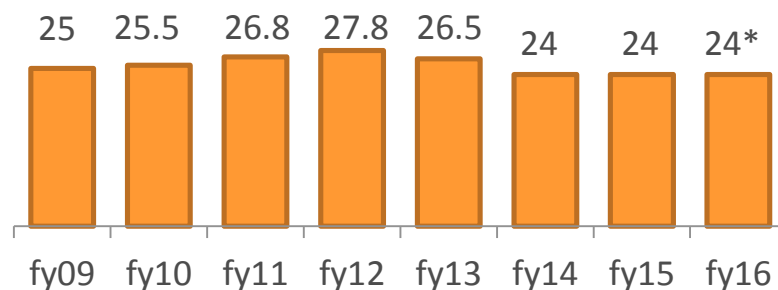
Improved US Energy, Economic, and Environmental Security

**Deployment efforts accelerate market transformation** by increasing public awareness & consumer acceptance/adoption of new vehicle technologies that are being developed through R&D activities.

**Deployment programs are essential when the success of new technologies depends on consumers changing their driving and purchasing habits.**

**Primary Focus – Achieve Petroleum and GHG Reductions ...**  
by Implementing Next-Steps when R&D is completed

Roughly 10% of VTO base budget supports Deployment programs



\*Base budget: Additional \$10M in FY16 for Alternative Fuel Vehicle Community Partner Projects, per Congressional direction

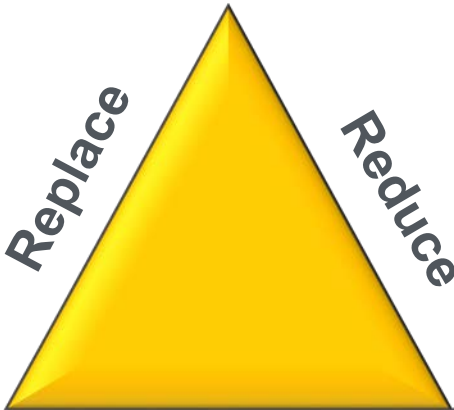
# Current Portfolio of Technologies

## Low-Carbon Fuels

Electric Vehicles  
Biodiesel  
Ethanol  
Drop-in fuels  
Hydrogen  
Gaseous Fuels

## Fuel Economy

More Fuel efficient vehicles,  
adopting smarter driving and  
vehicle purchasing habits



Eliminate



## Hybrids

Light- and heavy-duty  
Electric hybrids  
Plug-In hybrids

## Idle Reduction

Heavy-Duty Trucks  
School & Transit  
Buses  
Light-Duty Vehicles

**New Area of  
Emphasis:  
Holistic  
Transportation  
System view, smart  
cities**

# Clean Cities' Parallel Approach

Implement national policies and initiatives by  
facilitating change

## Local

Designate CC coalitions so that approach and message are consistent everywhere, but with attention to local market conditions and priorities

## National

Provide a national unbiased source of information.

Provide tools, experts to address barriers and solve problems.

Develop corporate partnerships with industry and national fleets as well as public fleet partners—federal, state, regional and local – to increase awareness and publicize success through mass media and outreach.

Provide financial assistance to jump start markets and incentivize private investment.





# Clean Cities Coalitions



## Nearly 100 coalitions with thousands of stakeholders

## Representing ~80% of US population

# Who's Who in Clean Cities - DOE

## DOE Headquarters (HQ)



Dennis Smith  
Director



Linda Bluestein  
Co-Director



Shannon Shea  
Communications  
Manager



Mark Smith  
National Partners  
Manager



Nick Bleich  
Workplace Charging  
Challenge

★ Leveraging  
CC team &  
stakeholders

## DOE Regional Managers National Energy Technology Laboratory (NETL)



Dan Nardoizzi  
Northwest



Dave Kirschner  
North Central



Darren Stevenson  
Mid-Atlantic



Erin Russell-Story  
Northeast



Brett Aristegui  
California



Neil Kirschner  
South Central



Trev Hall  
Southeast

# Who's Who in Clean Cities – National Labs

## National Renewable Energy Lab



Wendy Dafoe  
Main NREL  
point of contact



Andrew Hudgins  
CCTV,  
National Parks



Caley Johnson  
Facts and figures,  
Annual Report



Sandra Loi  
Coordinator main  
point of contact



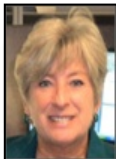
John Gonzales  
Fleets, Safety,  
Tech. Assistance



Trish Cozart  
Clean Cities and  
AFDC websites



Kay Kelly  
NCFP, safety,  
Tech. Assistance



Judi Deitchel  
CC booth, AFDC,  
document orders



Erik Nelsen  
Communications,  
CCU on-line training

## Argonne National Lab



Marcy Rood  
Main ANL  
point of contact



Andy Burnham  
AFLEET, NGV, LPG



Marianne Mintz  
Renewable Nat. Gas



Amanda McAlpin  
CCU Workforce  
Development



Dan Santini  
Electric Drive



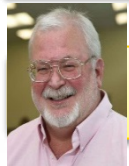
Patricia  
Weikersheimer  
Idle Reduction

## US DOT Volpe



Mike Scarpino  
Interagency  
Collaboration

## Idaho National Lab



Jim Francfort  
EV Tech Assist



Sera White  
Clean Cities POC

## Oak Ridge National Lab



Bo Saulsbury  
Fuel Economy tools,  
Consumer Outreach



Brian West  
Tech Assist &  
Vehicle Testing



Janet Hopson  
FuelEconomy.gov  
website



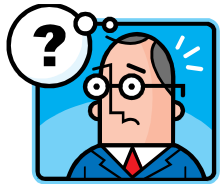
Stacy Davis  
Transportation  
Energy Data Book



# Clean Cities Deployment Efforts include 5 Major Activities



**Consumer Information, Outreach, and Education:** *DOE-developed tools help consumers save money on fuel cost and help fleets understand their options for cost-effective alternatives to gasoline and diesel fuel (includes FE.gov and AFDC).*



**Technical & Problem Solving Assistance:** *DOE experts help leaders address permitting and safety issues, technology shortfalls, and other project implementation barriers.*



**Coalition Training and Stakeholder Coordination:** *DOE helps convene key community, industry, and business leaders to develop and implement projects, leverage resources, address local barriers, and assure relevant workforce development.*



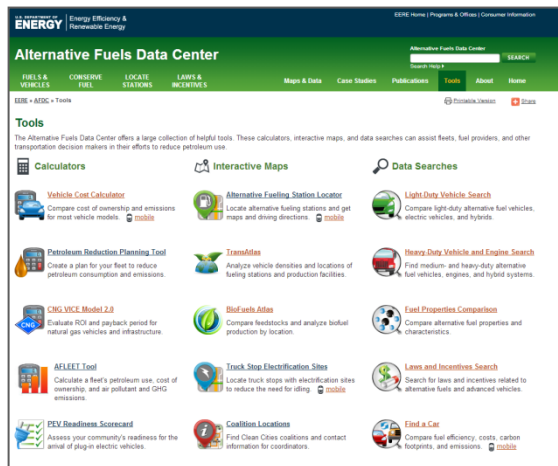
**Identification/Tracking of Essential Program Metrics:** *Coalitions track local/regional market conditions, facilitate infrastructure development, share best practices and lessons-learned.*



**Competitively-Awarded Financial Assistance:** *Federal cost-share encourages initial private sector match and long-term investment.*

# Consumer Information, Outreach, and Education

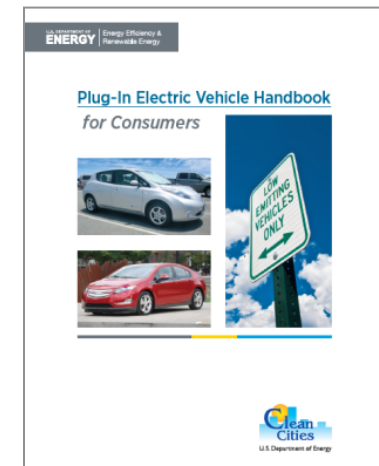
- Non-biased source of VT data and information.
- Fuel Economy Guide (FE.gov), Alt-Fuel Data Center (AFDC).
- Online tools and cost calculators, other web resources.
- Fact Sheets, publications, handbooks, success stories.
- Technical Response Service and Hotline.
- Public workshops, webinars, industry technical conferences.



Online Tools



Technical Response Service



Publications

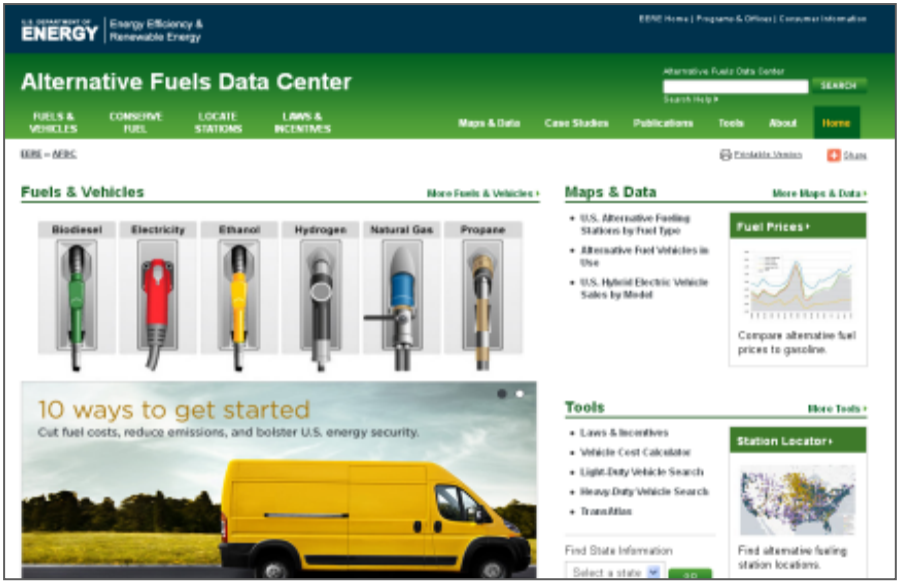
## Fueleconomy.gov

Enables consumers to find the fuel-efficient vehicle that meets their needs, as well as save gas and money with their current vehicles.



## Alternative Fuels Data Center

Helps fleets choose the right alternative fuel or other petroleum and GHG reduction approach for them, with almost 100 case studies and 14 interactive tools.



# Technical and Problem Solving Assistance

- Capture lessons learned and develop best practices
- Technical Forums and User Groups
- Address unforeseen permitting and safety issues
- Identify chronic vehicle or infrastructure field problems
- Incident investigations (learn from failures)



## Model EVSE Permit

### Application for Installation of Electric Vehicle Charging Equipment

**NOTICE:** The system must be installed in compliance with the National Electric Code® (NFPA 70), Article 625 Electric Vehicle Charging System or applicable electrical code currently adopted and enforced within the jurisdiction of installation. All associated work with circuits, electrical service and meters shall be completed in compliance with NFPA 70, national electric code, or applicable electrical code currently adopted and enforced within the jurisdiction of installation.

#### Section 1: Permit Applicant Information

Name:		
Installation Street Address (P.O. box not acceptable):	Contact Person:	Phone Number:
City:	County:	State:
Owner Name:	Street Address:	ZIP Code:
City:	State:	ZIP Code:
Submitter's Name/Company:	Street Address:	Phone Number:
City:	State:	ZIP Code:

General description of equipment to be installed:

#### Section 2: Permit Code Information

Requirements for wiring a charging station are taken directly out of the 2011 edition of the National Electrical Code® (NEC) NFPA 70, Article 625 Electric Vehicle Charging System. This article does not provide all of the information necessary for the installation of electric vehicle charging equipment. Please refer to the current edition of the electrical code adopted by the local jurisdiction for additional installation requirements. Reference to the 2011 NEC may be made at [www.nfpa.org](http://www.nfpa.org).

NEC Chapter or Article	DESCRIPTION
Chapter 2 and 3	<b>Branch Circuit</b> A new electrical box added on a branch circuit shall comply with NFPA 70 National Electrical Code: Chapter 2 Wiring and Protection and Chapter 3 Wiring Methods and Materials and all administrative requirements of the NEC or the electrical code in effect in the jurisdiction.
625.4	<b>VOLTAGES</b> Unless other voltages are specified, the nominal ac system voltages of 120, 120/240, 208Y/120, 240, 480Y/277, 480, 600Y/347, and 600 Volts shall be used to supply equipment.
625.5	<b>LISTED OR LABELED</b> All electrical materials, devices, fittings, and associated equipment shall be listed or labeled.





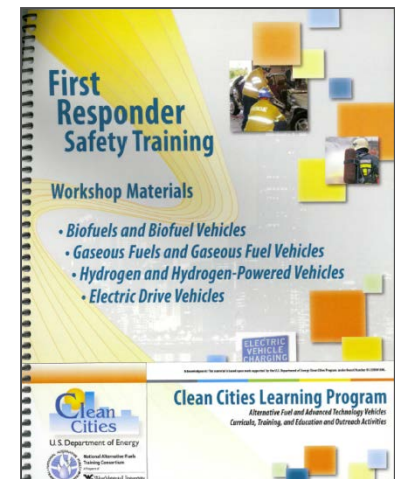
# Coalition Training and Stakeholder Coordination

- Technical training, mentoring, and workforce development
- Strategies are customized for local market conditions
- CC networking to assure consistent approach and messaging
- Identification of potential fleet and funding partners
- Government-Industry-Trade Group collaborations
- Coordinating alt-fuels infrastructure development



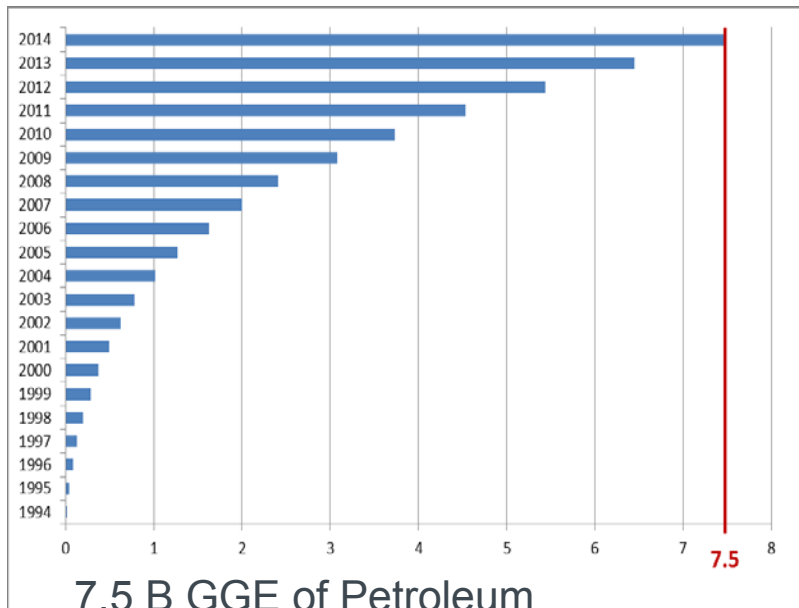
# Competitively-Awarded Financial Assistance

- Community Readiness and Policy Development
- Infrastructure Development (fueling/charging stations)
- Vehicle Deployment (optimization & incremental cost)
- Curriculum Development (safety and technical courses)
- High-Visibility Demonstration projects
- Hands-on Fleet and Driver Experience projects
- Aggregate purchasing to create economies of scale

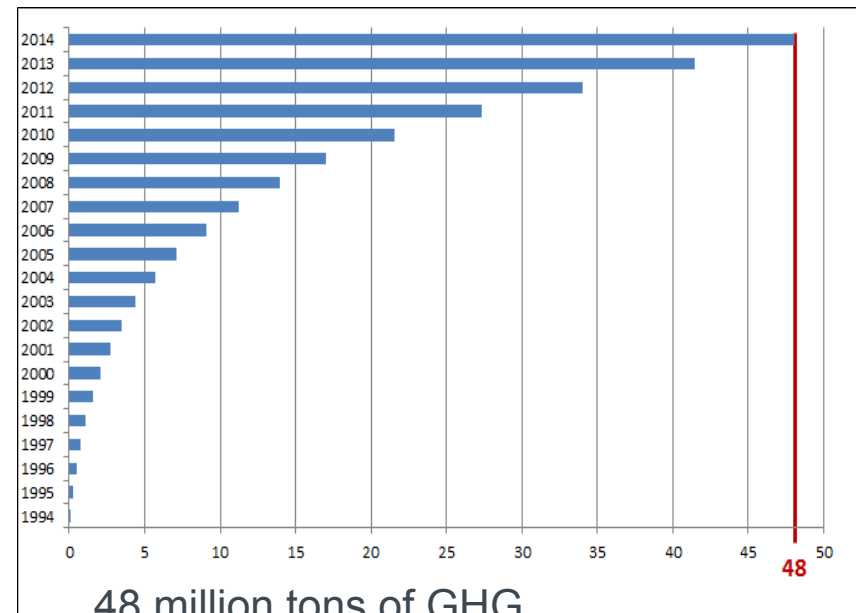


# Tracking Program Accomplishments

## Analyzing Cumulative Benefits since 1993



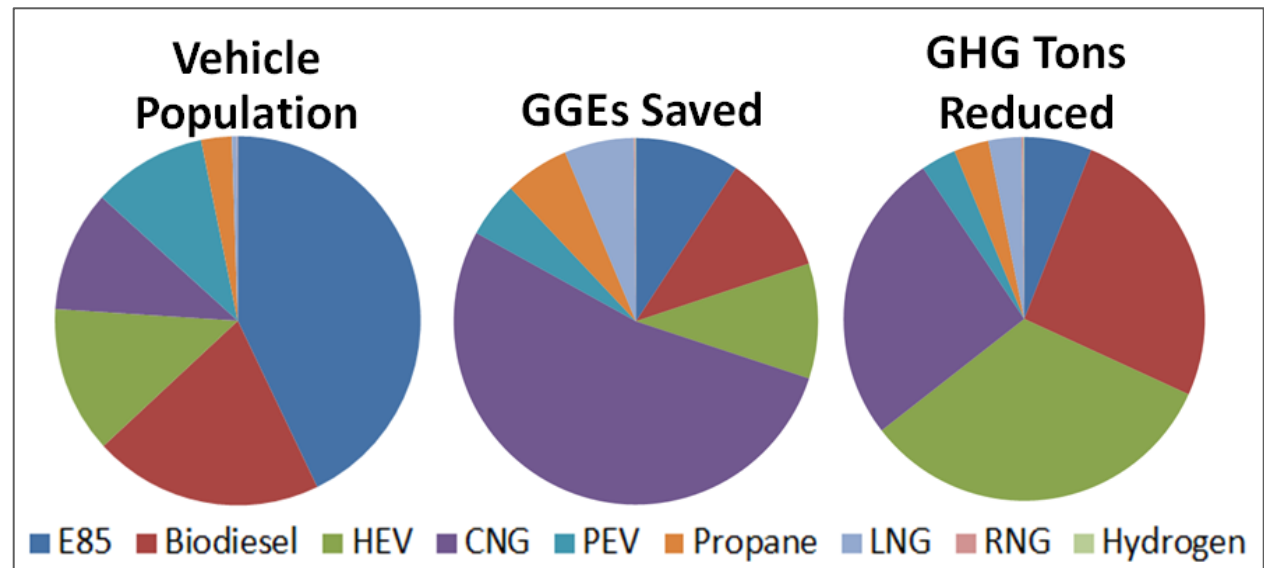
7.5 B GGE of Petroleum Reduction



48 million tons of GHG

### 2014 Accomplishments:

- **1 Billion GGE reduction**
- **6.6 Million Tons GHG reduced**
- *Equivalent to removing 1.5 million cars from the road*



## FY 2015 Funding Opportunity Description

The objective of this FOA is to create and implement high impact and highly innovative approaches to increase the acceptance and deployment of Alternative Fuel Vehicles (AFVs), in three Areas of Interest (AOIs):

- AOI 1: Demonstrations via hands-on experiences
- AOI 2: Safety-related training
- AOI 3: Emergency preparedness

**11 Projects Total**  
**\$5,850,985 DOE Share**  
**\$3,211,985 Cost Share**  
**TOTAL: \$9,062,970**

- 6 projects presenting at 2016 Annual Merit Review
- Period of Performance start dates varied between May and Sept 2015
- 2 year performance periods



## Area of Interest 1

### *Alternative Fuel Vehicle (AFV) Demonstration and Enhanced Driver Experience Projects*

- *Allow users to experience AFVs and analyze the benefits of using them*
- *Assess the enhanced driver experience and consumer awareness/education impacts of the project*
- *Identify any financial and non-financial incentives that will be offered as well as any special programs that will stimulate consumer interest as a result of the project*

#### **5 Projects Awarded**

**Total DOE Funding: \$2,115,985**

**Cost Share Requirement: 50%**



- 1. Florida Department of Agriculture and Consumer Services, Office of Energy**  
*Project Title: Drive Electric Orlando*
- 2. ASG Renaissance**  
*Project Title: Plug-In Hybrid Electric Vehicle Demonstration Program and Social Media Campaign*
3. Clean Fuels Ohio
4. Penske Truck Leasing Co., L.P.
5. Triangle J Council of Governments

## Area of Interest 2

### *Alternative Fuel Training for First Responders, Public Safety Officials, and Critical Service Providers*

- *Develop and/or deliver alternative fuel safety and technical training to emergency first responders, public safety officials, and critical service providers that have a broad impact across the alternative fuel user community.*

#### **5 Projects Awarded**

**Total DOE Funding: \$2,935,000**

**Cost Share Requirement: 20%**



#### **1. West Virginia University Research Corporation**

*Alternative Fuel Vehicle Curriculum Development And Out Reach Initiative*

#### **2. National Fire Protection Association**

*National Alternative Fuel Vehicle (AFV) Emergency Responder, Recovery, Reconstruction, and Investigative Training*

#### **3. Metropolitan Energy Center, Inc.**

*Safe Alternative Fuel Deployments: A Combined AFV And Fire Rescue Training Initiative - The Safe - D Project*

#### **4. North Central Texas Council of Governments (NCTCOG)**

#### **5. University of Central Florida**



## Area of Interest 3

### *Incorporating Alternative Fuels into Emergency Response and Preparedness Operations*

- *Collaboration and participation with state and local governments to incorporate the use of AFVs, and alt-fuel infrastructure across multiple city, state, and regional emergency management and response entities into existing and future emergency preparedness plans.*

#### **1 Project Awarded**

**Total DOE Funding: \$800,000**

**Cost Share Requirement: 20%**

### **National Association of State Energy Officials (NASEO)**

*Initiative For Resiliency In Energy Through Vehicles (IREV)*

